

Nokomis Area Groundwater Technical Team January 22, 2018 Meeting Minutes

Participants and personal and organizational hydrology expertise:

- Karen Galles – Hennepin County, surface water hydrology background
- Jason Spiegel – DNR, public waters regulations and management of public waters
- Rachael Crabb – MPRB, water resources supervisor, wetlands permitting, groundwater monitoring, surface water monitoring, Lake Nokomis weir management
- John Clark – MCES, environmental scientist, water supply planning, hydrogeology and earth science background
- Kyle Colvin – MCES, 22 years experience with development plans and I&I program
- Joe Richter – DNR, groundwater regulations and appropriation permit
- Tiffany Schaufler – MCWD, hydrology expertise, XPSMM model, creek baseflow study, 2014 flood report, dam management, creek monitoring
- Paul Hudalla – City of Minneapolis, hydrology and hydrogeology modelling expertise with City and in private consulting
- Katrina Kessler – City of Minneapolis, Director of Surface Water and Sewers Division, engineering background

Discussion of sources of data along with some summary of discussion from November 30th meeting

- Understanding where homeowners have experienced issues in relationship to surficial geology formations and high groundwater is important, suggestion to get MSGS GIS layer(s), and map them with known basement flooding issues.
- Nokomis, Hiawatha, Solomon Park, Taft, and Mother Lakes appear to be part of what was a wetland complex prior to development. The organic deposits of this wetland were drained, and fill was added for development. The natural condition is for this area to be wet, and with increasing rainfall in the area since the 1940's it wouldn't be surprising if the area where there was a wetland is remaining wetter longer. This could be one of the factors contributing to the issues homeowners are experiencing.
- It would be useful to have groundwater levels from all aquifers but most important from the most shallow (Quaternary) aquifer. Whether or not the surficial aquifer is connected to deeper aquifers in this location should be investigated.

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- Limited data from existing DNR observation wells.
- One well with long standing record is located in the basement of Hope Church however that well is monitoring water levels in the Prairie Du Chien aquifer.
- The two new MPRB and City new wells located south of Nokomis and at the northwest corner of Solomon Park are measuring surficial groundwater levels. The wells are approximately 20 feet deep and have been collecting groundwater levels every 4 hours since mid-November 2017.
- There was a question at the November 30th meeting whether there is a downward groundwater gradient, meaning that water from the surficial aquifers moves vertically down, likely need nested wells to answer that question.
- DNR can request additional groundwater experts help evaluate the need for and potential location for nested wells.
- The MPRB has some shallow wells at the Hiawatha Golf Course that may have information useful to this project. The City of Richfield's municipal wells and shallow wells at the MAC may also be able to provide relevant data, team members will reach out to others to get data.
- There are more extensive sets of surface water data available for Lake Nokomis and Minnehaha Creek.
- Surface water data (particularly lake and stream stage data) will likely be important if evaluating connections between these surface waters and the near-surface aquifers (observation well data).
- Recently the MPRB and DNR partnered to get Lake Nokomis Water Level data updated on the DNR's "Lake Finder Website"
<http://www.dnr.state.mn.us/lakefind/showlevel.html?downum=27001900>
- 10-years of data is shown in an auto-generated graph, but the whole period of record can be downloaded from lake finder. It is important to note the ten most recent years of Lake Nokomis water level data represent a change from a very dry year to several very wet years so that change looks dramatic. Lake Nokomis had very low water levels between 2003-2011. The lake had not had another period of levels this low since 1931-1938. Subsequently, the flood of record in the watershed occurred in 2014, and the lake saw extremely high levels that had only been achieved before in 1965 and 1983. Because the most recent 10-year period begins with one of the driest years on record for Lake Nokomis and also contains one of the 3

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highest readings the lake has ever achieved, it appears that lake levels have risen significantly during that time period. When the whole period of record of lake levels is shown together, it is more clear that recent years have had high levels of fluctuation.

- The MPRB in coordination with the MAC and Leisch has been tracking the water levels in Mother Lake.
- The last Nokomis lake level reading on 12/22/17 was 815.36. After the City of Richfield culvert repair near Taft Lake Nokomis rose 4", whereas Mother Lake dropped approximately 1". Mother Lake will lower by another approximately 1" once water begins flowing again after the thaw. MPRB will coordinate with the MAC and Leisch to monitor lake levels upstream of Lake Nokomis, and will coordinate with MCWD on Nokomis weir operation to ensure that this additional water can leave the system.
- The City will share available data about locations of wet basements and other problems with high groundwater.
- A key question is when did problems start or become more acute? There is at least a perception that issues have become more acute in the last several years.
- Between 2006 and 2016 the Twin Cities Metro Area received approximately 3" more of precipitation each year. The 12 month period between August 2016 – July 2017 was the wettest 12-month period on record. Precipitation data is available http://climateapps.dnr.state.mn.us/gridded_data/precip/monthly/monthly_gridded_precip.asp
- At the November 30th meeting there was acknowledgement that many of the homes in this area were built in the 1930s during the "dust bowl" period which were characterized by low ground and surface water levels.
- Aside from precipitation there are questions about what other conditions have changed. DNR is going to look into whether they have records of changes in industrial permittees changing pumped amounts.
- Joe is going to share a list of appropriation permits and a summary of any nearby well information with the group.
- Rachael will provide data from new wells.
- Paul will reach out to the City of Richfield. Katrina will reach out to the MAC.

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- Unclear if Richfield and MAC have water level data or just pumping records. Understand that Richfield has reduced municipal water supply pumping.
- Also possible that the MCWD-funded stormwater BMPs near Legion and Taft Lake in Richfield may have relevant data – Tiffany and Paul to coordinate to get info.
- Prior to next meeting the City will try to get resources to map as many of the data on one map as possible.

Definition of Draft Problem Statement

“Are shallow groundwater levels in the vicinity of Lake Nokomis (with emphasis to the south and west) increasing?”

Next Steps

Team members should email data that they have to all team members in the next couple weeks. The City will work to collate data and share back to all members. The DNR will solicit additional review of data by other expert hydrologists.

Next meeting will be scheduled when people have had time to review the data. Key questions remain:

- Are existing data sufficient to answer the problem statement?
- If existing data are not sufficient, what is the scope of the effort to fill the gap?

The City is developing a website to share presentations, meeting minutes, and data. The website is a communication tool for all team members to utilize to facilitate open channels of communication. The City is also looking into setting up an email subscription to provide regular updates to interested parties. There is heightened interest at the policy level and with residents. All team members should direct people to the website for updates.