

Metro MAWD Meeting Minutes

*“Metro MAWD” is the Metro Chapter of the
Minnesota Association of Watershed Districts*

7:00 PM, Tuesday, January 15, 2013

Capitol Region Watershed District

Attending:

Board Members

Pam Blixt, Minnehaha Creek
Bill Olson, Minnehaha Creek
Jodi Peterson, Nine Mile Creek
Mary Texer, Capitol Region
Pat Priener, RCWD
Jill Crafton, Riley Purgatory Bluff Creek
Sherry Davis-White, MCWD
Len Kremer, Lower MN
Marianne Breitbach, PLSLWD

Staff and Guests

Beth Lockwood, MPCA
Terri Yearwood, DNR/Central Region
Jim Haertel, BWSR
Cliff Aichinger, RWMWD
Ray Bohn, MAWD
Phil Belfiori, RCWD
Jason Moeckel, MN DNR
Tim Kelly, MPCA
Perry Jones, USGS
Mark Doneux, CRWD
Bill Alms, WSB & Associates
Eric Evenson, MCWD

I. Call to Order

a. Attendance, Introductions

Jill Crafton motioned and Pam Blixt seconded a motion to approve the Agenda as presented. Motion carried.

Chair Mike Thienes noted that the Special Reports will be taken up first on the Agenda.

III. Special Reports –

A. Using Groundwater in the 21st Century, Jason Moeckel, Minnesota Stormwater Steering Committee, DNR

Mr. Moeckel started by stating the DNR brings its particular skills to the table when ~~we~~ they collaborate to address water management problems. ~~He noted,~~ a few of the DNR's ~~our~~ partners are shown ~~to as evidence remind me to admit to you~~ that this presentation borrows from the work of others.

Mr. Moeckel noted that mMost ~~of you~~ people are aware of how important groundwater is to Minnesota because. ~~After all, your~~ businesses and our livelihoods depends depend on it.

Groundwater also provides all the drinking water in some parts of Minnesota and nearly all water used for all other purposes. 75% of Minnesota's drinking water comes from groundwater and groundwater is the backup for surface water in the case of drought.

Both quality and quantity must be protected to allow ecosystems to continue to thrive. All businesses in Minnesota rely to some degree on groundwater. It is part of what makes Minnesota what it is.

In aggregate, about 75% of drinking water comes from groundwater and groundwater is the backup for surface water in the case of drought.

Mr. Moekel then showed ~~a charts~~charts illustrating groundwater use and levels over time. ~~He noted that we~~ We know that population has grown by about one million (4.3 to 5.3) since 1988. ~~P~~We can see that public water supply from groundwater and population rise together, but it is also apparent that there must be other drivers to explain the variability around the rising trend. ~~It was noted that~~ We might suggest that climate plays a role. ~~In~~ 1993, a year ~~we~~ known ~~was~~ wet, ~~see how low~~ water use was ~~lower than normal.~~ ~~?~~ ~~In~~ Now ~~check~~ a dry year, 1988, ~~water use increases and you can see the differences in~~ groundwater levels ~~drop.~~ ~~And the economy is probably important.~~ ~~He also noted the~~ ~~Check out the~~ 'slump' in water use during the recent 'slump' in the economy.

~~Of course~~G, groundwater is important for more than drinking water ~~including:~~ ~~agricultural~~agricultural and landscape irrigation, industrial processing and practically everything else. Public water systems can supply users in all of the categories – it includes much more than just drinking water.

Irrigation has gone from a supplemental use to a primary use.

The availability and sources of potable groundwater vary significantly across Minnesota. In some parts of the state groundwater resources are limited and local aquifers of limited extent may be extremely important as a primary potable water supply. These aquifers may be overlain by relatively impermeable layers of glacial till and therefore be more protected from surface sources of contamination, or they may be at the ground surface and highly vulnerable to contamination.

In the Twin Cities area and extending to the southeast most potable groundwater comes from large regional aquifers that extend over significant distances.

When an aquifer is composed of limestone or dolomite, groundwater may flow rapidly through large fractures and be extremely vulnerable to contamination. This is referred to as a karst aquifer and is common in southeast Minnesota.

In central Minnesota, extensive shallow sand deposits from glacial outwash are the primary source of groundwater and may also be highly vulnerable to contamination.

In much of Minnesota, the characteristics and conditions of an aquifer may vary significantly over very short distances. Because of this variability in the characteristics of aquifers, information is generally needed on a local scale to properly manage groundwater resources.

Mr. Moeckel showed an example of a well impacted by pumping. This is a typical pumping signature; water levels drop in the summer and come back up in the winter. ~~If a domestic well or~~

~~surface water body has water levels at an elevation of 1250 or so, then sometimes the nearby pumping can impact the well or surface water body.~~

~~One other thing to note~~Mr. Moeckel also noted that ~~,~~the drop in water levels during the summer could also could take nitrates or other contaminants (oil/gas etc) further down into the aquifer and contaminate it at a deeper depth. Thus pumping could impact the quality of water in this area too.

Frequent well measurements reveal patterns. We can identify the 1988 drought and recovery, then a trend of increasing summer pumping signatures leading to minimum water level in 2009. Our state climatologist figures that we will reach the climate equivalent of 1988 soon, if we don't get good soaking rains. Groundwater is already at below 1988 levels in some places.

Mr. Moeckel presented a graph of what the water level in the Prairie du Chein/Jordon aquifer is doing out by Lake Minnetonka in Orono. It is very good to have a long period of record, though not so good to see what it reveals. The greatest drawdown ever measured in this well occurred this past September.

Mr. Moeckel then presented another map that depicted the effect of seasonal drawdown in the TC metro area for the Mount Simon-Hinckley aquifer. This is the deepest, most protected aquifer in this area. It has very old water, based on age dating, over 30,000 yrs old in some places. This graph shows a major drawdown that occurs during the summer months. The darkest color is an estimate of 30 feet, although one of the wells experienced a 75 foot drop during this period.

Managing Water supplies, not to mention expanding them, can be challenging.

A major trend that was observed over the years is the increased reliance on groundwater supplies to meet water demands in metro area.

~~-~~Until the end of the 70's, surface water from the Mississippi River was the main source of water supply in the metro area, but since the 80's the reliance on groundwater has increased to meet water needs for newly developed suburbs of the metro area.

~~At~~~~†~~The Metropolitan Council ~~,~~~~we've~~~~has~~ been using a computer groundwater flow model, known as the Metro Model 2, to help ~~us~~ evaluate and plan for the region's water supplies.

The model was part of ~~an our~~ approach to respond to legislation passed in 2005, requiring the Council to engage in planning activities to address water supply needs of the metro area.

The results of ~~the our~~ modeling are the foundation of the region's new Master Water Supply Plan, which was approved by the Metropolitan Council and the Department of Natural Resources in 2010.

While the plan's goal and principles were used to identify water supply issues and shape guidance on addressing those issues, the model was the primary tool used to predict the future distribution and magnitude of potential issues. The model covers almost 5,000 square miles.

It includes the region's 9 major aquifers and confining units – from the unconsolidated glacial deposits at land surface down to the Mt. Simon aquifer. A This cross-section east-to-west across the metro from Watertown to Afton illustrates these layers and how they vary across the region.

This model has been integral to ~~our~~ the water supply planning effort. It allows planners ~~us~~ to:

- understand the cumulative impacts of the region’s many individual water supply decisions and
- help us prioritize areas for future analysis and planning.

The model was used to predict aquifer water levels from now until 2050, assuming communities continue to use their current sources and grow at the rate projected in the 2030 Development Framework.

~~Mr. Moeckel showed a series of slides. This slide and the next few slides~~ illustrate how water levels decline in the Prairie du Chien-Jordan aquifer as water demand increases. There is a high ~~We’re~~ interested in predicting water levels, because declines may cause wells to go dry and overlying lakes and streams to lose water.

Mr. Moeckel presented slides that focus on the Prairie du Chien-Jordan aquifer, because it is the most productive and heavily-used aquifer in the metro area. ~~We’ve evaluated all the region’s other aquifers, as well. On the map, the darker the color, the more water level is predicted to decline.~~

Mr. Moeckel pointed out that increasing population and water demand are expected to cause water level declines across the metro. Some areas will be hit particularly hard as water suppliers strive to keep up with significant population growth. The question Managers face is: how much drawdown is acceptable? Specifically, how much drawdown can the groundwater system experience and still supply ecosystems, prevent degradation of water quality, and supply future generations with adequate water?

To identify areas where projected declines are most likely to be unacceptable, the state has ~~we~~ applied thresholds that the DNR has used in a few other places in Minnesota.

Mr. Moeckel presented a map that illustrates one of those thresholds. Red areas are those where water levels are expected to decline so much that less than half the available head remains. “Available head” refers to the height of the water level above the top of a confined aquifer; it is a value DNR hydrogeologists use to characterize aquifers as unconfined or confined, which has a bearing on how productive they will be. This exercise demonstrates what aquifer conditions to expect under current planning. In this case, we can see that aquifers in some areas may become less productive and unable to supply future generations with adequate water.

In addition to future supply issues, our modeling predicts that some areas may experience surface water impacts due to increased groundwater pumping. ~~The colored areas on~~ Mr. Moeckel showed an ~~this~~ map that indicates where soil and geologic conditions are most likely to create direct connections between land surface and deeper bedrock aquifers.

Some areas are where the projected 2050 water demand is expected to lower the water table more than 3 feet. Surface waters and ecosystems in those areas are more likely to be impacted by increased groundwater pumping.

~~Switching gears a bit now~~—Another common alternative to using groundwater is the use of stormwater for non-potable purposes. In developed parts of Minnesota, approximately 70% of the

rain that falls runs off into storm drains and surface waters. 30% infiltrates through our soils, supporting plants and ultimately recharging our groundwater system.

~~But remember—earlier slides~~Mr. Moeckel reminded everyone of the ~~illustrated the~~ seasonality of water demand. ~~We~~Minnesotans also know about the seasonality of ~~our~~ precipitation. For reuse of stormwater to work, demand for stormwater and availability of stormwater must match. The quality of the stormwater must also match its proposed use. The new Stormwater Reuse Guide, funded by the Met Council's appropriation from the Clean Water Fund, provides detailed guidance to match stormwater availability to non-potable water demand. If harnessed, this water is available to reduce the demand on existing potable water treatment and distribution infrastructure, manage future demands on groundwater, and reduce the volume of mass loading of pollutants to surface waters.

Stormwater reuse projects are being developed throughout Minnesota.

One example is Target Field, where stormwater is collected from the ballpark field and stadium seating, treated, and reused for irrigation and washdown. This project has reduced demand for municipal drinking water by 2 MGY.

Another example includes the City of St. Anthony Village, where stormwater and water treatment filter backwash water is used to irrigate a municipal park and City Hall campus. This project has reduced demand for groundwater by 5.6 MGY. The project also achieved a 77.5% reduction in phosphorus discharges to nearby surface waters.

There was a brief discussion following Mr. Moeckel's talk and the group thanked him for his presentation.

B. Groundwater and Surface Water Interaction in White Bear Lake, Perry Jones, USGS

Mr. Jones started out by recognizing and thanking the partners for the project. He then presented a graph depicting the decline of White Bear Lake levels since 2004. The graph that was presented showed the long term water levels in the lake compared to annual precipitation. A map was then presented that illustrated other local lakes experiencing record low water levels.

Mr. Jones then reviewed some basic geology of the area and the purpose and goals of the study. He stated the conclusion of the study was that low lake levels can be explained by higher regional pumping and lower precipitation. Groundwater flows into the lake from glacial sediments and lake water flows out and reaches wells in Prairie du Chien/Jordan and glacial aquifers

The study focused on 1978 to the present because groundwater pumping to augment lake level ended in 1978. There was a long period of 33 years to examine lake level response to environmental variables. Also, the study could divide present decline from 1978 – 2002 to see if the lake level change recently is different than the historical relationship.

Through a series of slides and graphs, Mr. Jones noted some other significant findings from the study:

- 2003 – 2011 lake level change compared to precipitation is significantly different than the past.

- Lake level change reduced by 0.5 ft
- 4 more inches of precipitation would be needed annually to maintain lake level
- Seasonally, the effect is significant in the summer
- White Bear Lake level is highly correlated to Prairie Du Chien Jordan aquifer levels.
- Prairie Du Chien Jordan aquifers are important water supply aquifers for the Twin Cities metro area.
- The well highest in the “groundwater shed” exhibits greatest variability, “top of the hill”
- 4 wells are exhibiting greater annual variability, particularly after 2003.
- Municipal pumping has more than doubled. Communities included: Centerville, Columbus, Forest Lake, Hugo, Lake Elmo, Lino Lakes, Mahtomedi, North St. Paul, Vadnais Heights, White Bear Lake, White Bear Township.
- Municipal was 65% of the total in 1980 and now is approximately 85-90% of the total
- Other includes temporary dewatering, industrial, and other non-municipal uses.
- On average 83% of the total withdrawals are from the Prairie du chien jordan. The other aquifers comprise the other 17%
- Even at old pumping rates, the lake level would have declined some because of low precipitation
- Pumping explains more of the recent decline.
- Record-high Prairie du Chein/Jordon pumping at near or slightly below-average precipitation from 2003 through 2011 explains the decline.

Summary:

- Annual lake level response to precipitation changed, particularly in summer.
- Several areas of Prairie du Chein/Jordon aquifer experiencing increasingly large summer water level declines
- Summer Prairie du Chein/Jordon pumping is increasing.
- Use pumping to explain the change in lake level to precipitation relationship.

[There was a discussion following Mr. Jones talk and the group thanked him for his presentation.](#)

II. Agency and Association Updates

A. BWSR Update, Jim Haertel

Jim Haertel gave the BWSR Update.

8410 Rules - The comment period coming up in February. The updated reporting program – E-link will be rolled out in April or May. The Clean Water Fund Grants are under some scrutiny from the legislative auditor and legislature.

B. Minnesota Pollution Control Agency (MPCA) Updates, Beth Lockwood

Beth Lockwood gave the MPCA Update.

The Stormwater Manual work continues. The MIDS program will be wrapping up in June

Permits – The Construction Stormwater Permit will be out for Public Notice in February.

MS4 Permit – the Agency is preparing response to comments and will be done by late winter.
There was a request from SCSC to have a longer notice period to permits going to MPCA Board.
| Bruce Wilson retired and is now working at EOR.
Beth reviewed 12/3/13 Stine letter regarding conflict of interest letter. Discussion occurred.

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C. Department of Natural Resources (DNR) Updates, Terri Yearwood

Terri Yearwood gave the DNR Update
The annual stakeholder forum was held on January 4th and 5th.
There was a meeting of the AIS Advisory Committee
The DNR is gearing up for field season. Water craft inspection unit is hiring inspectors
Terri noted some staffing updates. Dave Luethe retired and Steve Colvin is the New Deputy Director.

Eric Evenson asked if AIS funding decreasing? Terri said she was not sure.

D. Minnesota Association of Watershed Districts (MAWD) Updates, Ray Bohn

Ray Bohn gave the MAWD update.

Ray said the MAWD [Board](#) remained the same and had a planning session. Commissioner Stein discussed water management statute. It was discussed that the Metro WD Statute on termination 103B.221, does not give BWSR adequate flexibility. The legislation is outdated. There has been legislative discussion on groundwater.

Ray noted that Larry Samstad, of LMWD passed away.

He also noted the Roundtable discussion on one watershed, one plan. The Clean Water Council reappointments are being made. Pam, Blixt is up for reappointment.

Ray also reminded the group that the Legislative Briefing is March 13-14

C. Administrator's Update

No update was given.

IV. Action Items

A. Approval of the Minutes 10/16/12

Mike Thienes moved and Bill Smith seconded approval of the October 16th meeting minutes

V. Unfinished Business

A. Education

No updates

B. Governance

1. PLSLWD & Scott County SCALE Study Update

No update was given.

2. Hennepin County Water Governance Update

1. Not update was given.

~~Discussion occurred.~~

VI. General Information

- A. Roundtable Discussion – Current Issues, Trends and Topics, All

Cliff noted that Roger Lake passed away and Jack Frost has resigned.

Jill Crafton noted that the [re](#) is an upcoming conference on water on February 23 at Normandale CC.

VII. Next Meeting

April 16, 2013

VIII. Adjournment

Motion by Mike Thieneds, second by Bill Smith to adjourn. Motion carried.