Dane County Office Cooperative Extension

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Yahara Lake Level Advisory Group 2 (YLAG2)
Minutes

May 26, 2011
3 - 5 pm with Public Comment beginning at 5:00 pm

Location: Lyman F. Anderson Agriculture and Conservation Center
1 Fen Oak Court, Madison

Participants in attendance:

Phyllis Berg-Pigorsch for Bill Mazanet		Kevin Connors
Sue Jones	Melissa Sargent	Rob Phillips
Daniel Stepahny	Allan Coville for Don Peterson	Anita Weier
Rick Gullickson	John Van Dinter	Ed Minihan
Tom McGinnis	Ken Potter	Chin Wu
Bill Fitzpatrick	Dean Hein	Susan Tesarik
Lloyd Eagan	Sue Josheff	Mindy Habecker

Participants absent:

Scott Reirson	Jack Von Rutenberg	Chuck Rolfsmeyer
Kyle Richmond	Mike Kakuska	Melissa Mallot
Rick Kurz	Richard Lathrop	Mike Amstadt
Kurt Welke		

1. **Introductions** - All

2. **Approval of Minutes –** Changes were made to the April 28, 20011 meeting minutes and the minutes were approved.

3. **Check-in**
   More information is on the Website including the meeting schedule, agendas and minutes, handouts, PowerPoint presentations and public comments. It should be up and running very shortly. It is linked to **"www.countyofdane.com"**, click on **"Departments"** on the left side of the screen, click on "**Land and Water Resources Department**", click on "**Water**", click on "**Lake level Data and Information**". In the middle of the page, click on "**Yahara Lakes Water Level Advisory Group (YLAG2)**" or put http://www.countyofdane.com/lwrd/landconservation/ylag.aspx in your Bookmarks or Favorites.

   A copy of Ch. 31.02, WI Statutes was passed out. It gives the department the authority to set water levels

and flows.

4. **Precipitation, Runoff, and Climate Change Issues Affecting Yahara Lake Levels:**
   Ken Potter, UW Civil and Environmental Engineering, (608)262-0040, kwpotter@facstaff.wisc.edu

The PowerPoint "Factors Affecting Water Levels in the Yahara Lakes" is located on our website at:
http://danedocs.countyofdane.com/webdocs/pdf/lwrd/landconservation/KenPotterYLAG2presentation.pdf

Discussion

- The river slope is very flat, only 3-inches/mile between Monona and Kegonsa
- Steadily increasing water levels in Lake Mendota – shown of graph starting in 1920
- Since 1930, steadily increasing runoff from development sewers
- Reviewing precipitation from 1865 – 2010 – The late 1800s had high precipitation and 2000s had high precipitation – not only climate change but also cyclic pattern
- Lake Mendota levels have risen but Lake Monona have stayed level because Mendota is used for storage because of it's size, topography and to protect Lake Monona development
- Annual flows in Pheasant Branch have been increasing since 1985 due to development
- Climate change may be caused by greenhouse gas. If natural cyclic precipitation pattern occurs with climate change patterns, precipitation could be extremely high and low.
- Climate change models aren't very actuate – 16 different models with a range of results
- For Madison, prediction is drier summers and winter and springs will have increased precipitation
- We know temperatures are increasing, likely from greenhouse gases
- How does temperature affect precipitation and flood?
- Local ordinance can require the peak discharge to remain the same after development as before by building detention ponds but the same volume of water will reach the lakes, just a little slower. Dane County's volume ordinance is a good step
- Internally-drained areas have been drained by storm sewer, ditching and pumping. Tiedeman's Pond and the Hwy V area are examples.
- Stormwater infiltration requirements are beneficial even it they use valuable land.
- If we increase winter drawdown, during droughts, we may not be able to bring the lakes back up after winter drawdown.
- We need a hydrologic model coupled with a hydraulic model to evaluate long and short term dam operation
- Precipitation varies greatly across the watershed both north to south and east to west.
- We lack of good precipitation data which makes it difficult to calibrate a model to predict and evaluate the runoff
- We need better precipitation gage coverage – need another 12 gages for at least a couple years – to combine with the improved weather radar
- Climate change may cause higher and lower precipitation depending the season but it will be about another ten years of research before we have better information
- Hydrologic model and more gages called for in YLAG1

Sue Josheff showed a poster of the top ten rain events in Madison and provided a handout of record precipitation events and the distribution of precipitation events by decade from 1940 – 2010.
http://danedocs.countyofdane.com/webdocs/pdf/lwrd/landconservation/Precip_chart.pdf

5. **Groundwater and Potential Impacts to Yahara Lake Levels:**

Ken Bradbury, Hydrogeologist, Wisconsin Geological and Natural History Survey, (608)263-7921, krbradbu@wisc.edu

The PowerPoint "Groundwater and Potential Impacts to Yahara Lake Levels" is located on our website at:
http://danedocs.countyofdane.com/webdocs/pdf/lwrd/landconservation/Bradbury_presentation_May_26_2011.pdf

Discussion

- Dane County has a lot of wetlands and had a lot more that were filled or drained so we shouldn't be surprised by highwater
- In Dane Co. – lakes are a surface outcropping of groundwater
- Big lakes pin the groundwater level at the lake shore but the groundwater level changes greatly higher or lower as distance increase landward from the shoreline
- Groundwater can recharge from the lakes and groundwater can discharges to lakes
- Wells can interrupt flow to a stream by reducing flow going to the stream or actually drawing from the stream.
- Under the Madison area, groundwater draw down is about 60' in the deep aquifer.
- The lakes are in the upper aquifer
- Groundwater affects on streams can be predicted by the existing groundwater model.
- Are groundwater levels rising? Yes, groundwater levels in Dane County have recently been rising, as a result of increased recharge. We do not know whether this trend will continue.
- Rainfall increase relates to groundwater recharging
- Rain one year shows more recharge the next year
- Recharge varies a lot from year to year
- There are long-term monitoring wells in the area that recently showed record high levels
- Is groundwater part of the flooding problem? – Yes, water-table rise has occurred in many places in southern Wisconsin, leading to flooding problems. Example is the Spring Green photo in Ken Potters presentation
- What can we do about it? Lower lake levels and limit development in high groundwater area.
- The existing groundwater model is crude but a new model is in the works which will improve estimates
- Groundwater discharge to Yahara system is significant – estimated between 90 and 150 cfs
- Eau Claire aquitard separates the shallow and deep aquifer in the Madison area and it affects recharge to the deep aquifer
- Local pumping has little impact on lake levels, because the lakes are large and are part of a river system

Questions –

- If Mendota fluctuates feet over the year, what distance from the shore will be affected – ¼ mile
- When will the new groundwater model be done? June 2012
- Will the model be able to look at scenarios? It will include lake fluctuation but won't handle storm water
- Can groundwater be an input into the hydraulic model? It can be but isn't often done.
- Does topography affect groundwater? Groundwater movement is affected more by soil than topography.
- Are residential, industrial, etc. water uses in the groundwater model? Municipal and other high capacity wells are in the model.
- Isn't groundwater use going up? Conservation works – population is growing but water use is steady

- Why does pumping have little effect on lakes? Well withdrawal is very small compared to the total volume of water in the lakes, the river inputs and the dam's ability to reduce discharge - water budget
- Doesn't the West Campus Cogeneration Plant affect the Lake Mendota's level? No, the water taken from the lake is very small. It may have a minor affect on flow from Lake Mendota but it is compensated by the well that was required as part of the permit
- Is Well #13 drawing down Cherokee Marsh? Well #7 affects the marsh more.
- Do FEMA floodplain maps show groundwater flooding? No, only surface water flooding because FEMA defines flooding as water flowing over land.
- If the lakes are lowered, would groundwater into the lakes increase? Yes, for a while until the new equilibrium is reach.
- In droughts, can we rely on groundwater to keep the lake levels up? No.
- Can we infiltrate our way out of flooding? There is engineered infiltration but we can't infiltrate enough to eliminate flooding
- Can you increase infiltration substantially? Yes, but only as fast the material will carry it away.
- What granularity in the model are you expecting? – The model may not be able to simulate small changes in groundwater impact. People may be expecting too much from a model.
- Is the marsh's ability to infiltrate lower due to sediment? Yes, sediment can reduce infiltration.

6. **Review of potential future presenters and specific topics - All**
   Mindy asked for recommendations for possible presenters on the remaining topic. Participants were asked to forward their recommendations.

7. **Discuss process - Mindy Habecker, Dane County UW-Extension**
   Mindy asked participants to think about whether they would like to do a tour of the system. We also need to decide about a public education event.

8. **Next steps, future meeting dates, location and agenda items**
   Next meeting is June 23, 2011. The topic will be Yahara River hydraulics

9. **Public Comment**
   One public comment