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O1	Claudia Lenhoff	2018.10.09		tec	Add a worksheet on Inventory of Industrial Processes, By Products, and Hazardous Materials	Aquifer Protection Worksheet: Inventory of Industrial Processes, By Products, and Hazardous Materials Classification: Threat Problem: Past practices of disposal and cleanup of accidental releases of industrial by-products and hazardous materials are not always recorded but often were made on site. Many of the disposal methods formerly practiced are now prohibited. The historical wastes may be a source of surface or ground water contamination particularly if above shallow aquifers or a recharge area. Recommendations: Compile a comprehensive list of industries and companies, types of generated process wastes, and by products including from historical processes is wanted. The list should include: · Names and locations of historical industries and enterprises and types of generated wastes and by products. · List of industries and companies which currently generate wastes including from historical processes. · Types of processes, wastes, by products, and disposal practices if known. Specific activities should include:	

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						· Collect and archive institutional information including manifests, processes, and engineering records and reports This data is available from IEPA, municipalities, counties, solid waste management associations, companies and corporations, and individuals. Records should be available for sole use as confidential information by regulatory agencies but not subject to FOIA to avoid release of industrial secrets. · Assemble location information about industries and companies which generate(d) wastes including from historical processes. Information is available from corporations, companies, ISM, ISGS, ISWS, IEMA, FEMA, and universities. · The list should be updated periodically. Abbreviations a. FEMA – Federal Emergency Management Agency b. HTEM – Helicopter-borne, Time domain, Electromagnetic geophysical survey. c. IDNR- Illinois Department of Natural Resources d. IDOT - Illinois Department of Transportation	

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						e. IEMA –Illinois Emergency Management Agency f. IEPA – Illinois Environmental Protection Agency g. IHPA– Illinois Historic Preservation Agency h. ISM – Illinois State Museum i. ISGS – Illinois State Geological Survey, Prairie Research Institute, University of Illinois at Urbana-Champaign j. ISWS – Illinois State Water Survey, Prairie Research Institute, University of Illinois at Urbana-Champaign k. MAPTF – Mahomet Aquifer Protection Task Force l. NRCS – Natural Resources Conservation Service, U.S. Department of Agriculture m. PRI – Prairie Research Institute, University of Illinois at Urbana-Champaign n. UIUC – University of Illinois at Urbana-Champaign	
O2	Claudia Lennhoff	2018.10.09	Line 359 App. G, Table 1, Item 5	tec	Add to recommendations	WATER QUALITY AND PROTECTION: · The following new facilities, sites, units or potential routes must not be located within a delineated recharge area: 1) low level radioactive waste sites; 2) Class V injection wells; 3) municipal solid waste sites; 4) special or hazardous waste landfills.	
O3		2018.10.15		gen	There is not full consensus on all recommendations; how should that be	Create appendix for minority opinions	

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					represented in the final document?		
O4	Chapin Rose / Rick Cobb	2018.10.25		gen	CR: I believe that we should have 20 minutes for additional presentation from the Dewitt anti-windmill group to state their case if they wish. They came to the public comment session some months ago, but weren't really able to make a case in time allotted. It would seem to me that they should be heard, if they wish. Landon/Alyssa has contact info and can call and find out if they would be interested in providing more information. you will recall they presented quite a bit of material that was turned over to Rick Cobb, but did the rest of the MATF members get a copy? RESPONSE by RC: We did review the 3 inch binder provided by the folks who were concerned about the effects of windmills on groundwater. At the meeting in Monticello. I presented that there was some evidence in the fractured shale setting in Canada (where the documentation that we reviewed focused) had some impact in that specific hydrogeologic setting. The well owners impacted were using the shale and the vibrations appeared to release fissile and brittle shale into their drinking water wells	Hold additional presentation from DeWitt anti-windmill group	

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O5	Chapin Rose / Rick Cobb	2018.10.25		gen	CR: I also, think we need more information on the permitting process for landfills with respect to the local siting requirements and public notice. ultimately this went to court and a settlement agreement went into effect, however, I don't know that this changed the underlying law. People have a right to know in advance what is being received in a landfill and the permit modification process that changes that is something that we should take some time to inform the committee about. I'm not sure the other members would want to make a recommendation; but I know some, including myself, feel pretty strongly it needs amended. We should at least walk through the process for them so they understand it. I have constituents who have reached out to me on this as something that is missing from our conversations and I agree. RESPONSE from RC: I requested input on this issue from Todd Rettig, Chief, Bureau of Land.	Review landfill permitting process	
O6	Chapin Rose	2018.10.25	Line 283	tec	CR: I think that while we have talked a lot about preventing issues, we haven't talked at all about the lack of enforcement that occurred and is occurring at the PG site in north champaign county.		

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					My constituents are still in the dark on what is/is not being done to fix PG's disaster. We need to put the AG/IEPA/IDNR on the spot and tell people what the plan is. It has been almost 2 years and still no plan, which is unacceptable. RESPONSE by RC: In response, I have added this detail in the Natural Gas Worksheet discussing the AGO's lawsuit filed on behalf of the State against the defendant PGL. In addition I have added a detailed timeline of events in Appendix E.		
O7	Chapin Rose	2018.10.25	Line 786 Line 787-838	gen	CR: I would also appreciate some kind of handout that explains the post "spill/leak/event" rules for clean-up and the process RESPONSE by RC: I added this detail to the report on cleanups and the next section that details the emergency response process.		
O8	Teresa Barnet	2018.10.30		gen	I am absolutely against adding any "new" items to our report. We have been working hard since February and meeting in Sub Committees and as Full Task Force monthly. There has been plenty of time to bring items & concerns forward for discussion. At this late date, there is no time to research, educate and make decisions with the same	Do not add to the final report any new items not previously discussed by MAPTF	

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					attention and detail we have carefully given all current items in the report. I understand we need to tweak a few agreed upon items already addressed by the Tally and People's Gas. I also believe we should stay within the parameters set forth as the purpose & tasks of the MAPTF. That does not include funding. As I stated at our last meeting, I do not agree with comments brought forth against specific landfills or other facilities across the Aquifer, especially those that are currently regulated and monitored by IEPA. There is a huge difference between a KNOWN Threat and Potential Threats.		
O9	Carol Ammons & Claudia Lennhoff	2018.10.30	117-154	tec	Recommend the Chris Stohr Legacy Landfill Worksheet and recommendations	SEE O9 BELOW	
O10	AR	2018.10.30	Line 13-32	ed	Add to introduction context of why the Mahomet Aquifer is significant RC RESPONSE: Addressed in subsequent draft		
O11	AR	2018.10.30	Unnumbered table between lines 50 and 51	ed		List members of task force	

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O12	AR	2018.10.30	Line 499-533	ed	Unclear if 2 callout boxes on Illinois Environmental Protection Policy are separate or continuous RC RESPONSE: moved from Section III to Appendix B and text reworked		
O13	AR	2018.10.30	Figure 1 after line 582	ed	Acronyms in chart unclear REC RESPONSE: text added to clarify meaning of acronyms		
O14	AR	2018.10.30	Line 33-60	ed	Include objectives of the Task Forces RC RESPONSE: See revised introduction		
O15	AR	2018.10.30		Tec / Ed	I think we need to be clear about definitions that are used by the Illinois EPA vs. definitions that are used in this report and/or by the task force. RC RESPONSE: We gave it our best shot between pages 7 – 20 developed by the Task Force vs. the historical context of what has been developed as discussed in Appendix B. Andrew and others on the task force will develop definitions as discussed 11/19/2018.		
N1	Jim Risley & Chapin Rose	2018.11.07	Line 435		Below are some recommendations and solutions that Chapin and I are suggesting be included in the Manlove 4 template of the draft. I have communicated the sending of these recommendations to Larry Stoner and Charles Hostetler. 1. Establish a trust fund to cover the cost of remediation in an event of a significant		

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					environmental incident so immediate remediation can begin. i.e. Manlove 4 methane gas leak. 2. Gas companies must consult with third party environmental experts in the event of a significant environmental incident to certify their corrective plans and conduct oversight of the clean-up. 3. Random sampling in areas of known or high risk of contamination from the Manlove 4 gas leak should have bi-annual surveys of residential wells for water quality . The specific focus of the surveys should be for levels of thermogenic methane. 4. Funds should be obtained for research on decontaminating surface and groundwater that have been compromised by thermogenic methane gas leaks.		
N2	PRI	2018.11.16	Line 380-397	Tec	There is a gap in the originally compiled recommendations related to coordinated aquifer-wide monitoring. PRI can provide a short paragraph identifying the need and relative costs as it relates to water quality monitoring. PRI asks that appendix H be removed from the document as it only covers one part of a coordinated aquifer-wide monitoring program (review of historical data) and will provide updated text that can more effectively identify this need in the context of the prioritized recommendations	replace lines 392 to 394: "The Task Force recommends the General Assembly provide $19.8M to the Prairie Research Institute (PRI) to utilize HTEM technology to characterize the aquifer to aid in identifying the connections with other aquifers and surface waters. Work can be done in phases to focus on areas with the highest level of interest first. For example, Area 2 ($4M) incorporates both the threat from the natural gas storage field and the critical recharge areas for the Champaign-Urbana water supply. Area 5 ($3.3M) covers the transitional areas where there is the threat of nitrate contamination because	

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						the natural protective clays layers over the aquifer are thin or absent." place after line 426 on page 21 and place appendix at the end of the report: "Support for PRI to Address Specific Threats and Recommendations Identified by the Task Force The Task Force recommends the General Assembly expand the critical data collection and research efforts of the Prairie Research Institute by providing $2.3M per year in additional general revenue funds. An additional onetime request of $1.0M will provide funding for the necessary equipment to deploy state of the art monitoring networks and to create the analytical capability to identify emerging contaminants of concern. These new efforts will address recommendations outlined in the categories of Aquifer Characterization, Water Quality and Protection, Water Quantity and Sustainability, and Communication, and many of the identified threats including arsenic, nitrate, road salt, abandoned wells, personal care products, and source water protection. Highlights of	

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						this new focus on the Mahomet Aquifer include the creation of more comprehensive monitoring networks for groundwater levels, surface water flows, and atmospheric variables; modernization of well databases; improvement of on-line access to information for the public; development of next-generation groundwater flow models; water quality studies with specific emphasis on the fate and transport of nitrate between the aquifers and streams; and technical assistance outreach to communities and stakeholders.	
N3	PRI	2018.11.16		Tec	The task force has previously discussed selecting top priorities (e.g., top 3, top 5, top 10). PRI recommends removing that designation as it is unnecessary. The work of the task force has been very important to identify and rank the priorities. How many of those priorities can be acted on depends on the resources that are available from the legislature.	Remove sentence referring to top 10 prioritized recommendations	
N4	From DFF notes	2018.11.19		ed	Be sure the executive summary identifies that the report was for "gap" areas and that we didn't delve into areas that are already regulated to determine anything regarding if the regulation is appropriate and/or responsive. PRI Response – PRI has offered to facilitate final report preparation and can include a statement provided by the TF in an		

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					executive summary. If desired, PRI can assemble the Executive Summary from the final approved language used in the body of the final report.		
N5		2018.11.19		gen	In Appendix H do we need more detailed costs on monitoring? PRI response: PRI asked to withdraw Appendix H and to submit updated information. The discussion identified the need to 1) provide costs for priority HTEM areas for potentially phasing in that work, and 2) to better clarify the two priority efforts of a) aquifer characterization by HTEM and b) aquiferwide monitoring	See proposed changes related to N2 above	
N6	From DFF notes	2018.11.19	Line 156	tec	Is Nitrate to be a Threat or Potential Threat? TF Hostetler: Subcommittee A categorized and supported nitrate as a threat, not potential threat.		
N7	From DFF notes	2018.11.19	Line 209	tec	Is Road Salt to be a Threat or Potential Threat?		
N8	From DFF notes	2018.11.19		tec	Add Definitions of Routes, Threats, Potential Threats, Potential Routes		
N9	From DFF notes	2018.11.19		tec	What is the cost for allocating resources to review abandoned wells or other routes?		

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N10	From DFF notes	2018.11.19		tec	HTEM- should this be used for specific applications for permit for example in landfills or when there are hazardous substances being permitted TF responses – Barnett: The TF should not be prescriptive or make requirements that are under local authority IEPA Bureau of Land Chief, Todd Rettig – Landfill siting is permitted on a local basis		
N11	From DFF notes	2018.11.19			Discussion about the legacy landfill comment (Carol Ammons comment)		
N12	From DFF notes	2018.11.19		tec	Should we add items to threats, should we create a more or most severe category for People's Gas? TF responses – adding additional categories is problematic and does not follow with the existing assessments and endorsements at the subcommittee level.		
N11	From DFF notes	2018.11.19		tec	Should we weigh in on the recent "Brickyard" decision regarding when local siting is needed for change of scope for a landfill?		

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N12	PRI	2018.11.23		gen	Is all content in Appendix E cleared for public release? Does this need to be vetted to AGO?		
N13	PRI	2018.11.23		ed	Insert guide to acronyms/abbreviations		
N14	PRI	2018.11.23		ed	Insert table of contents when text is finalized		
N15	PRI	2018.11.23		ed	Include recommended report citation		
N16	PRI	2018.11.23		ed	Rather than including the entire PRI recommendations document, can we simply provide a citation and a link? It makes the document unwieldy to repeat all of this content.	Omit Appendix F: Published Stakeholder Recommendations Compiled by PRI	
N17	George Roadcap	2018.11.30	Appendix G, Table 1	gen	The Ranking by Subcommittee B of the existing recommendations compiled by the Prairie Research Institute is an important work product of Subcommittee B and should not be relegated to the back.	Move this table after line 377	
N18	George Roadcap	2018.11.30	Appendix G, Table 1	ed	10 is an arbitrary number and there's no need to separate the first 10 recommendations from the next 8	Remove line separating top 10 ranked items from items 11-18	

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Aquifer Protection Worksheet

Item: Legacy Landfills

Subcommittee A Classification: Potential Threat

Problem:

In 1970 the Illinois General Assembly passed the Illinois Environmental Protection Act which created the Illinois Environmental Protection Agency and the Illinois Pollution Control Board. In turn, the Board created solid waste landfill regulations in the Illinois Administrative Code (known as the 35 IAC 807 regulations). Prior to this time, landfills were either not regulated, or regulated by local or State Public Health Departments. Some of these pre-807 sites, and a limited number of 807 solid-waste landfills, did not have source controls (i.e., may have disposed of what is now hazardous waste before the promulgation of RCRA in 1976), did not have groundwater monitoring programs, and did not have effective engineering controls (e.g., liners, leachate removal systems, and landfill gas collection and control systems). These are also known as "legacy landfills" and were commonly called "dumps."

Using waste disposal practices that were common only 25 years ago most of the -"legacy landfills" - i.e., unlined, thinly covered, dumps and landfills, were operated and closed before adoption of current state and federal regulations. These "cemeteries of waste" pose a contamination threat to the Mahomet Aquifer (Figure 1).

Legacy landfill structures (all dots, Figure 1) were often poorly situated along streams and wetlands, in gravel pits and quarries, low-lying areas, etc., excavated into weathered (porous) soil materials, and thinly covered with as little as 6 to 18 inches of compacted earth at closure. Figure 1 shows the locations of 218 known legacy landfill sites overlying the Mahomet Aquifer (Mehnert and Keefer, 1988), all of which pose a potential threat to shallow aquifers, surface water, and the Mahomet Aquifer. There are likely landfills at locations which are unrecorded.

By one estimate, as much as 50% of annual precipitation infiltrates the thin, uneven, ill-constructed, weathered earthen covers, mixes with wastes, and transmits contaminated leachates into accessible groundwater systems (Hughes et al., 1971). Of the legacy landfills, nearly one-half (94, green dots, Figure 1) lie within 20 feet above mapped shallow aquifers which can distribute leachates laterally as well as vertically by connecting with sand channels, fractures and well bores, allowing contaminants to flow into deeper aquifers. Moreover, it can be anticipated that changes over time to a warmer, wetter climate here will increase erosion of covers and increase infiltration into landfill wastes and so increase leachate volumes.
The MATF should advocate for an evaluation of the legacy landfills overlying the sole source aquifer including conducting targeted studies of hydrogeology and water quality threats of all landfills using published literature, and geographic information systems (GIS) and remote sensing technology (Stohr and Filippini, 2018).

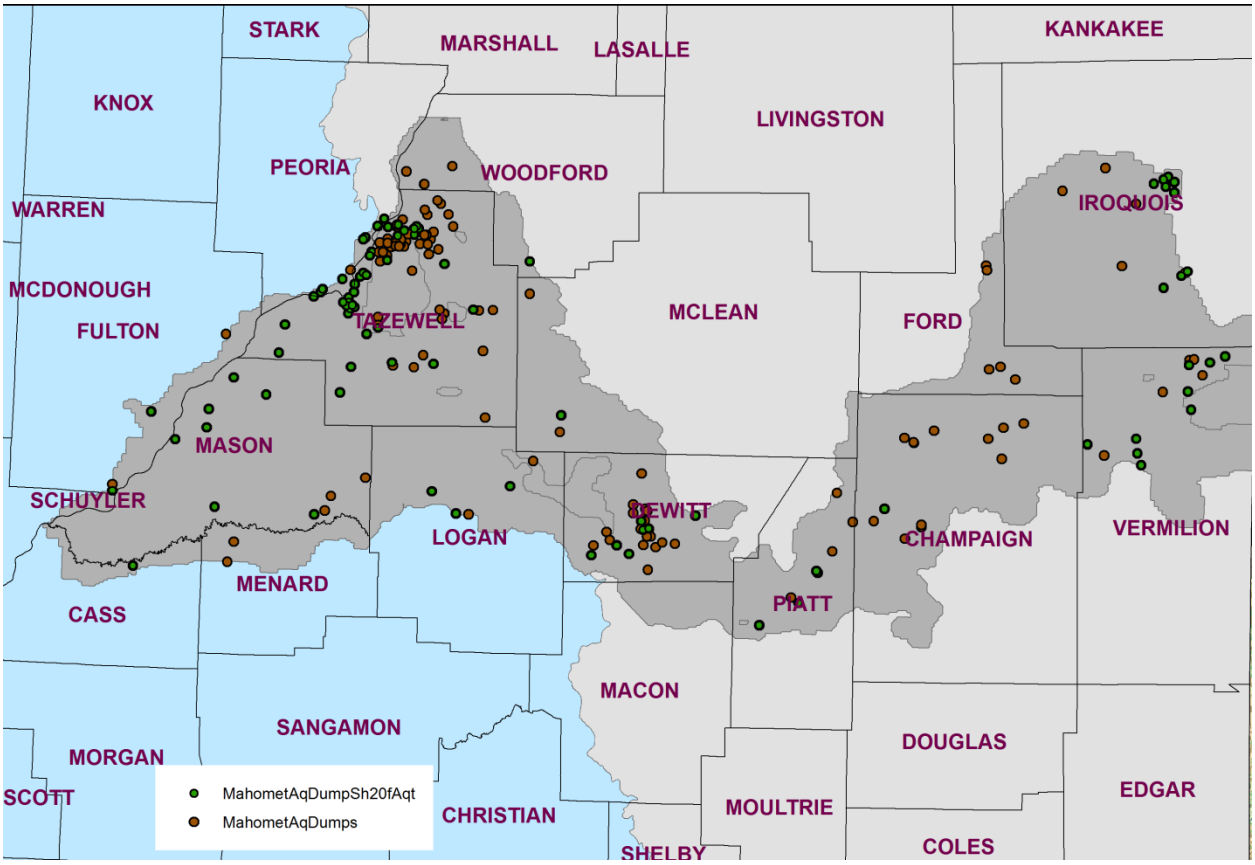

Figure 1. Locations of known legacy landfills over the Mahomet Aquifer (all dots). Green dots show locations over shallow aquifers mapped within 20 feet of the land surface. Red dots indicate there are no intervening shallow aquifers.

Legislative Recommendations:

1. Direct the ISGS/ISWS/IEPA to identify legacy landfills for priority inspection using existing, available information available from ISGS, ISWS, PRI, IDNR, IEMA, FEMA, NRCS, and other agencies. Focus further study on those which pose a hazard to surface and ground water resources. Landfills with the following characteristics are of concern:
    a. Landfills over unsuitable geology (ISGS)
    b. Landfills over shallow aquifers (ISGS)
    c. Abandoned landfills (ISGS, IEPA)
    d. Landfills within or proximity to 500-year floodplain (ISWS, FEMA, IEMA)
    e. Landfills near dwellings and private wells (NRCS, ISGS, ISWS)
    f. Illinois Environmental Protection Agency staff prepared a list of “807” or legacy solid-waste landfills that overlie the Mahomet Aquifer from their Solid-Waste Database.
        i. Queries were sent out to the field offices to further research these sites and to determine those that did not have source controls, groundwater monitoring, or engineering controls.
        ii. Five such sites were located that overlie recharge areas of the aquifer.

2. Collect and archive institutional information about old landfills for present (as in #1) and long term use including manifests and engineering records. This data is available from IEPA, municipalities, counties, solid waste management associations, companies and corporations, and individuals [mainly inheritors of property owned by family members]. Records should be available for sole use as confidential information by regulatory agencies but not subject to FOIA.

3. Assemble location information about industries and companies which generate(d) wastes including from historical processes. Information is available from corporations, companies, ISM, ISGS, ISWS, IEMA, FEMA, and universities. Records should be available for use as confidential information by regulatory agencies but not subject to FOIA.

Propose legislation to direct the Illinois Pollution Control Board and Illinois Environmental Protection Agency to

4. Update current methods and increase training of inspectors to incorporate remote sensing (aerial photography and lidar), geographic information systems (GIS), and database management to guide field inspections of all legacy landfills. This would include:
    a. Preparation of georeferenced image maps showing defects such as depressions, erosion, landslides, barren areas, leachate seeps, trees, and vegetation anomalies using lidar and aerial photography and image processing/enhancement for use in field inspections. Georeferenced image maps should be prepared by inspectors (ideally) trained in image processing of remote sensing imagery and GIS, trained technicians, or expert remote sensing specialists.
    b. Training of inspectors to use GIS and remote sensing technology to track defects, structures, appliances, and wells for routine inspection and sustainable management for closed landfills.
    c. Regular update knowledge and skills of landfill inspectors should be required to maintain legacy landfills and reduce risk of contamination of surface and ground water.

Propose legislation that will:

5. Promote community support for subsequent use and maintenance of legacy landfills where this can be safely done. This can be accomplished by
    a. Financial incentives for privately or corporate owned legacy landfills to enter into partnerships with Forest Preserve Districts, Park Districts, and conservation clubs to provide funding for a higher level of maintenance and promote subsequent use of former landfills.
    b. Financial incentives for publicly owned legacy landfills to enter into partnerships with Forest Preserve Districts, Park Districts, and conservation clubs as a means to provide funding for a higher level of maintenance and promote subsequent use of former landfills.

REFERENCES

Stohr, C and H. Filippini. 2018. Enhanced Field Inspections of Closed Landfills Using Aerial Orthophotography in Illinois, USA. Journal of Hazardous, Toxic, and Radioactive Waste. American Society of Civil Engineers. Volume 22, No. 1. Published online September 14, 2017.

Abbreviations

a. FEMA – Federal Emergency Management Agency
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k. MAPTF – Mahomet Aquifer Protection Task Force
l. NRCS – Natural Resources Conservation Service, U.S. Department of Agriculture
m. PRI – Prairie Research Institute, University of Illinois at Urbana-Champaign
n. UIUC – University of Illinois at Urbana-Champaign

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The MATF should advocate for an evaluation of the legacy landfills overlying the sole source aquifer including conducting targeted studies of hydrogeology and water quality threats of all landfills using published literature, and geographic information systems (GIS) and remote sensing technology (Stohr and Filippini, 2018).

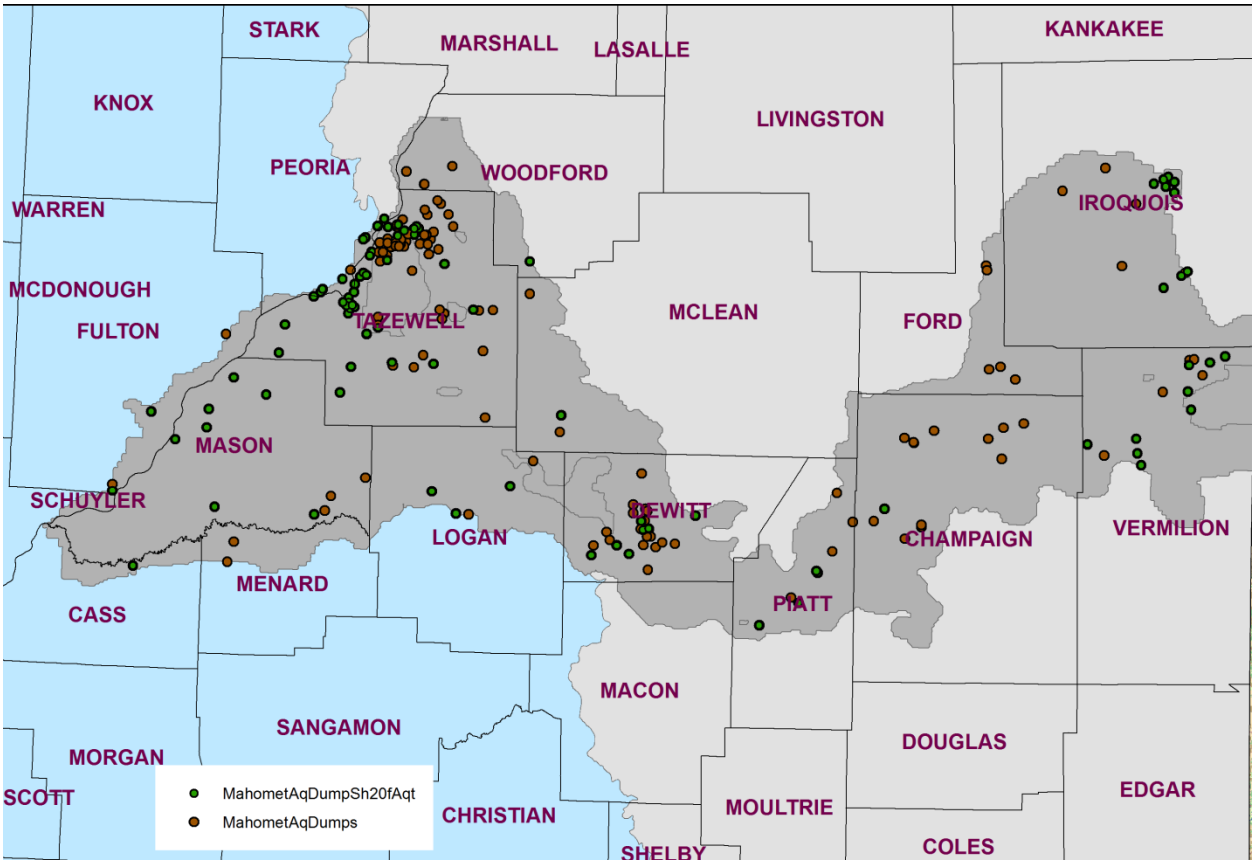

Figure 1. Locations of known legacy landfills over the Mahomet Aquifer (all dots). Green dots show locations over shallow aquifers mapped within 20 feet of the land surface. Red dots indicate there are no intervening shallow aquifers.

Legislative Recommendations:

6. Direct the ISGS/ISWS/IEPA to identify legacy landfills for priority inspection using existing, available information available from ISGS, ISWS, PRI, IDNR, IEMA, FEMA, NRCS, and other agencies. Focus further study on those which pose a hazard to surface and ground water resources. Landfills with the following characteristics are of concern:
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7. Collect and archive institutional information about old landfills for present (as in #1) and long term use including manifests and engineering records. This data is available from IEPA, municipalities, counties, solid waste management associations, companies and corporations, and individuals [mainly inheritors of property owned by family members]. Records should be available for sole use as confidential information by regulatory agencies but not subject to FOIA.

8. Assemble location information about industries and companies which generate(d) wastes including from historical processes. Information is available from corporations, companies, ISM, ISGS, ISWS, IEMA, FEMA, and universities. Records should be available for use as confidential information by regulatory agencies but not subject to FOIA.

Propose legislation to direct the Illinois Pollution Control Board and Illinois Environmental Protection Agency to

9. Update current methods and increase training of inspectors to incorporate remote sensing (aerial photography and lidar), geographic information systems (GIS), and database management to guide field inspections of all legacy landfills. This would include:
    a. Preparation of georeferenced image maps showing defects such as depressions, erosion, landslides, barren areas, leachate seeps, trees, and vegetation anomalies using lidar and aerial photography and image processing/enhancement for use in field inspections. Georeferenced image maps should be prepared by inspectors (ideally) trained in image processing of remote sensing imagery and GIS, trained technicians, or expert remote sensing specialists.
    b. Training of inspectors to use GIS and remote sensing technology to track defects, structures, appliances, and wells for routine inspection and sustainable management for closed landfills.
    c. Regular update knowledge and skills of landfill inspectors should be required to maintain legacy landfills and reduce risk of contamination of surface and ground water.

Propose legislation that will:

10. Promote community support for subsequent use and maintenance of legacy landfills where this can be safely done. This can be accomplished by
    c. Financial incentives for privately or corporate owned legacy landfills to enter into partnerships with Forest Preserve Districts, Park Districts, and conservation clubs to provide funding for a higher level of maintenance and promote subsequent use of former landfills.
    d. Financial incentives for publicly owned legacy landfills to enter into partnerships with Forest Preserve Districts, Park Districts, and conservation clubs as a means to provide funding for a higher level of maintenance and promote subsequent use of former landfills.

REFERENCES

Stohr, C and H. Filippini. 2018. Enhanced Field Inspections of Closed Landfills Using Aerial Orthophotography in Illinois, USA. Journal of Hazardous, Toxic, and Radioactive Waste. American Society of Civil Engineers. Volume 22, No. 1. Published online September 14, 2017.

Abbreviations

o. FEMA – Federal Emergency Management Agency
p. HTEM – Helicopter-borne, Time domain, Electromagnetic geophysical survey.
q. IDNR- Illinois Department of Natural Resources
r. IDOT - Illinois Department of Transportation
s. IEMA –Illinois Emergency Management Agency
t. IEPA – Illinois Environmental Protection Agency
u. IHPA– Illinois Historic Preservation Agency
v. ISM – Illinois State Museum
w. ISGS – Illinois State Geological Survey, Prairie Research Institute, University of Illinois at Urbana-Champaign

x. ISWS – Illinois State Water Survey, Prairie Research Institute, University of Illinois at Urbana-Champaign
y. MAPTF – Mahomet Aquifer Protection Task Force
z. NRCS – Natural Resources Conservation Service, U.S. Department of Agriculture
aa. PRI – Prairie Research Institute, University of Illinois at Urbana-Champaign

UIUC – University of Illinois at Urbana-Champaig