Threat Assessment of Select Mahomet Aquifer Landfills in High Groundwater Recharge Areas

Rick Cobb, Hayden King, and Joe Konczyk: Bureau of Water, Division of Public Water Supplies

Illinois EPA
807 groundwater monitoring

- Details permitting requirements for operators of solid waste landfills that initiated closure before September 18, 1992.

- Closure performance standard:

  Controls, minimizes or eliminates post-closure release of waste, waste constituents, leachate, contaminated rainfall, or waste decomposition products to the groundwater or surface waters or to the atmosphere to the extent necessary to prevent threats to human health or the environment.

- Post-closure care requires groundwater (GW) monitoring (cost estimates for quarterly parameter sampling spanning the minimum 15-year post closure period).
Paxton #2 (Ford County)

- Active period: 1974-1992
- Last Inspection 12/20/2016
- Completion of post-closure care requirements pending:
  1. Application for a supplemental permit describing how intrawell background GW quality values are established.
  2. Replacement of G05-S, which has been dry since 2006.
  3. GW data from samples collected during 4 consecutive quarters needed to show the landfill is not causing GW contamination.
  4. Submission of new completion certification affidavit.
Potential Threats from Paxton #2

◊ No current GW contamination is apparent, but proactive measures are warranted for several reasons:

1. Post-closure care certification still needs to be submitted.

2. Uncertainty of GW data, some of the wells are not producing adequate water for sampling.

3. Paxton Community Water Supply (CWS) well is located approximately 0.5 miles from the landfill.

4. A lack of documentation regarding gas migration from the landfill.

◊ Marathon Pipeline runs through the area transporting gasolines & distillates, preventative measures to protect the Mahomet Aquifer from potential pipeline failures are appropriate.
Tazewell RDF (Tazewell County)

- Last Inspection: 04/18/2018.
- 2017 Annual Report shows high levels of acetone and tetrachloroethene.
- Acetone levels were the result of laboratory contamination by a third party.
Potential Threats from Tazewell RDF: Tetrachloroethene (C$_2$Cl$_4$)

- Colorless liquid, commonly used for dry cleaning and metal degreasing.
- Qualifies as a Volatile Organic Compound, can become vinyl chloride when broken down.
- Likely carcinogenic to humans.
- Hazardous waste, should not be at this landfill.

Tazewell RDF GW monitoring well R62S is in corrective action for C$_2$Cl$_4$.

- 4$^{th}$ Quarter of 2017 sample shows an observed increase of 3.8 $\mu$g/L
- Class 1 GW standard: 5 $\mu$g/L

- No drinking water Maximum Contaminant Level violations in Community Water Systems to report.
Illini Technical Systems (Tazewell County)

- Primary waste was construction materials/debris.
- Completion of post-closure care requirements: 06/30/2004
- Last inspection: 08/10/2004
- No potential threats to GW quality are apparent.
Rowe Construction Company Landfill (McLean County)

- 5-Year post-closure care period began 05/04/1989.
- Completion of post-closure care requirements: 05/04/1994.
- No potential threats to GW quality are apparent.
Pekin Metro Landfill (Tazewell County)

- Last Inspection: 07/19/2017

- Improved passive gas ventilation systems were installed in conjunction with cap expansion in Fall 2014.

- Has yet to achieve certified closed status.

  - Last 5-year permit expired in 2001, since then there has been no operation or GW monitoring.

  - GW monitoring wells likely buried during 2014 cap expansion.

  - This will need to be remedied in order to initiate a post-closure care period.
Summary

- GW monitoring can be improved at Paxton #2 and Pekin Metro.
- No immediate GW quality concerns are apparent, but proactive measures may be warranted.
- Survey of GW quality from private wells in these communities could supplement these findings.
Acknowledgements

- Ted Dragovich: BOL Permits Section
- Paul Eisenbrandt: Regional Inspection Staff
- Alan Fuhrmann: BOW Public Water Supplies Section
- Andrea Rhodes: BOW Compliance Assurance Section
- Kenn Smith: BOL Permit Section
- Jason Thorp: Regional Inspection Staff
- Jeff Turner: Regional Inspection Staff
Questions?