

PROTECT THE MAHOMET AQUIFER

OUR HOME
OUR WATER
OUR AQUIFER

LEARN MORE 
PROTECTTHEMAHOMET.COM

Champaign County Zoning Board of Appeals Briefing

Andrew Rehn, Prairie Rivers Network
Pam Richart, Eco-Justice Collaborative

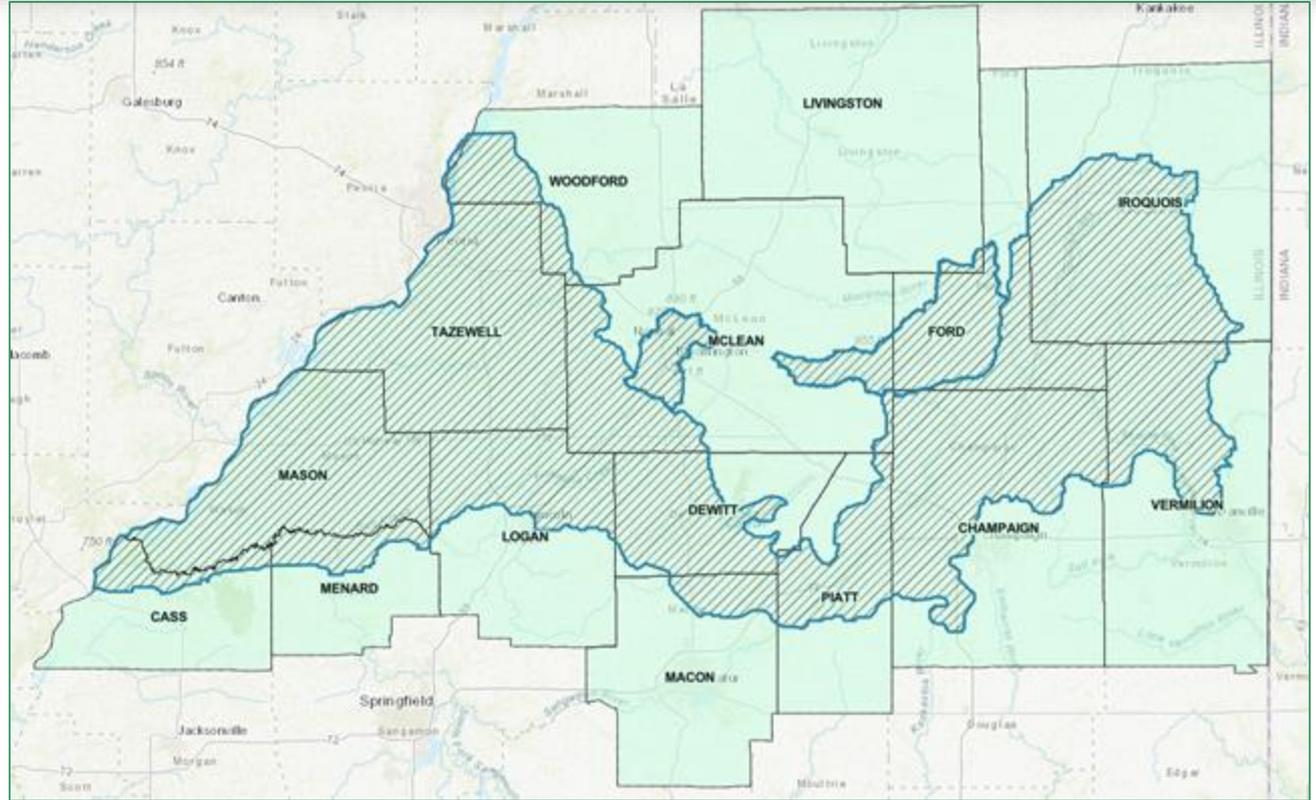
December 12, 2024

The Mahomet Aquifer

US EPA Sole Source Designated

“Project Review Area” depicted, includes recharge zones

Drinking water for nearly 1 million people



The Mahomet Aquifer

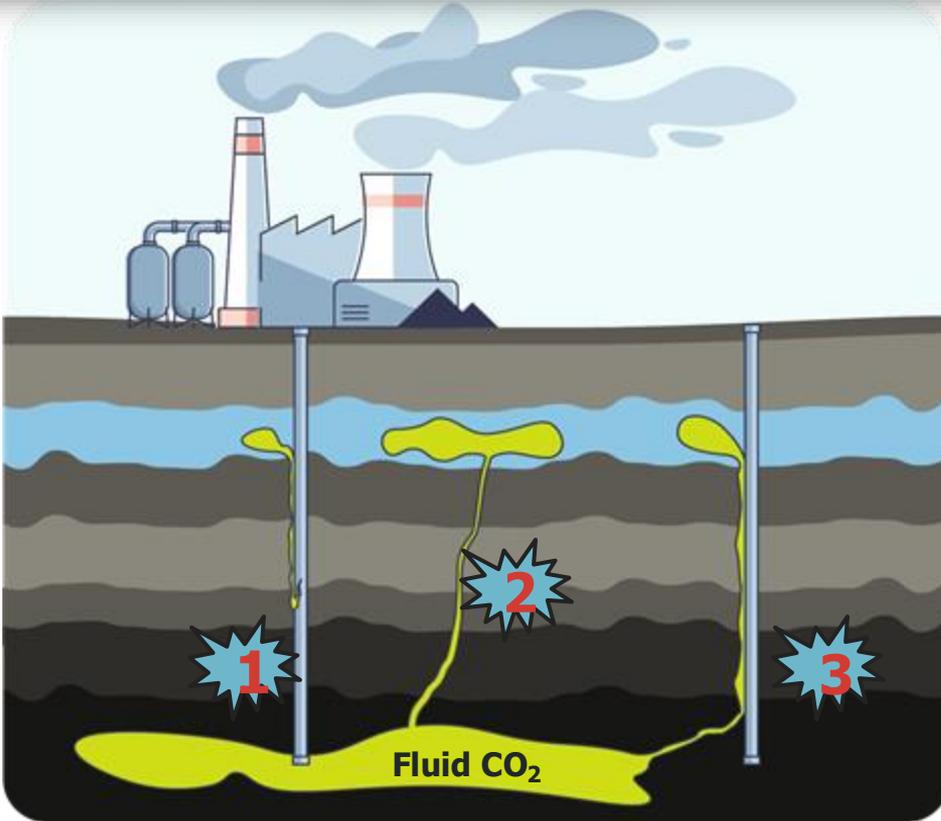
I  my Aquifer!
No toxic chemical waste in the Clinton Landfill



Protect
the
Mahomet
Aquifer!



Carbon Sequestration



Leak Pathways

- 1. Injection Well**
- 2. Caprock Failure**
- 3. Abandoned Wells**

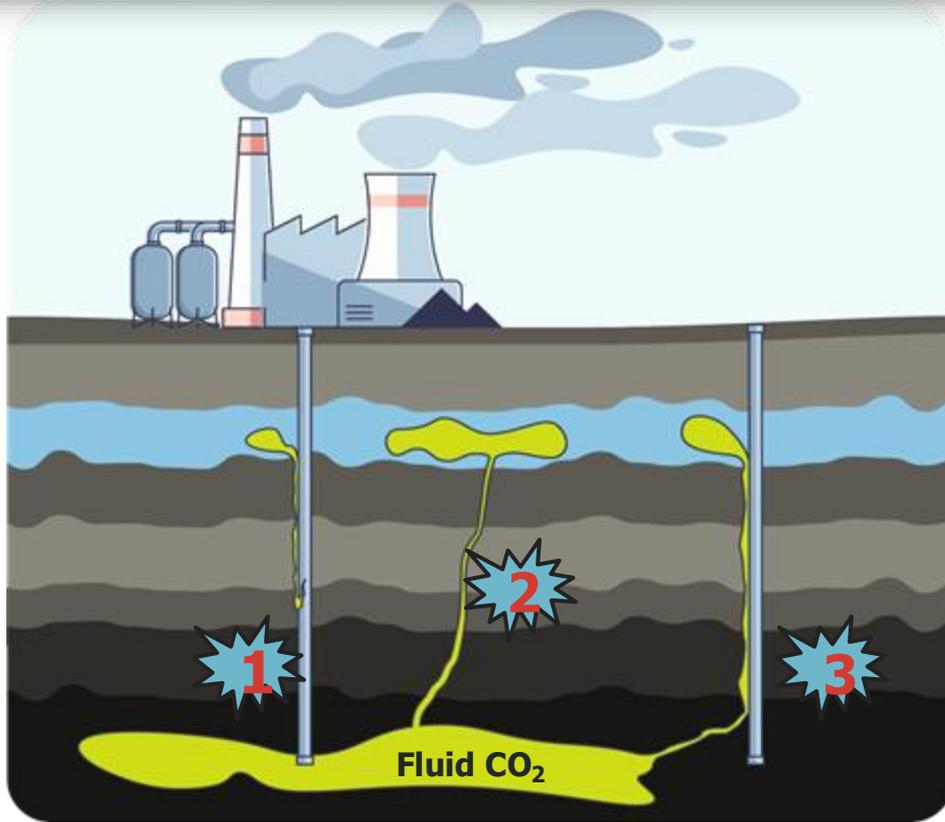
Risks

- **Acidification**
- **Salinization**
- **Heavy Metal Contamination**

**Mahomet
Aquifer**

**Mt. Simon
Sandstone
Saline Aquifer**

Carbon Sequestration



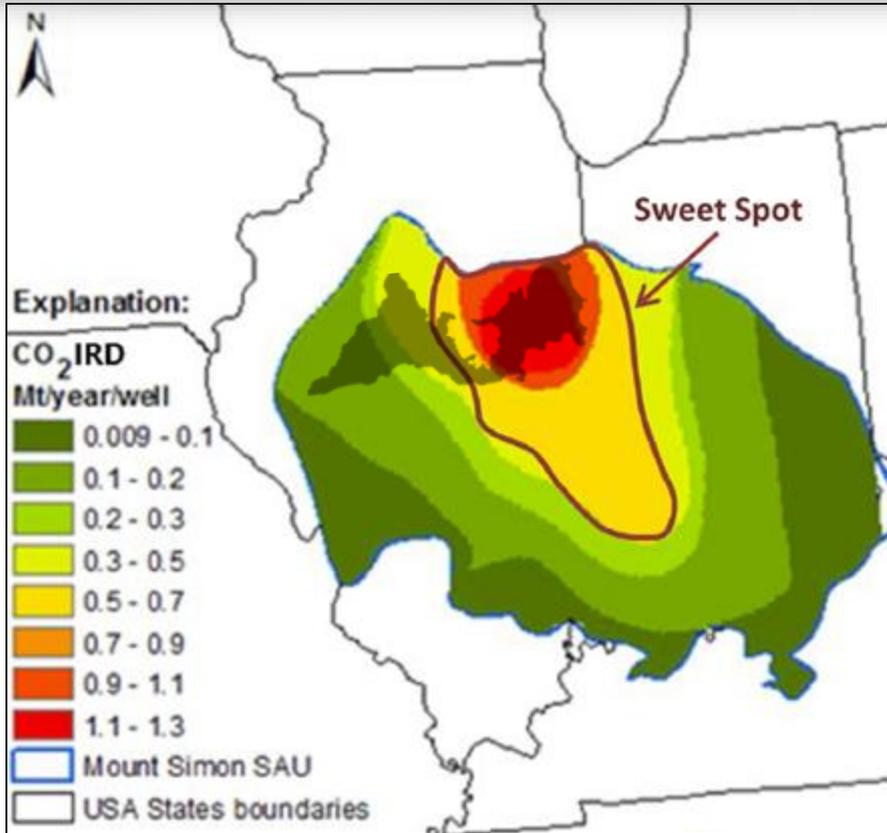
Threats identified by Department of Energy:

“**Acidification of USDW** from CO₂ infiltration, thereby affecting human, animal, and plant environments if the groundwater is produced and used”

“**USDW becoming saline** from displacement of natural brine into USDW thereby affecting human, animal, and plant environments if the groundwater is produced and used.”

“**USDW becoming contaminated with toxic heavy metals, colloids, or other particulates** dissolved and/or mobilized from CO₂ infiltration within or into USDW; thereby affecting human, animal, and plant environments if the groundwater is produced and used”

Why here? Why now?



House passes Inflation Reduction Act, sending climate and health bill to Biden

The successful vote Friday marked the end of a debate that spanned more than a year and a half, at times pitting Democrats against each other over the final major component of the president's agenda

12 min 2547

85\$/ton



Why the IRA's Carbon Capture Tax Credit Could Increase Greenhouse Emissions

EMILY GRUBERT | DECEMBER 5, 2023
EMERGING TECH, MARKETS & FINANCE

SHARE ON f in

New research raises doubt around the climate benefits of the 45Q tax credit for carbon capture and storage for fossil fuel powerplants.

CCS projects that could affect the Mahomet (so far)

One Earth Sequestration, LLC

90 MMT CO₂

**Heartland Greenway Carbon Storage -
Vervain**

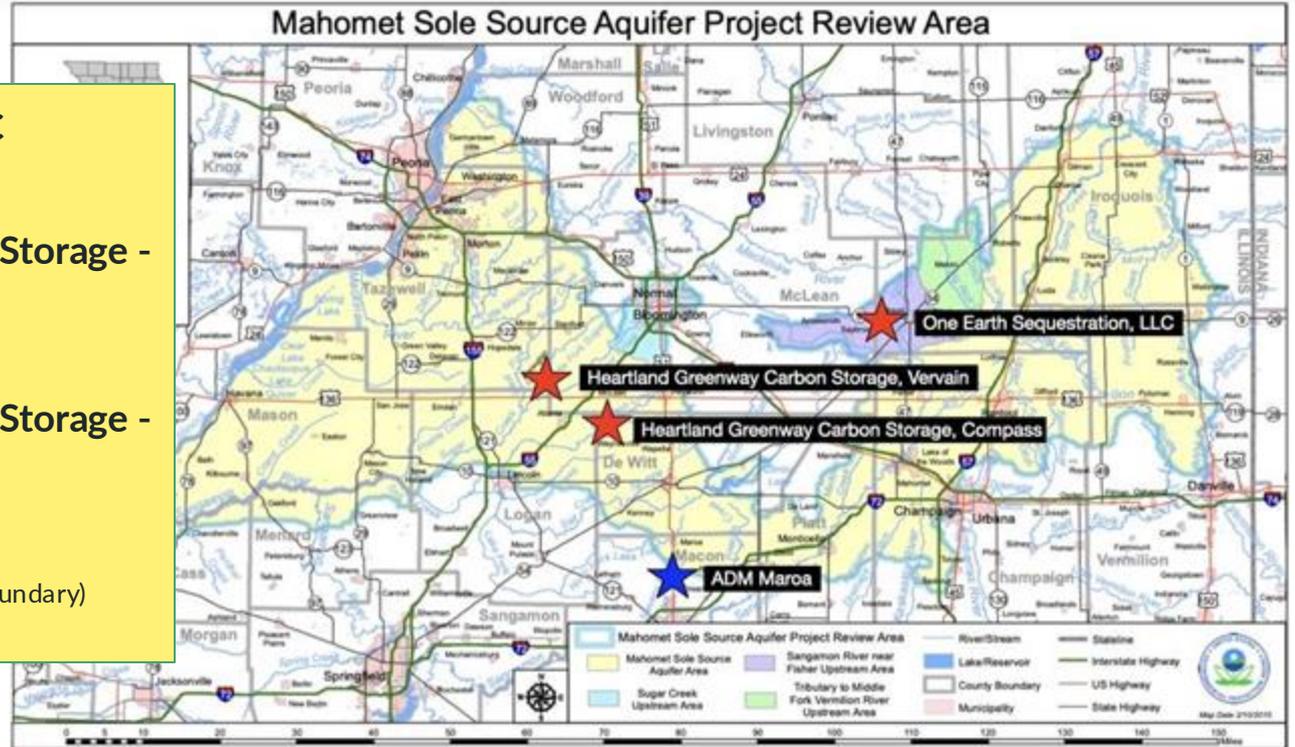
62.5 MMT CO₂

**Heartland Greenway Carbon Storage -
Compass**

62.5 MMT CO₂

ADM Maroa (just outside aquifer boundary)

39.6 MMT CO₂



- ★ Projects located within the Mahomet Aquifer or recharge area
- ★ Projects that are close, but appear to be located just outside the boundaries of the aquifer

Existing Regulation of Sequestration

Federal - Class VI Well Permit

- US EPA administered via the Safe Drinking Water Act
 - Site characterization, monitoring requirements, emergency plan, reporting, etc.

State Legislation passed last spring - Public Act 103-0651 "SAFE CCS Act"

- Illinois EPA administers Sequestration Permit
 - Soil gas monitoring, water impact report
 - Alternate water supply if there is a leak
 - Non-consenting landowner protections
 - Minimum 30 years post closure care
- Does not include a Mahomet Aquifer Sequestration Ban despite requests from Mahomet Aquifer legislators.

A Gap - No Alternative Source of Drinking Water

The SAFE CCS Act requires a sequestration operator to “provide an alternate supply of potable drinking water”

The U.S. EPA sole-source designation means that “there are no reasonably available alternative drinking water sources should the aquifer become contaminated”

For the Mahomet Aquifer:

- **Surface water source availability** - For **92% of the public water suppliers**, an alternative surface water source is not economically feasible
- **Groundwater source availability** - For **77% of the public water suppliers**, an alternative groundwater source is not economically feasible

ADM leaks - Lessons learned

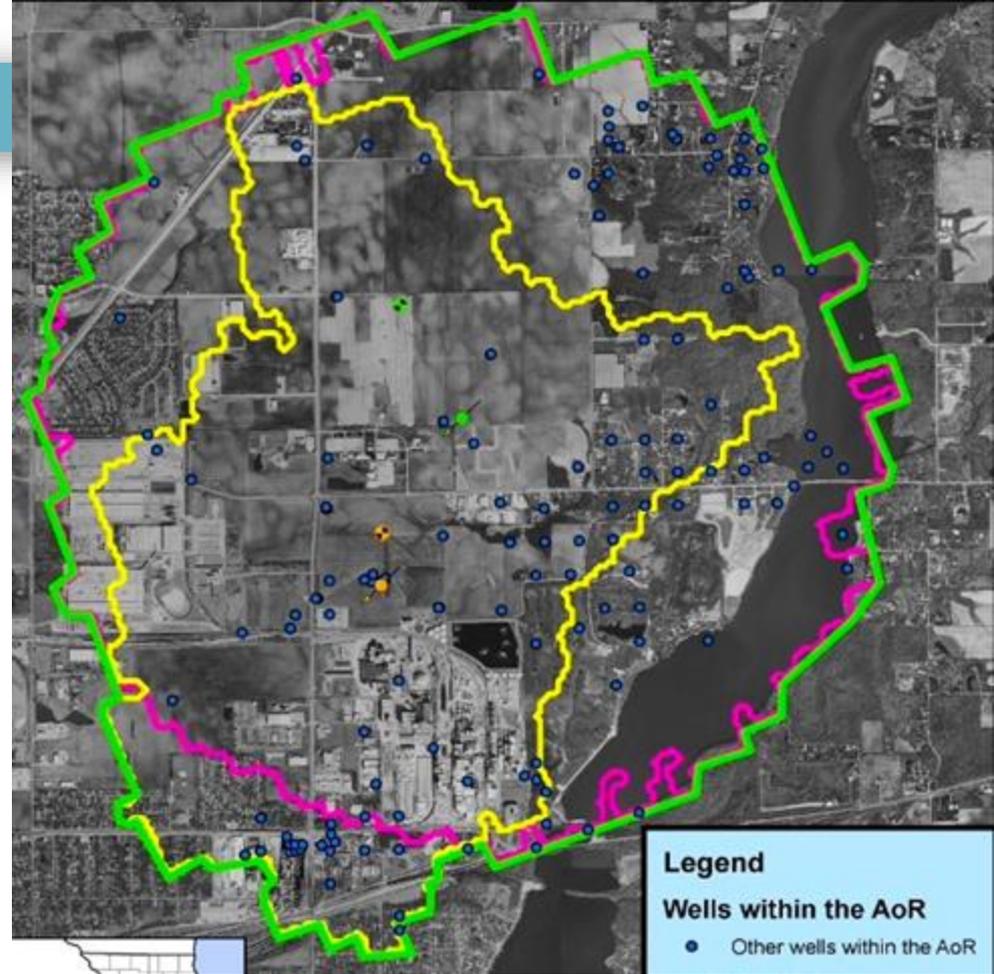
ADM's Decatur Sequestration Facility:

- Two injection wells. Two monitoring wells
- Only operating EPA-approved Class VI project in the country

Pilot project. Operated from 2011 to 2014.
Stored 1 MMT CO₂

Commercial scale project. Illinois Industrial Carbon Capture and Storage Project:

- Began injecting in 2017.
- Stored an additional 3.5 MMT CO₂ to date, just half of what was promised.



ADM leaks - The facts

January 2022 thru December 2022. Monitoring well malfunctions, leaks and is partially plugged

October 2023. ADM identifies corrosion. Fully plugs and takes well out of production

June 2024. EPA inspects all wells

August 2024. EPA issues Notice of Violation

September 2024. E&E News Politico breaks story about ADM's monitoring well leak ADM discovered in March. EPA issues Administrative Order on Consent

October 2024. Leak in second monitoring well discovered. ADM stops injecting - But operated for one year with just one monitoring well

November 2024. ADM identifies 24 wells that can serve as CO₂ escape routes

ADM Decatur's Industrial Carbon Capture and Storage Project is the **ONLY** operating U.S. EPA permitted Class VI well project in the country

Within seven years, both of its monitoring wells have **LEAKED**



ADM leaks - The facts

COMPANY FAILURES

Design - Selected “best available technology” but not proven

Material - Used 13 chrome steel, which corrodes in a saline aquifer

Operational:

- Operated for 10 months with a partially functioning injection well
- Injected for an additional 12 months with just **one** monitoring well
- Did not follow their emergency plan. Continued injecting CO₂, but should have shut down
- Did not notify Gov. Pritzker, local governments or the general public

A wake-up call?

- Design failure
- Material failure
- Operator failure
- Oversight failure
- Transparency / accountability failure

ADM leaks - The facts

EPA FAILURES

- Approved project with material flaws
- Allowed injection with one monitoring well for 12 months rather than issue a Notice of Violation
- Didn't require company to stop injecting CO₂ as required by EPA approved emergency plan
- Waited until August 2024 to issue a Notice of Violation and September 2024 to issue an Administrative Order on Consent
- Never told ADM to stop injecting CO₂

A wake-up call?

- Design failure
- Material failure
- Operator failure
- Oversight failure
- Transparency / accountability failure

ADM leaks - The facts

“...EPA acknowledges that while there is an **inherent level of uncertainty in the early stages of any injection project**, this uncertainty will diminish as operational and post-injection monitoring data is collected and the model is validated.

The Class VI regulations were designed to continuously ensure USDW protection, accommodate and **reduce uncertainty, and manage risk of USDW endangerment over time** as a comprehensive suite of monitoring data becomes available.”

Source: U.S. EPA Response to Comments for Draft Modified Class VI Permit Issued to Archer Daniels Midland. November 2016.

A wake-up call?

- Design failure
- Material failure
- Operator failure
- Oversight failure
- Transparency / accountability failure

CCS is happening at an unprecedented scale

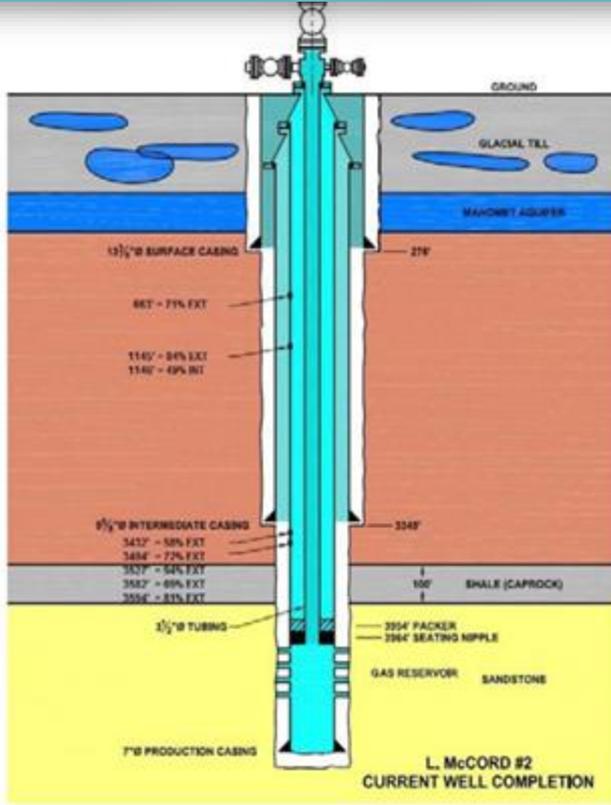
Projects under review by the U.S. EPA are **over 100 times** the size of ADM's Decatur Project

The three projects that would inject CO₂ through and store it under the Mahomet Aquifer are over **50 times the size of ADM's Decatur Project**

Draft permits from U.S. EPA released starting February 2025. All projects could be approved by September 2025

Project Name	Counties	CO ₂ stored per year per well (MMT)	Number of wells	Years in operation	Total CO ₂ (MMT)
ADM Decatur					
Phase 1, pilot	Macon	0.33	1	3	1.00
Phase 2, "commercial"	Macon	0.50	1	7	3.50
Total CO₂ stored, ADM					4.50
ADM Decatur, Phase 2	Macon	0.50	1	4	2.00
ADM Decatur, Phase 3	Macon	1.10	1	12	14.30
ADM Maroa	Macon	1.10	3	12	39.60
One Earth*	McLean, Ford	1.50	3	20	90.00
Navigator Vervain*	McLean, Logan	1.25	2	25	62.50
Navigator Compass*	DeWitt	1.25	2	25	62.50
Navigator HGP	Christian	1.00	6	30	180.00
Marquis Energy	Putnam	1.50	1	5	7.50
All other projects					458.40

People's Gas Leak ... A lesson learned from natural gas storage



There is **just one** natural gas storage reservoir under the Mahomet... and it leaked!

Peoples Gas knew the well was corroding in 1995 but did nothing until it a leak was discovered in **December 2016** by a Peoples Gas employee

By 2020, the estimate of providing replacement water to affected residents was **\$10,000,000**

Eight years later, residents still do not have replacement water.

Regulation is a Risk But a Ban is Certain

The ZBA can, and should act now

- **Pass the moratorium today.**
 - The moratorium is simply to give time to understand the issue. It is temporary by nature.
 - No projects will be impacted by a moratorium. Let's keep it that way.
 - The Champaign State's Attorney has shared its opinion that a moratorium, if challenged, is likely to survive the challenge.
- **Move forward quickly on the ban.**
 - The ZBA should pass a ban on injection of CO2 through and storage of CO2 under the Mahomet Aquifer and its recharge areas in Champaign County.
 - You don't need to agree with this to support or a moratorium today.
- **Ford & DeWitt have passed similar bans.**

Questions?
