

**DRAFT Meeting Minutes**  
**Groundwater Modeling Technical Advisory Group**  
Barr Engineering Company  
4700 West 77<sup>th</sup> Street, Suite 200  
Minneapolis, Minnesota 55435

**February 9, 2009**  
**8:30 AM – 12:00 PM**

**Attendees:**

Ray Wuolo, Barr Engineering Company  
Evan Christianson, Barr Engineering Company  
Bill Olsen, Dakota County  
Lanya Ross, Metropolitan Council  
Chris Elvrum, Metropolitan Council  
Robert Tipping, Minnesota Geological Survey  
Tim Cowdery, United States Geological Survey

Evan Christianson began the meeting by providing an overview of the model recalibration process described in the MS Word document 'Recalibration Run Definitions'.

An expansive discussion followed, with many general and specific questions asked and answered. Much of the discussion was difficult to record, but some specific comments are noted below.

Bill Olsen asked if the predictability statistic referred to in the 2005 paper 'Multimodal Ranking and Inference in Ground Water Modeling' by Eileen Poeter and David Anderson was calculated as part of the recalibration process. Ray Wuolo noted that this statistic was not calculated. Bill asked how many free parameters were used in the model. Evan responded that the number of free parameters varied from recalibration to recalibration scenario. For example, in the 'Quat\_by\_cell' model run, the hydraulic conductivity of the Quaternary varied by two parameters (horizontal and vertical).

A discussion of model parameters followed. It was noted that the Farmington area has very high hydraulic conductivity as indicated from a pumping test. Bob Tipping also pointed out that the Edina pumping test indicates very high hydraulic conductivity, and a discussion of pumping test data ensued.

Tim Cowdery asked if recharge was reduced by 50%, how did the model compensate? Evan replied that a corresponding increase in flux through boundary conditions occurred.

When looking at the calibration statistics for all the model scenarios, Evan pointed out that the 'Quat\_by\_zone' model run had the lowest overall

residuals. Bob asked if hydraulic conductivity in the Quaternary model layers was specified to vary where the Platteville and Glenwood were present. Evan replied that the model does not include these two units. Bob responded that, while this was not as important at the regional scale, it has implications for local flow. Bob also asked what factors caused the model to force hydraulic conductivity values up during the calibration process. Ray responded that hydraulic conductivity values were increased when not enough flow was entering the layer.

Tim noted that differences in recharge have huge implications for land use and whether or not the groundwater system of the seven-county metro area is able to provide, or if we're dependent on sources outside of our boundaries. He asked about Met Council's specific management goals for this model.