Water Quality Technical Advisory Committee

119 E Olin Avenue
May 11, 2010 - 1:00 p.m.

Attending: Ken Bradbury (KB), Joe DeMorett (JD), Joseph Grande (JG), Jocelyn Hemming (JH), Al Larson (AL), Sharon Long (SL)

Absent: Janet Battista (JB), Tom Heikkinen (TH)

Agenda:

- **Review of April 13, 2010 Draft Notes**
- **Sentinel Well Update (JD)**
- **Unit Well 8 Disinfection Study (JG)**
- **Unit Well 9 Wellhead Protection Plan (JG)**

1. Review of April 13, 2010 Draft Notes (JG)

- No changes requested.
- Janet suggested that we continue to closely monitor UW15. Most recent PCE result was 3.4 ppb; result from last fall was 3.9 ppb.

2. Sentinel Well Update (JD)

Summary: All six ports on the sentinel well were sampled on April 27. Samples were tested for Inorganics (PHMDC), Volatile Organics (Northern Lakes), and isotopes (WGNHS). VOC results were distributed. Conductivity values were somewhat higher but with a similar pattern (March – April). The well was purged quite a bit before sampling. It appears to be approaching *in situ* conditions. This will be confirmed once the results for nitrates and chlorides come back. Leak is estimated at 70 feet below the surface. Water level is at 62 feet below the surface.

Several VOC detections at trace levels: Benzene in port #2, chlorobenzene in 3 of the 6 ports, and toluene in 5 of the 6 ports. Detections were very low (2.1 ppb relative to MCL of 1,000 ppb). Detections could be lab contaminants. A separate trip blank will be sent in the future to evaluate this potential. TCE and PCE were NOT present. Trichlorofluoromethane was detected in the shale layer, between ports 3 and 4; it is not a regulated drinking water contaminant. Inorganics that are typically found in landfills include chromium, cadmium, iron, manganese, nickel, chloride and nitrate.

Expect to resample all 6 ports for Inorganics and VOC at the end of May or in early June. Going forward, the plan is to sample on a quarterly basis.

3. Unit Well 8 Disinfection Study (JG)

Update: At its April meeting, the Water Utility Board expressed interest in how the utility might implement the recommendations outlined in the *Disinfection Study*. The third recommendation – collecting isotope data – had the most support. Madeline previously supplied isotope data from several Madison wells, including UW8. Based on the data, surface water (i.e. the lake) was not a significant contributor to the well. Ken offered to gather existing data and discuss at the next meeting. Consensus among the group was to not pursue either Option #1 (chlorination of the borehole) or Option #2 (adding a check valve).

4. Unit Well 9 Wellhead Protection Plan (JG)

Summary: Well 9 is located at 4724 Spaanem Avenue. The well was inherited from the Town of Monona; however, MWU built the tank. The immediate vicinity of the well is primarily residential customers with storefront commercial east of the well (Stoughton Road). Well 9 is the only well in Pressure Zone 4 and annual pumpage averages 400-500 million gallons (handout). The gaps in monthly pumpage are due to maintenance: the tank was painted in 2002 and the well pump was replaced in 2005.

PCE is currently under half the MCL. Has been detected for over a decade, the level has been gradually decreasing since peaking around 4 ppb in 2002-2003. Current level is lower; 2 ppb in January 2010 and 1.7 ppb in April 2010. Peaks may have correlated to when well was turned off (KB) which might be due to having time to build up (SL). Short-term peaks were also observed at UW15 and UW18 after being out of service for maintenance/repairs (JG). Total trihalomethane in July 2005 may be an anomaly (SL) or may be tied to when the pump was replaced (JG). After the pump was replaced, 50 – 100 pounds of chlorine would have been used to sanitize the well. Detects in 2000 to 2003 – including ethylbenzene, xylene, 1,1-dichloroethane, trichloroethylene and trichlorofluoromethane – have not been present in recent years (handout). Source may be local automotive shops on Stoughton Road, the Blooming Grove Fire Department and/or Mautz paint. Inorganics (handout) over the past ten years are stable. In particular, sodium and chloride levels are relatively flat.

Wellhead Protection: Two historic spills were reported within the wellhead protection area. One involved pesticide/fertilizer (#1) and the other was of an unknown substance (#2). Do not believe either spill impacted the well. Two existing storage tanks are located with the WHPA: one is a 300-gallon underground fuel tank on Camden Road (#3); the other is a 265-gallon underground tank on Buckeye Road (#4). Spill #1 may have already moved past the well before it would have been deep enough to impact the well (KB). Wellhead protection area delineation is based on the lateral movement of particles, is often under the most conservative estimate, and is usually done at the maximum pumping rate (worst case scenario).

Group consensus was that test results look good. No recommendation for additional testing outside of compliance monitoring. Future wellhead protection might include evaluating potential contaminant sources further from the well and up gradient, along with looking at on-going leaks versus one time spills.

General discussion of wellhead protection activities: The Water Utility initiated a pilot program surveying the UW 14 wellhead protection area (1200' radius and modeled 5-year capture zone) for unused/unabandoned private wells (handout). Letters were sent to over 200 property owners prior to surveys being performed. Properties that were flagged as potentially having an unused private well, due to the age of the house being older than the age of the main, will also have an internal survey conducted. Based on computer modeling, there is a potential for 3,000 – 6,000 unused or improperly abandoned private wells. Based on a small sample of the 900 block of N. Fair Oaks Avenue, the modeling has shown to be approximately 85% accurate.

The WU initiated a private well reimbursement program this past January that is funded through the landfill remediation fee. Property owners may be reimbursed 50% of the abandonment cost up to $1000. The DNR also has a private well abandonment reimbursement program. Property owners may seek reimbursement from both programs.

Property owners located within the MWU service territory may have a private well. The well and pump installation must meet the requirements of Wisconsin Administrative Code NR 812 and are permitted through MWU. Currently, there are approximately 200 permitted private wells.

Strategies employed by other utilities that might be useful to employ at MWU:

- City of Philadelphia (surface water) looks at orders of magnitude. This can provide early warning for changes in conductivity. (SL)
- Posting signs indicating where wellhead protection area is. May help to raise awareness. Might be currently done in either Dayton, OH or Miami, FL. (KB)
- Education of the public, especially through the schools. (AL)
- Water watch. Education of a citizen group about where water comes from and then they are able to educate others. (KB)
- Installation of sentinel wells at each of the municipal wells. (KB)
- Presentation at AWWA WQTC - monitoring wells used in Redmond, WA. Early detection system of facilities with known contaminants (i.e. dry cleaners). (JG)
- Maintenance of existing wells. (AL)

Next wellhead protection plan reviewed will be Unit Well 18.

Next meeting: Tuesday, June 8 at 1PM.

Preliminary agenda items:

Discussion of existing isotope data for Madison municipal wells (KB)
Review of UW 14 or UW 18 wellhead protection plan
Review of new meeting schedule and format