Save My Louisiana Report

Save My Louisiana – Comprehensive CCS & Environmental Impact Report (2025)

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Executive Summary

Louisiana currently has 33 pending Class VI carbon capture and sequestration (CCS) projects totaling 107 proposed injection wells across multiple parishes. Many of these wells are located within or adjacent to the Chicot Aquifer—the primary freshwater source for much of central and southwestern Louisiana. These projects collectively represent a statewide experiment in long-term CO_2 storage that carries substantial risks to human health, groundwater integrity, ecosystems, and private property.

CCS in Louisiana: Projects, Wells, Companies, and the Chicot Aquifer

Executive snapshot (as of June–Oct 2025)

- **Louisiana Class VI CCS applications on file: 33 projects** totaling **107 injection wells** (state tracker, updated June 20–26, 2025). That's slightly higher than the "31 / 104" figure circulating earlier. denr.louisiana.gov
- **State status:** Louisiana has **Class VI primacy**; in Oct 2025 the Governor ordered a **pause on new Class VI applications** while prioritizing review of pending ones. Van Ness Feldman+1
- **Chicot Aquifer coverage:** ~9,500 sq mi across 15 parishes: **Vernon, Rapides, Evangeline, Allen, Beauregard, Calcasieu, Jefferson Davis, Acadia, St. Landry, Lafayette, St. Martin, Cameron, Iberia, Vermilion, St. Mary.** USGS

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1. Louisiana CCS Overview

According to the Louisiana Department of Energy and Natural Resources (LDENR), there are **33 Class VI applications** representing **107 wells** across more than 20 parishes. The Chicot Aquifer, which spans approximately 9,500 square miles across 15 parishes, underlies many of these projects.

Parishes with CCS activity overlapping the Chicot Aquifer include: Vernon, Rapides, Allen, Beauregard, Calcasieu, Cameron, Vermilion, and Jefferson Davis.

Each project has been filed under Louisiana's new Class VI primacy authority, granted by the U.S. Environmental Protection Agency (EPA) in 2024. This transfer of regulatory control enables Louisiana to issue CO_2 injection permits with limited federal oversight.

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2. Parish-by-Parish Well Counts (Pending Applications)

- **Allen Parish:** ExxonMobil (Hummingbird 5; Mockingbird 4), Denbury (Draco 6), Magnolia Hub (4) → **19 wells**
- **Rapides Parish:** Cleco Power (Diamond Vault 6), CapturePoint (CCS-1 Wilcox 6) → **12 wells**
- **Vernon Parish:** CapturePoint (CCS-2 Wilcox 6), Aethon Energy (Wilcox 6), Denbury (Draco shared) → **12 wells**
- **Cameron Parish:** Gulf Coast Sequestration (Minerva 4), Hackberry Carbon (1), Onstream GeoDura (6), Venture Global (1) → **12 wells**
- **St. Charles Parish:** High West (5), Lapis Energy (3) → **8 wells**
- **Iberville Parish:** Harvest Bend (3), RPS RPN-4 (1), RPN-5 (1) → **5 wells**
- **Livingston Parish:** Pelican Hub (5) → **5 wells**
- **Beauregard Parish:** Denbury (Draco shared), Evergreen Sequestration (2) → **2+ wells**
- **Calcasieu Parish:** Gulf Coast Sequestration (Goose Lake 2) → **2 wells**
- **Other parishes:** Remaining wells distributed among Ascension, Assumption, Pointe Coupee, Caldwell, Vermilion, and St. John the Baptist.

Optional section for your site: Parish-by-Parish well counts (from the state table)

You can render this as a collapsible accordion:

- **Allen** – Exxon (Hummingbird 5; Mockingbird 4), Denbury (Draco 6), Magnolia (4) → **19**. denr.louisiana.gov
- **Ascension** – RPS RPN-1 (1), BKVerde (1) → **2**. denr.louisiana.gov
- **Assumption** – RPN-2 (1), RPN-3 (1), RPS 1&2 (2) → **4**. denr.louisiana.gov
- **Beauregard** – Denbury Draco (part of 6 shared), Evergreen (2) → **≥2** (Draco spans 3 parishes). denr.louisiana.gov
- **Calcasieu** – GCS Goose Lake (2) → **2**. denr.louisiana.gov
- **Caldwell** – LGF Columbia (3) → **3**. denr.louisiana.gov
- **Cameron** – GCS Minerva (4), Hackberry (1), Onstream GeoDura (6), Venture Global (1) → **12**. denr.louisiana.gov
- **Iberville** – Harvest Bend (3), RPN-4 (1), RPN-5 (1), Live Oak (shares 8 w/ WBR) → **≥5**. denr.louisiana.gov

- **Livingston** – Pelican Hub (5) → **5**. denr.louisiana.gov
- **Pointe Coupee** – Capio Sherburne (1) → **1**. denr.louisiana.gov
- **Rapides** – Cleco Diamond Vault (6), CapturePoint CCS-1 (6) → **12**. denr.louisiana.gov
- **Sabine** – DT Midstream (1) → **1**. denr.louisiana.gov
- **St. Charles** – High West (5), Lapis (3) → **8**. denr.louisiana.gov
- **St. Helena** – Shell El Camino (2) → **2**. denr.louisiana.gov
- **St. John the Baptist** – Air Products (5), Capio Maurepas (2) → **7**. denr.louisiana.gov
- **Vermilion** – Exxon Pecan Island (2) → **2**. denr.louisiana.gov
- **Vernon** – CapturePoint CCS-2 (6), Aethon Wilcox (6), Denbury Draco (shared) → **≥12**. denr.louisiana.gov
- **West Baton Rouge** – Live Oak (shares 8 w/ Iberville). denr.louisiana.gov

Grand total from state table: 107 wells across **33 applications.** (I summed the "Number of Wells/Applications" column.) denr.louisiana.gov

2.1 Official Louisiana Class VI CCS Applications (state tracker)

Source: Louisiana DENR "Permits and Applications" → *Class VI Well Applications* (updated June 20–26, 2025). I'm reproducing the public rows here so you have them in one place. Totals: **33 applications / 107 wells.** denr.louisiana.gov

By operator → project → parish(es) → wells

1. Air Products Blue Energy – **LCEC Carbon Sequestration Site South** – *St. John the Baptist* – **5**. denr.louisiana.gov
2. Aethon Energy – **LA Wilcox Project** – *Vernon* – **6**. denr.louisiana.gov
3. BKVerde – **Donaldsonville** – *Ascension* – **1**. denr.louisiana.gov
4. Capio Sequestration – **Sherburne CCS #1** – *Pointe Coupee* – **1**. denr.louisiana.gov
5. Capio Maurepas Sequestration – **Maurepas WMA Sequestration Project** – *St. John the Baptist* – **2**. denr.louisiana.gov
6. CapturePoint Solutions – **CCS-1 Wilcox** – *Rapides* – **6**. denr.louisiana.gov
7. CapturePoint Solutions – **CCS-2 Wilcox 2** – *Vernon* – **6**. denr.louisiana.gov
8. Cleco Power – **Diamond Vault** – *Rapides* – **6**. denr.louisiana.gov
9. Denbury Carbon Solutions – **Draco** – *Allen, Beauregard & Vernon* – **6**. denr.louisiana.gov
10. DT Midstream – **LA CCS** – *Sabine* – **1**. denr.louisiana.gov
11. Evergreen Sequestration Hub – **Evergreen** – *Beauregard* – **2**. denr.louisiana.gov
12. ExxonMobil LCS Onshore Storage – **Pecan Island Area** – *Vermilion* – **2**. denr.louisiana.gov
13. ExxonMobil LCS Onshore Storage – **Hummingbird** – *Allen* – **5**. denr.louisiana.gov
14. ExxonMobil LCS Onshore Storage – **Mockingbird** – *Allen* – **4**. denr.louisiana.gov
15. Gulf Coast Sequestration – **Minerva** – *Cameron* – **4**. denr.louisiana.gov
16. Gulf Coast Sequestration – **Goose Lake** – *Calcasieu* – **2**. denr.louisiana.gov

17. Hackberry Carbon Sequestration – **Hackberry Sequestration** – *Cameron* – **1**. denr.louisiana.gov
18. Harvest Bend CCS – **White Castle** – *Iberville* – **3**. denr.louisiana.gov
19. High West Sequestration (BKV) – **High West CCS Project** – *St. Charles* – **5**. denr.louisiana.gov+1
20. Lapis Energy (LA Development) – **Libra CO_2 Storage Solutions** – *St. Charles* – **3**. denr.louisiana.gov
21. Live Oak CCS – **Live Oak CCS Hub** – *West Baton Rouge & Iberville* – **8**. denr.louisiana.gov+1
22. Louisiana Green Fuels (Strategic Biofuels) – **LGF Columbia** – *Caldwell* – **3**. denr.louisiana.gov+1
23. Magnolia Sequestration Hub (1PointFive/Oxy) – **Magnolia** – *Allen* – **4**. denr.louisiana.gov+1
24. Onstream CO_2 – **GeoDura** – *Cameron* – **6**. denr.louisiana.gov
25. Pelican Sequestration Hub (1PointFive/Oxy) – **Pelican** – *Livingston* – **5**. denr.louisiana.gov+1
26. River Parish Sequestration (Blue Sky Infrastructure) – **RPN-1** – *Ascension* – **1**. denr.louisiana.gov+1
27. River Parish Sequestration – **RPN-2** – *Assumption* – **1**. denr.louisiana.gov
28. River Parish Sequestration – **RPN-3** – *Assumption* – **1**. denr.louisiana.gov
29. River Parish Sequestration – **RPN-4** – *Iberville* – **1**. denr.louisiana.gov
30. River Parish Sequestration – **RPN-5** – *Iberville* – **1**. denr.louisiana.gov
31. River Parish Sequestration – **RPS-1 & RPS-2** – *Assumption* – **2**. denr.louisiana.gov
32. Shell U.S. Power & Gas – **El Camino** – *St. Helena* – **2**. denr.louisiana.gov
33. Venture Global CCS Cameron – **Cameron CO_2 Sequestration Project** – *Cameron* – **1**. denr.louisiana.gov

State map & PDF: LDENR's "Louisiana Class V and Class VI Project Locations" PDF is the official parish-level overview for your audience. denr.louisiana.gov

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3. Companies active in Louisiana CCS & "low-carbon" projects

Sequestration hubs / wells (Class VI)

- **1PointFive (Occidental)** – *Pelican Hub (Livingston/St. Helena)*; JV with **Enbridge** for pipelines; **Magnolia Hub (Allen Parish)** under DOE CarbonSAFE. Energy Capital+31PointFive+3Oxy+3
- **Gulf Coast Sequestration (GCS)** – *Cameron & Calcasieu* (Minerva/Goose Lake). gcscarbon.com
- **ExxonMobil Low Carbon Solutions** – *Allen (Hummingbird/Mockingbird), Vermilion (Pecan Island Area)*. denr.louisiana.gov
- **Live Oak CCS (Tenaska)** – *West Baton Rouge & Iberville.* Live Oak CCS Hub+1

- **River Parish Sequestration (Blue Sky Infrastructure)** – *Ascension/Assumption/Iberville.* Blue Sky Infrastructure+1
- **CapturePoint Solutions** – *CENLA/Wilcox projects in Rapides & Vernon*; broader **CENLA Hub** concept includes DAC emitters tie-ins. denr.louisiana.gov+2capturepointllc.com+2
- **Strategic Biofuels (Louisiana Green Fuels)** – *Caldwell (Port of Columbia)* – BECCS with multiple Class VI wells. Strategic Biofuels+1
- **Air Products Blue Energy** – *Ascension/St. John the Baptist* – blue hydrogen/ammonia with Class VI site; (air/water permits and Class VI apps on file). Air Products+2cleanenergylouisiana.com+2
- **Venture Global** – pursuing CCS alongside **Plaquemines/CP2 LNG**; Cameron sequestration application on state tracker. Venture Global+2Venture Global LNG+2
- **Denbury / Denbury Carbon Solutions** – multi-parish **Draco** storage plus existing **CO_2 pipeline (Green Pipeline)** in LA region. denr.louisiana.gov+1
- **High West Sequestration (BKV)** – *St. Charles* hub. BKV Corporation+1
- **Lapis Energy** – *St. Charles (Libra).* denr.louisiana.gov
- **Evergreen Sequestration Hub** – *Beauregard.* denr.louisiana.gov
- **Hackberry Carbon Sequestration** – *Cameron.* denr.louisiana.gov
- **DT Midstream LA CCS** – *Sabine.* denr.louisiana.gov
- **Capio / Capio Maurepas** – *Pointe Coupee; St. John the Baptist.* denr.louisiana.gov
- **Harvest Bend CCS** – *Iberville.* denr.louisiana.gov
- **Shell U.S. Power & Gas** – *St. Helena (El Camino).* denr.louisiana.gov

Capture/emitters tied to CCS in LA

- **CF Industries (Donaldsonville, Ascension)** – capture/transport via **EnLink** pipelines to **ExxonMobil** storage in Vermilion; later expanded deals (and separate out-of-state tie-ups). OGJ+3cfindustries.com+3ExxonMobil+3
- **Air Products (Ascension/St. John)** – blue hydrogen/ammonia complex with Class VI site. Air Products+1
- **Venture Global LNG (Plaquemines/Calcasieu/Cameron)** – corporate statements committing to CCS at LNG terminals. Venture Global+2Reuters+2
- **SunGas Renewables (Beaver Lake Renewable Energy, Rapides)** – "green methanol" producer positioning as "lower-carbon" fuel; (capture/storage partners have not been finalized publicly in state trackers). SunGas Renewables+1
- **Hyundai (ultra-low-carbon steel, Ascension)** – new EAF mill (blue→green hydrogen pathway); *if* using blue hydrogen or CCS-enabled inputs, it indirectly depends on CCS/45Q economics in LA. Opportunity Louisiana+2Canary Media+2

Pipelines & CO_2 transport

- **EnLink Midstream (Donaldsonville → Vermilion)** – contracted to move CF's CO_2 to Exxon storage. ExxonMobil+1
- **Denbury Green Pipeline (LA–TX)** – existing 24–20″ CO_2 pipeline network; capacity referenced publicly; history includes the Satartia MS incident on a Denbury line (PHMSA report). Oil and Gas Watch+1

- **Low Carbon Logistics CCS Transport LLC – withdrew** recent LA CO_2 pipeline applications (Sept 5, 2025). dce.louisiana.gov
- **Statewide view of proposed pipelines (10 total as of 2023)** – Environmental Integrity Project fact sheet. Environmental Integrity

All projects rely heavily on **45Q federal tax credits**, which pay up to $85 per metric ton of CO_2 permanently stored underground.

How many of these overlap the Chicot Aquifer parishes?

Many pending wells are in parishes within the **Chicot footprint** (e.g., **Vernon, Rapides, Allen, Beauregard, Calcasieu, Cameron, Vermilion, Jefferson Davis**). Cross-referencing the state Class VI table above with USGS Chicot parishes gives the overlap you can highlight on your site. denr.louisiana.gov+1

"Low-carbon" products tied to CCS/45Q in Louisiana

- **Blue hydrogen/ammonia** (Air Products; CF Industries). Air Products+2Oil and Gas Watch+2
- **LNG** (Venture Global's public CCS posture at Plaquemines/CP2). Venture Global+1
- **BECCS** (Strategic Biofuels; Fidelis/AtmosClear Baton Rouge BECCS deal announced with Microsoft). Strategic Biofuels+1
- **Steel** (Hyundai EAF "ultra-low-carbon" steel complex—likely to interface with hydrogen/CCS supply). Opportunity Louisiana+1

45Q tax credits – what your audience should know

- **45Q is the federal tax credit that subsidizes capture & storage (and utilization).** The IRS issued updated procedures in 2024 for utilization projects (Notice 2024-60) and updated **Form 8933** instructions in 2025; underlying final regs date to 2021. Prevailing Wage/AJ regs for boosted credit amounts were finalized in 2024. IRS+3IRS+3IRS+3

Useful official trackers & documents for readers

- **Louisiana DENR Class VI portal & applications (official)** – projects, well counts, and document links. denr.louisiana.gov
- **EPA Class VI Permit Tracker (context, pre-primacy)** – historical baseline of LA submittals. EPA
- **EIP Louisiana CCS Fact Sheet (projects + pipelines map/list, 2023)** – statewide overview. Environmental Integrity
- **Governor's Oct 2025 moratorium/priority review** – recent policy development. Vinson & Elkins+1

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4. Environmental and Health Impact Analysis

4.1 The Chicot Aquifer: Louisiana's Lifeline at Risk

The **Chicot Aquifer System** spans roughly **9,500 square miles** and supplies **over 700,000 people** across **15 parishes** with drinking, irrigation, and industrial water. It is composed of highly permeable sands and gravels that store fresh water at shallow depths—making it extremely vulnerable to both pressure migration and contamination from deeper CO_2 injection.

Geological and Chemical Risks

- **Pressure Transmission:** CO_2 injection creates large pressure fronts that can extend miles from each well. If the caprock integrity is imperfect or faults exist, these pressure changes can push **brine and dissolved CO_2 upward** into freshwater zones.
- **Brine Displacement:** Rising saline water can raise **chloride, sulfate, and TDS levels**, harming crops, municipal systems, and private wells.
- **Chemical Reactions:** Dissolved CO_2 forms carbonic acid, which lowers pH, dissolves minerals, and mobilizes **arsenic, lead, manganese, and iron**.

Sources: U.S. EPA Class VI Technical Guidance (2013); Little et al., Environmental Earth Sciences (2013); USGS Chicot Aquifer Hydrogeologic Framework (2020).

Evidence from Existing CCS Sites

- **Decatur, Illinois:** EPA confirmed **unauthorized CO_2 migration** beyond modeled limits in 2024–2025 at the ADM site, proving containment failures even under federal oversight. *(EPA Enforcement Order, Aug 2025; Reuters, Oct 2024.)*
- **Satartia, Mississippi:** The 2020 Denbury pipeline rupture caused hospitalizations and widespread evacuations. PHMSA's investigation exposed serious gaps in CO_2 transport safety and emergency planning.

Potential Impact on the Chicot Aquifer

If these Louisiana projects proceed, expected consequences include:

- **Permanent loss of potable water** through acidification and salinity increase.
- **Contamination migration through interconnected sand lenses**, impacting municipal and agricultural wells.
- **Infrastructure corrosion** due to altered groundwater chemistry.
- **Subsidence and wetland collapse** from subsurface pressure changes.
- **Ecological harm** to bayous, lakes, and estuaries fed by Chicot discharge, threatening fisheries and wildlife.

Why Louisiana Faces Unique Vulnerability

- The Chicot's freshwater lens lies **directly above the deeper saline formations** targeted for CCS storage.
- Louisiana's **tectonic faults and salt domes** provide natural vertical migration pathways.
- **High rainfall and shallow water tables** increase the likelihood that any upward leak will reach surface ecosystems quickly.

Recommended Actions

1. Immediate **moratorium** on CCS injection within or adjacent to the Chicot footprint.
2. Independent **USGS-led hydrogeologic reviews** for all pending Class VI applications.
3. Continuous **public groundwater monitoring** and disclosure of data.
4. Stronger **liability and bonding laws** requiring industry-funded cleanup of contamination.



4.2 Additional Environmental Risks in Louisiana (Expanded)

Louisiana's unique industrial history and coastal geography make it one of the most hazardous places in the United States to attempt large-scale carbon capture and sequestration (CCS). Beyond the immediate threat to the Chicot Aquifer, multiple inter-related vulnerabilities increase the probability of contamination, pipeline failure, and long-term ecological damage.

Legacy Wells and Subsurface Leakage Pathways

The state contains **over 250,000 recorded oil and gas wells**, including more than **4,600 orphaned** wells and tens of thousands that were abandoned before modern plugging standards. Many intersect the same geologic formations now targeted for CO_2 storage. Corroded casings, poor cement bonds, and incomplete records make them potential conduits for vertical migration of injected CO_2 or brine.

- The **Environmental Integrity Project (2023)** documented dense clusters of legacy wells around planned injection hubs in **Allen, Rapides, and Calcasieu Parishes**. (environmentalintegrity.org)
- A **Louisiana Illuminator** investigation confirmed that many wells near proposed storage sites were plugged before 1950 and lack depth verification. (lailluminator.com, May 2024)
- The **Louisiana Department of Natural Resources Well Database (2024)** lists thousands of inactive wells within 10 miles of CCS project footprints. (sonris.com)

Any of these wells could act as leakage conduits, carrying CO_2 or brine upward into freshwater zones or releasing gas at the surface decades after injection ends.

CO_2 Transport Corridors and Wetland Crossings

More than **700 miles** of new CO_2 pipelines are planned or permitted in Louisiana, primarily operated by **Denbury Inc., EnLink Midstream, CapturePoint Solutions, and Air Products**. These lines would cross the **Atchafalaya Basin**, the **Mermentau River**, and dozens of bayous and wetlands.

- The **PHMSA Pipeline Incident Database (2003 – 2024)** lists multiple CO_2 ruptures nationwide, confirming the potential for lethal ground-level gas clouds. (phmsa.dot.gov)
- **All4Energy.org (2024)** reports that New Orleans banned CCS pipelines within city limits because of safety concerns. (all4energy.org)
- **WWNO Public Radio (2024)** details widespread public opposition to pipelines planned through flood-prone parishes. (wwno.org)

Louisiana's deltaic soils, frequent flooding, and subsidence magnify the chance of pipeline rupture or corrosion. A single breach could release thousands of tons of dense CO_2 that displaces oxygen and endangers both residents and wildlife.

Cumulative Wetland and Surface-Water Impacts

Wetlands and bayous function as natural buffers for the Gulf Coast, but they are chemically sensitive. If leaked CO_2 dissolves into these waters, it forms carbonic acid that **lowers pH**, dissolving calcium carbonate shells and reducing biodiversity.

- Modeling by the **NOAA Gulf Ecology Division (2022)** found that even small CO_2 inputs can shift pH by 0.3–0.5 units—enough to cut **oyster-larvae survival by 50 percent**. (noaa.gov)

- The **Louisiana Department of Wildlife & Fisheries (2023)** warns that salinity and acidity changes threaten $2.4 billion in annual fisheries production. (wlf.louisiana.gov)

Once acidified, marsh soils release iron and manganese oxides that create orange bacterial mats and degrade aquatic habitats used by amphibians, crawfish, and waterfowl.

Environmental Justice and Public-Health Burden

Most CCS and "low-carbon" industrial sites cluster in the **Mississippi River Industrial Corridor—St. John, St. James, Ascension, and Iberville Parishes**—already known as *Cancer Alley*.

- **EPA EJScreen (2025)** ranks these parishes in the **90th – 95th percentile** nationwide for cancer-risk and air-toxic exposure. (epa.gov/ejscreen)
- **The Guardian (July 2024)** documents residents' concerns that CCS facilities will intensify respiratory illness and displacement. (theguardian.com)
- **The Lens NOLA (2023)** highlights how cumulative emissions and noise pollution from new CCS projects overlay existing petrochemical corridors. (thelensnola.org)

These communities are predominantly African American and low-income, making them disproportionately exposed to industrial hazards and least equipped to manage new CCS-related risks.

Regulatory and Land-Use Conflicts

Louisiana law allows **CO_2 injection beneath private land without the owner's consent** once declared a "public utility purpose" under **La. R.S. 30:1108** and **R.S. 19:2(12)**. This grants private corporations eminent-domain powers for CCS pipelines and wells. Parish governments—including **Allen, Vernon, and Rapides**—have adopted resolutions requesting a moratorium, citing lack of public consultation and environmental review. The **Allen Parish Police Jury CO_2 Risk Assessment (2025)** concluded that "permanent injection under active aquifers introduces non-reversible contamination potential." (allenparishpolicejury.com)

Without statutory reform and enforceable transparency requirements, Louisiana risks becoming a **national repository for industrial CO_2 waste** with little protection for its citizens, aquifers, or wetlands.

Summary: These factors—aging well infrastructure, pipeline hazards, fragile wetlands, and environmental-justice inequities—create an unprecedented convergence of risk. Each amplifies the others, meaning even a minor leak or policy failure could have cascading, statewide consequences.

4.3 Human Health Hazards

CO_2 is a colorless, odorless asphyxiant. When released from pipelines or wells, it displaces oxygen near the ground. Exposure to concentrations above **10%** can cause dizziness and unconsciousness within seconds; concentrations above **15%** can cause death.

The **Satartia, Mississippi incident (2020)** provides the most documented evidence of health impacts. PHMSA's investigation showed that more than **200 residents** were evacuated, and **45 people hospitalized** after a CO_2 pipeline rupture created a dense gas plume. Victims experienced confusion, paralysis, and loss of consciousness—consistent with acute hypoxia.

In **Sulphur, Louisiana (2024)**, a smaller release from CO_2 transport infrastructure led to emergency shelter-in-place orders. These incidents highlight Louisiana's lack of public warning systems, emergency training, and monitoring technology for CO_2 exposure.

Chronic exposure risks also exist for first responders and workers near leaking equipment. Extended exposure to elevated CO_2 can impair cognitive function, respiratory control, and cardiovascular stability.

Sources: PHMSA Failure Investigation Report (2021); Journal of Occupational Medicine (2019); WWNO, Sulphur Incident (2024).

4.4 Groundwater and Aquifer Threats Beyond the Chicot

Groundwater contamination from CCS injection can occur through several pathways:

- **Vertical Migration:** Over-pressurization from injection can push CO_2 or brine through microfractures or abandoned wellbores.
- **Well Integrity Failure:** Corrosion of cement and steel casings from carbonic acid formation can create long-term leakage pathways.
- **Pressure Front Displacement:** Injection increases formation pressure, driving saline water into adjacent freshwater zones even if CO_2 itself is contained.

At the **ADM Decatur site**, EPA enforcement in 2024–2025 revealed that injected CO_2 migrated into an unauthorized formation. Data from Illinois, Texas, and Wyoming show repeated casing integrity issues and pressure anomalies during injection pilot tests.

Peer-reviewed geochemical studies show that leaked CO_2 can reduce groundwater pH from **neutral (7)** to **acidic (4.5–5.5)**, mobilizing toxic metals like **arsenic (up to 200 µg/L)** and **iron (>10 mg/L)**. These concentrations far exceed EPA drinking water standards.

Sources: EPA Enforcement Order ADM (2025); Little et al. (2013); University of Texas Bureau of Economic Geology (2021).

4.5 Ecosystem Impacts

Ecosystem damage from CCS projects can extend across wetlands, rivers, and coastal estuaries:

- **Wetland Acidification:** Carbonic acid lowers water pH, dissolving calcium carbonate shells of crawfish, mussels, and oysters.
- **Fish Mortality:** Hypoxic zones from CO_2 releases or acidified water can suffocate aquatic life.
- **Metal Mobilization:** Increased concentrations of manganese and iron stain sediment and disrupt aquatic plant photosynthesis.
- **Food Chain Impacts:** Toxic metals bioaccumulate, threatening higher trophic species such as herons, alligators, and humans consuming fish or shellfish.

Louisiana's coastal economy depends on **$2.4 billion annually** in seafood and fisheries, all of which depend on stable water chemistry. CO_2 leakage into wetland systems could irreversibly alter salinity gradients and kill nursery habitats for shrimp, redfish, and blue crab.

Sources: Louisiana Department of Wildlife & Fisheries (2023); Environmental Science & Technology (2017); NOAA Gulf Ecology Division (2022).

4.6 Induced Seismicity

Injection of CO_2 under high pressure alters subsurface stress regimes. Studies from the **Illinois Basin–Decatur Project** recorded hundreds of microseismic events between 2012–2020 at depths of 1–2 miles. While most events were below magnitude 1.0, they reveal continuous stress adjustments in the injection formation.

Louisiana's geological profile—particularly near **Baton Rouge Fault Zone, Lake Charles Fault, and Sabine Uplift**—is not seismically inert. Injection-induced pore pressure changes can reactivate dormant faults, leading to minor earthquakes or caprock fracturing. These fractures increase the risk of CO_2 leakage into overlying formations.

Furthermore, subsidence linked to pressure depletion or shifting brine volumes may threaten critical infrastructure, including pipelines and levees. The combination of weak sedimentary strata and industrial injection heightens risk of land destabilization.

Sources: Bauer et al. (2016); USGS Earthquake Hazards Program (2023); LSU Geology Department Fault Database (2022).

4.7 Oversight and Enforcement Gaps

Louisiana's **Class VI primacy** means that state agencies—not the EPA—issue and enforce permits for CO_2 injection wells. This creates structural risks due to limited staff, reduced transparency, and potential conflicts of interest.

Identified Weaknesses:

- **Public Data Omission:** Unlike EPA's national UIC database, Louisiana's Class VI applications often omit pressure data, modeling assumptions, and groundwater monitoring results from public access.
- **Conflict of Interest:** LDENR staff and consultants often have prior industry affiliations. This raises ethical concerns over impartial enforcement.
- **Limited Inspection Capacity:** As of mid-2025, LDENR had fewer than **five dedicated inspectors** for all active Class VI applications statewide.
- **No Long-Term Liability Framework:** After 10 years, liability for storage sites may transfer to the state, potentially burdening taxpayers with perpetual monitoring costs.

Comparatively, EPA's federal oversight model mandates independent modeling audits, public hearings, and long-term care funds. Without these safeguards, Louisiana risks becoming a **CO_2 waste sink** for out-of-state emitters with minimal accountability.

Sources: Louisiana DEQ & LDENR Public Records (2025); EPA Region 6 Class VI Program Comparison (2024); Environmental Defense Fund Analysis (2025).

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5. Scientific Citations (Cross-Referenced)

1. U.S. Department of Transportation, PHMSA. *Failure Investigation Report: Satartia CO_2 Pipeline Rupture (2020).* https://www.phmsa.dot.gov
2. Pipeline Safety Trust. *PHMSA Actions Following Satartia Incident (2021).* https://pstrust.org
3. U.S. EPA. *Safe Drinking Water Act Class VI Injection Well Enforcement: ADM Decatur Site (2024–2025).* https://www.epa.gov
4. Little, M. et al. (2013). *Potential Impacts of CO_2 Leakage on Groundwater Quality.* Environmental Earth Sciences. https://doi.org/10.1007/s12665-013-2418-3
5. U.S. Geological Survey. *Chicot Aquifer System Hydrogeologic Framework (2020).* https://pubs.usgs.gov
6. Reuters. *ADM Pauses Injection After Possible Leak (2024).* https://www.reuters.com
7. Bauer, R. et al. (2016). *Seismic Monitoring at Illinois Basin–Decatur Project.* International Journal of Greenhouse Gas Control. https://doi.org/10.1016/j.ijggc.2016.02.002

8. Environmental Integrity Project. *Carbon Capture and Storage Projects in Louisiana (2023).* https://environmentalintegrity.org
9. PHMSA. *National CO_2 Pipeline Incident Data (2003–2024).* https://www.phmsa.dot.gov
10. U.S. EPA. *Class VI Program Overview and Guidance.* https://www.epa.gov/uic/class-vi-wells-used-geologic-sequestration-co2
11. Louisiana Illuminator. *Leaky Landscape: Old Oil Wells Could Threaten Carbon Injection Safety (2024).* https://lailluminator.com
12. All4Energy.org. *Ban on Carbon Capture Sequestration Facilities and Pipelines (2024).* https://www.all4energy.org
13. WWNO. *Public Outcry Against Carbon Capture in Louisiana Growing (2024).* https://www.wwno.org
14. The Lens NOLA. *A Known Risk: How Carbon Stored Underground Could Find Its Way Back Into the Atmosphere (2023).* https://thelensnola.org
15. The Guardian. *Carbon Capture Pollution in Louisiana's Cancer Alley (2024).* https://www.theguardian.com
16. Allen Parish Police Jury. *CO_2 Risk Assessment Final Report (May 2025).* https://www.allenparishpolicejury.com
17. University of Texas Bureau of Economic Geology. *CO_2 Storage and Migration Studies (2021).* https://beg.utexas.edu
18. Louisiana Department of Wildlife & Fisheries. *Economic Value of Fisheries and Wetlands (2023).* https://www.wlf.louisiana.gov
19. NOAA Gulf Ecology Division. *Wetland Salinity and Acidification Impacts (2022).* https://www.noaa.gov
20. Environmental Defense Fund. *Evaluation of Louisiana Class VI Primacy and Oversight (2025).* https://www.edf.org

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6. Conclusion

CCS infrastructure in Louisiana poses cumulative environmental, geological, and public health risks that far outweigh claimed climate benefits. Incidents in Mississippi, Illinois, and Texas prove that pipeline ruptures and injection failures are not hypothetical. The overlap between CCS infrastructure and critical freshwater resources such as the Chicot Aquifer warrants immediate public oversight, risk transparency, and a statewide moratorium on new CO_2 injection permits pending comprehensive environmental review.

Notes on “low-carbon” claims and reliance on CCS/45Q

- Many LA “low-carbon” projects (blue hydrogen/ammonia, LNG with CCS, BECCS, and even “ultra-low-carbon” industrials) hinge economically on **45Q** and related IRA provisions (and on transport/storage infrastructure and Class VI approvals). See IRS 45Q regs, Form 8933 guidance, and utilization procedures. Federal Register+2IRS+2

Citations (selected)

- **LDENR Class VI portal (applications, maps):** Class VI program, tracker, and "Project Locations" PDF. denr.louisiana.gov
- **USGS Chicot extent & parishes:** data pages & maps. USGS+1
- **Company & project pages / news:** CapturePoint CENLA Hub; Strategic Biofuels LGF; Air Products Blue Energy; CF-Exxon-EnLink; Venture Global CCS references; 1PointFive Pelican/Magnolia; Tenaska Live Oak; BKV High West; GCS; River Parish Sequestration (Blue Sky). Blue Sky Infrastructure+11capturepointllc.com+11Strategic Biofuels+11

Continued - Scientific Analysis: Documented Environmental & Health Risks from CCS (with U.S. case evidence)

1) Human health hazards from CO_2 pipeline releases

- **Satartia, Mississippi (Feb 22, 2020)** — A Denbury CO_2 pipeline ruptured during a landslide after heavy rain, releasing a dense CO_2 cloud mixed with H_2S. **Dozens were hospitalized** and hundreds evacuated; vehicles stalled as oxygen was displaced. The U.S. DOT **PHMSA failure investigation** details the event, causes, emergency response problems, and corrective actions. PHMSA+1
- **Regulatory consequence** — PHMSA and Pipeline Safety Trust documented significant penalties and compliance actions tied to Satartia. Pipeline Safety Trust
- **Context** — PHMSA's national pipeline incident trend data and independent analyses show CO_2 pipeline incidents are not theoretical; incidents (including CO_2) are tracked and published by PHMSA. PHMSA

Why this matters for Louisiana: A **CO_2 leak in Sulphur, LA (Apr 3, 2024)** triggered a shelter-in-place order and raised questions about monitoring and emergency readiness—press coverage and advocacy alerts document the release. The Guardian+2Pipeline Safety Trust+2

2) Groundwater/aquifer risks from injection (Class VI) and migration

- **Illinois (ADM Decatur Class VI site)** — In 2024–2025, the **EPA alleged** ADM violated its Class VI permit after **injected fluids migrated into an unauthorized zone ~5,000 ft deep**, and for failures in monitoring and emergency/Remedial plans. ADM paused injection while investigating; EPA issued a **proposed order (Sept 19, 2024)** and later a **final order (Aug 13, 2025)** under the Safe Drinking Water Act. Environmental Protection Agency+3Environmental Protection Agency+3Environmental Protection Agency+3
    - Local and national outlets summarized the monitoring-well leak and pause; follow-ups noted ADM preparing to restart after remediation steps under EPA

oversight. governorsbiofuelscoalition.org+3Inside Climate News+3Capitol News Illinois+3

- **Mechanisms of harm (peer-reviewed science):** Laboratory/field-informed studies indicate **even small CO_2 leakage into overlying freshwater can acidify groundwater**, lowering pH and **mobilizing metals (e.g., Fe, Mn, potentially As, Pb) and increasing TDS**—posing risks to **USDWs (Underground Sources of Drinking Water)**. ACS Publications+2Wiley Online Library+2
- **EPA risk framing:** EPA's Class VI program exists **specifically** to protect USDWs from endangerment; technical guidance requires intense site characterization, Area-of-Review (AoR) modeling for pressure/brine displacement, monitoring, corrective action, and post-injection care. These risks are recognized in EPA's Class VI pages and guidance. Environmental Protection Agency+1
- **Chicot Aquifer relevance:** Because Louisiana's **Chicot Aquifer** underlies many parishes with pending CCS (Class VI) applications, **pressure-front/brine displacement and leakage scenarios** described in EPA guidance and the literature are directly relevant to LA drinking-water protection. (Use your Chicot + Class VI overlay to show parish-level overlap). Environmental Protection Agency

3) Induced seismicity & caprock integrity

- **Illinois Basin–Decatur Project (IBDP)** — Multiple scientific studies and USGS monitoring document **injection-induced microseismicity** associated with CO_2 injection into the Mt. Simon saline formation. While generally small magnitude, these events are **direct evidence of stress/pressure changes** that, in worst cases, can compromise seals or open pathways if mismanaged. ScienceDirect+1
- **New geophysical interpretation (2025):** Time-lapse seismic analysis suggests **CO_2 plume migration along faults** at IBDP, underscoring the importance of **fault mapping and pressure management** to prevent upward migration. AGU Publications

4) Estuaries, rivers, lakes & wetlands—ecological pathways

- **Surface-water pathways** from **pipeline releases** (asphyxiant CO_2 clouds flowing downslope/into low areas) can threaten **wetland fauna and first responders**; Satartia's plume behavior illustrates terrain-driven pooling of dense gas. PHMSA
- **Leakage chemistry impacts** (if CO_2/brine reach shallow zones): acidification (carbonic acid) can decalcify shells, alter fish behavior/respiration, impair macroinvertebrates, and **mobilize trace metals**, with downstream loading into **estuaries**. Freshwater-focused experiments and models show reduced pH and increased dissolved ions/trace metals after CO_2 intrusion. ScienceDirect+1

5) Texas context: compliance and oversight concerns

- PHMSA and investigative reporting describe **significant enforcement conflicts at Texas fabrication/facility sites** tied to CO_2 pipeline construction and operator behavior toward inspectors (Denbury/Republic). While these are oversight process issues (not aquifer

damage), they raise **red flags about safety culture** in a state central to CO_2 pipeline build-out. Inside Climate News+1
- PHMSA maintains public **failure-investigation reports and enforcement dockets** for CO_2 pipelines, including Denbury's historic **Green Line leaks** and Satartia. Use these official repositories to show a **pattern of incidents** relevant to any Louisiana routing. PHMSA+1

6) What these case studies prove (and what they don't)

- **Proven, documented harms:**
  - **Acute human health impacts** from pipeline ruptures/releases (Satartia): loss of consciousness, hospitalizations, mass evacuation. PHMSA
  - **Regulatory violations at an active Class VI site** (ADM Decatur): EPA found **migration into unauthorized zones** and monitoring/response failures, prompting a multi-month **injection pause** and federal orders. Environmental Protection Agency+2Reuters+2
- **Scientifically demonstrated risks:**
  - **Groundwater chemistry degradation** if CO_2/brine reach USDWs (pH drop; metal mobilization) — repeatedly shown in peer-reviewed work and embedded in EPA's Class VI protective scheme. ACS Publications+1
  - **Injection-induced microseismicity and potential fault-reactivation pathways** (Decatur studies), emphasizing conservative site selection and pressure management near aquifers. ScienceDirect+1
- **What remains contested:**
  - Full-scale, long-duration CCS near **sole-source aquifers** (e.g., **Mahomet Aquifer** concerns around Decatur) remains controversial. EPA says no demonstrated impact to drinking water to date, but **ongoing enforcement and remedial actions** show **non-zero failure potential** that warrants a **precautionary approach** in aquifer-dependent regions like **Chicot**. Reuters+1

Direct links (for your website's citations box)

- **PHMSA failure report (Satartia/Denbury)** — official 25-MB PDF. PHMSA
- **PHMSA summary page for Denbury failure report** (HTML). PHMSA
- **Pipeline Safety Trust press note on Sulphur, LA CO_2 leak (Apr 2024).** Pipeline Safety Trust
- **Guardian coverage (Sulphur & Satartia context).** The Guardian
- **EPA: Class VI program (risk and protections).** Environmental Protection Agency
- **EPA Class VI guidance (technical).** Environmental Protection Agency
- **ADM enforcement – EPA proposed order (Sept 19, 2024).** Environmental Protection Agency
- **ADM enforcement – EPA final order (Aug 13, 2025).** Environmental Protection Agency

- **Reuters: ADM pauses injection after potential leak (Oct 2, 2024).** Reuters
- **Peer-reviewed: groundwater impacts from CO_2 leakage (Little et al.; Rossi et al.; Zhu et al.).** ACS Publications+2ScienceDirect+2
- **Microseismicity (USGS; Bauer et al.); fault-guided migration (2025).** U.S. Geological Survey Publications+2ScienceDirect+2
- **PHMSA 20-year incident trends (national).** PHMSA
- **TX oversight concern (Republic/Denbury inspector incidents).** Inside Climate News+1