ROCKY MOUNTAIN ASSOCIATION OF GEOLOGISTS
CCS Workshop
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Navigating Pore Space Leasing

Essential Provisions and Pitfalls for Effective Carbon Capture Utilization and Sequestration

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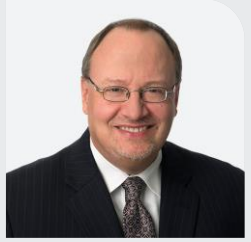
Presented by:



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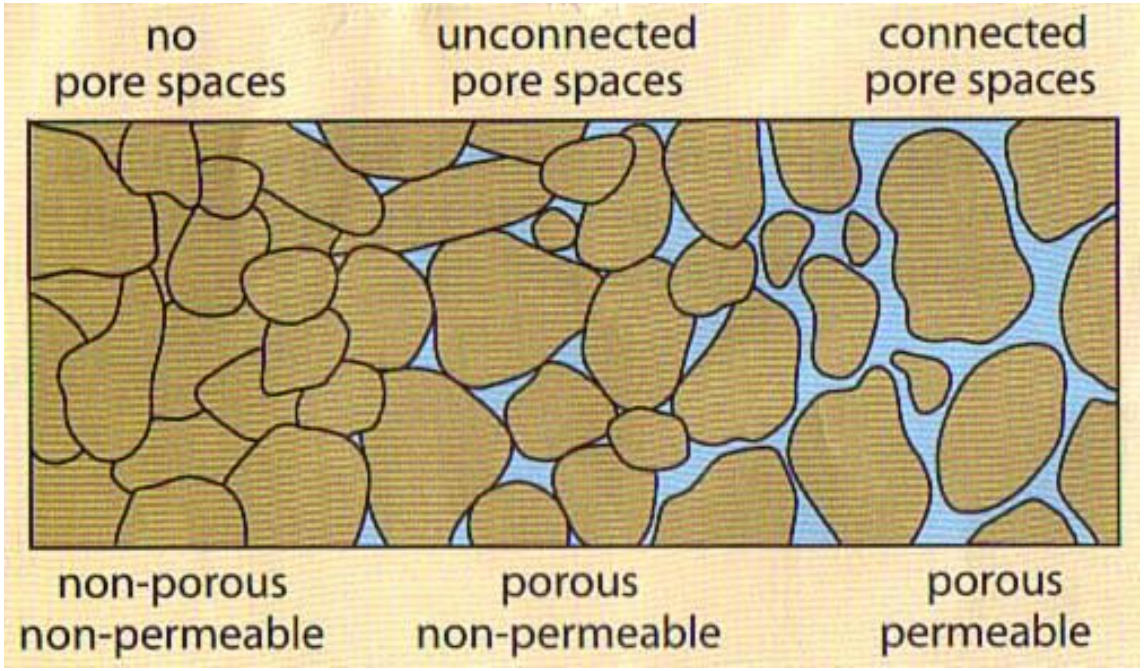
I. Introduction

A. What is pore space?

B. Not all pore space is created equal

1. Porosity
2. Permeability
3. Caprock/Containment



II. Who owns the pore space?

A. American vs. English Rule

1. Ad Coelum Doctrine (American Rule) (From the center of the earth to the heavens)
    a. Codified in many states
        1) LA Civ. Code Ant. 490
        2) North Dakota ND Cert. Code §47-31-03-04, §47-31-05
        3) Wyoming Wyo Stat. Ann §34-1-152
        4) Colorado HB 24-1346 – 2024 legislation confirms that pore space ownership resides in owner of the surface

II. Who owns the pore space?

2. Texas - law unclear due to conflicting case law (e.g. Mapco Inc. v. Carter, 808 S.W. 2d 262 (Tex App) rev'd on other grounds 817 S.W. 2d 686 (Tex. 1991)
   - Decision based on mineral-in-place ownership theory
   - Mapco conflicted with earlier Court of Claims decision (Emery v. United States, 412 F.2d 1319 (Ct.Cl. 1969) and subsequent Texas Sup Ct. and Court of Appeals cases that had cited Emery with approval
   - Other minority states: Kentucky case law unsettled
3. Other states:
   - Ohio – no case law
   - Pennsylvania – no case law
4. Federal lands:
   - Will depend on a reading of relevant land patents and granting statutes
   - Determination may also hinge on state property law

III. What other rights beyond the pore space will a CCUS developer need?

A. Surface Use Rights

B. Drill Through Rights

- May need waivers from mineral owners to prevent drill through rights by mineral owner or obtain drill through rights from mineral owner

  e.g. Calif. Low Carbon Fuel Standards Law requires a waiver of drill through right in order to qualify for the California Low Carbon Fuel Tax Credit

  e.g. Section 45Q tax credit recapture for CO2 leakage events

  Directional/slant drilling may obviate need for a waiver of drill through rights, depending on size and location of reservoir footprint

  If reservoir is large enough, directional drilling may not be practical and a no-drill right covenant may effectively preclude development of minerals beneath a CO2 sequestration reservoir

III. What other rights beyond the pore space will a CCUS developer need?

C. Use of Storage Reservoir

1. Conflicting Usage Rights between Mineral Estate Owner and Surface Owner

   E.g. Partially or wholly depleted oil fields

   Waivers

   a. Class VI UIC permitting requirements more stringent than Class II UIC permitting requirements

   b. CO2 corrosivity – may lead to increased costs of oil and gas pipeline drilling

D. Geophysical Issues

1. Class VI permits will require evidence that reservoir is of sufficient size, porosity or permeability to receive CO2, adequate caprock to show impermeability below and above the formations

   - Seismicity studies
   - Drilling/well logging test sites
   - Geo exploration

III. What other rights beyond the pore space will a CCUS developer need?

E. Geo-exploration rights are often reserved in favor of the owner of the mineral estate

- Are drilling and testing rights exclusive to the mineral owner or does surface owner have rights too?
- Can mineral estate owner exclude/prohibit others from geo exploration, even if not undertaken for oil & gas exploration purposes?
- Some mineral owners have argued so, e.g. Guynberg v. County of Northglenn, 793 P.2d 230, 234 (Colo. 1987)
- May need agreements between CCUS developer and mineral estate owner/lessee to conduct geophysical CCUS investigations
- Confidentiality provisions may be necessary to protect mineral estate owner

F. Permitting Rights

1. Land use – state, local, Federal
2. Environmental
3. EPA UIC Class VI Permits
4. Other – See Schedule 1

IV. The pore lease space

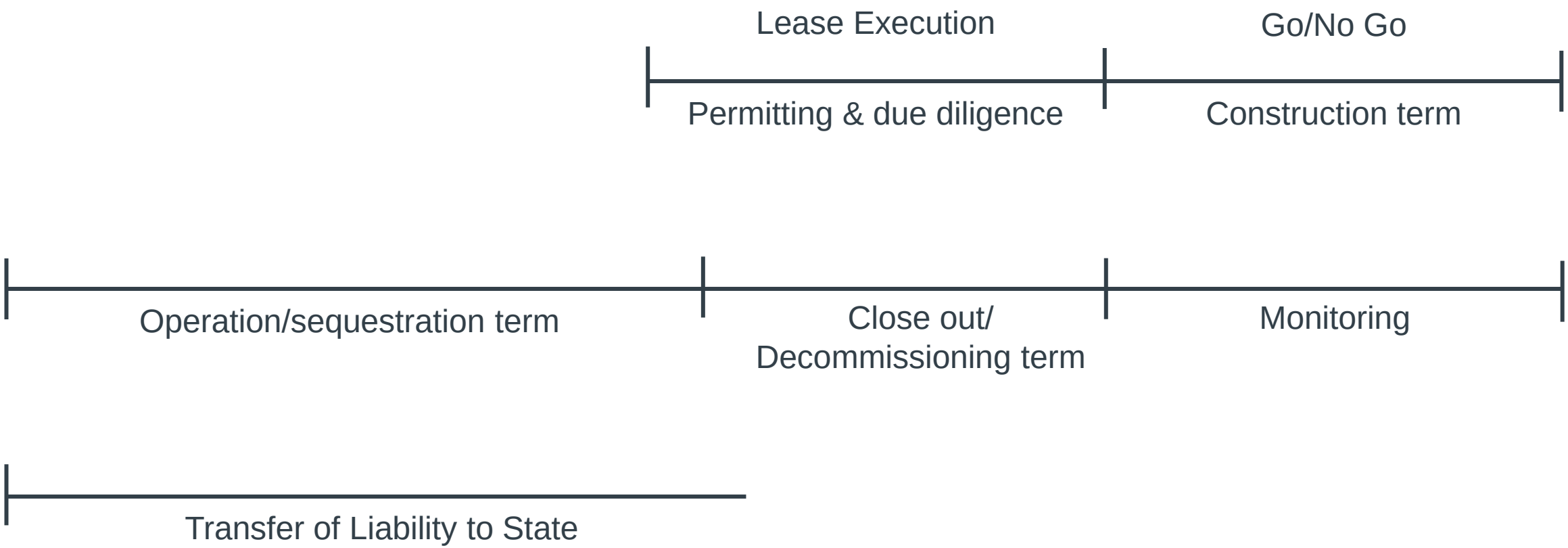
A. Description of Land
   1. Surface legal
   2. Depth/stratum description
      - Confirming title
        1) Title work
           - Surface
           - Mineral titles
        2) Survey
        3) Title Insurance?
        4) Waivers from 3d parties?
           - e.g. – neighbors, mineral estate owners or mineral lessees

IV. The pore lease space

- Required Appurtenances
  1) Access or other easements on the surface from
     A. Surface owner
     B. Neighboring Property Owners
  2) Subsurface easements from neighboring surface owners or mineral estate owners or mineral lessees

B. Term
1. Initial term for: due diligence, permitting
2. Construction Term
3. Operational Term (during CO2 injection)
4. Close out/monitoring and decommissioning Terms
5. Required Benchmarks/Milestones for each Term
   - Permitting approvals
   - Due diligence approvals

IV. The pore lease space



IV. The pore lease space

- Construction commencement and completion
- Minimum injection thresholds during an Operation Term to hold the lease?
- Decommissioning approvals

6. Required Benchmarks/Milestones for each Term
   - Duration
   - Fees
   - How exercised?
7. Rent for each term
   a. Bonus or Guaranteed payment up front?
      - For each term or during just at lease execution and due diligence/permitting term or also for other terms?
   b. During each term, how calculated – per acre, per ton of CO2 stored, tied to value of 45Q, tied to percentage of CCUS Developer's gross profit?

IV. The pore lease space

c. Rent Adjusters
   - Tied to change in value of 45Q credit?
   - Tied to change in CPI
   - What about 45Q recapture events – if rent tied to value of 45Q credit or CCUS gross profit, is there a clawback for 45Q recapture?
   - Should landowner be required to share in the downside if they share in the upside?
   - Other mechanisms?

8. Unitization/Pooling Issues
   a. Factor in impact on rent payment of pooling or unitization with neighboring property owners
   b. Colorado HB 24-1346 creates regime for unitization of “geologic storage units.”
      - Requires approval of 75% of land owners
9. Lease options - another way to tie up pore space at reduced cost.

IV. The pore lease space

10. Surface and Subsurface Damage and Restoration and Removal of Equipment
    a. Restoration of surface and repair of damage
    b. Ownership and removal of casing and other wellhead equipment
11. Ownership of 45Q Tax Benefits
12. Reserved Rights in favor of Owner
13. Legal Compliance Obligations – See Schedule 1
14. Reporting
15. Insurance
    a. Commercial General Liability (CGL)
        1) Owners Controlled Insurance Program (OCIP) or Contractor's Controlled Insurance Program (CCIP)?
            - Cost?
            - Enrollment requirements?

IV. The pore lease space

b. Builder's Risk Insurance
c. Pollution liability
d. 45Q Insurance
e. Terms
    1) Amounts
    2) Additional Insured Status
    3) Primary and Non-contributory
    4) Waiver of Subrogation
    5) Duration of Coverage
    6) Class UIC VI and other state and federal insurance requirements

16. Indemnity
    - property damage and personal injury
    - limit to third party claims only
    - survival
    - tie to insurance coverage?

IV. The pore lease space

17. Metering and Monitoring
    - Standards, e.g. ISO 27914; first Fed 2017-10 (for Class VI UIC)
    - API standards for measuring CO2
    - Seismicity monitoring
18. Ownership of CO2
19. Default and Remedies
20. Surrender
21. Subordination/Intercreditor Issues with Lenders
22. Miscellaneous/Boiler Plate

V. Post lease obligations

A. Monitoring/Reporting

B. Insurance/Indemnity

C. Transfer of Liability to State; requirements vary by state
   - 0-50 years, depending on state
   - States that accept liability typically require establishment of a storage fund to cover cost of ongoing monitoring and CO2 leaks
   - e.g. North Dakota
   - Wyoming

V. Post lease obligations

SOME STATES HAVE ADOPTED STATUTORY SCHEMES THAT ALLOW FOR RELEASE OF CCS OPERATOR LIABILITY AFTER SEVERAL DECADES OF CLEAN OPERATION

Statutes typically require:

- Payment into a state controlled CCS Reserve or Insurance Fund or maintenance of surety bonds
- On-going well monitoring
- Incident free operations for several decades after which Operator may be released by State from on-going liability
  - Release is not automatic
  - **Liability for future leaks/cleanup may be transferred to the State**
  - Examples
    - Wyoming: SF0047 – releases the operator's liability after a 10-year monitoring period
    - Alaska: HB 50 – 50 years after injection has concluded, an operator will be eligible to obtain a certification of completion, transferring title of the stored carbon dioxide to the owner of the pore space and transferring responsibility for long-term monitoring and maintenance to the state.
    - California: Carbon Fuel Standard (LCFS) CCS Protocol – project operators must monitor sites for 100 years to receive LSCFS credits.

VI. Potential 3rd party claims

- Analogies in Oil and Gas operations
  - Hydraulic fracking/EOR
  - Waste water disposal
  - Natural gas storage
- Other
  - Induced seismicity

Potential causes of action for carbon capture

A. Trespass

B. Nuisance

C. Negligence

D. Strict Liability

A. Trespass

- Intentional, unlawful, and damaging entry of a person or thing onto someone else's property
- Common cause of action in analogous cases
  - Once again, the **intent** element can pose a problem for plaintiffs
  - Trespass is also grounded in the right of possession and exclusion; courts often require a showing of **prior use** of the subsurface space
- Example cases – both sidestepping the issue:
  - *Environmental Processing Systems LC v. FPL Farming Ltd.*, 58 Tex. Sup. Ct. J. 293 (Tex. 2015): declined to address whether wastewater that migrates under neighboring land constitutes a trespass
    - Plaintiff bore the burden of proving that it had not consented to the intrusion and did not offer sufficient proof
  - *Briggs v. Sw. Energy Prod. Co.*, Briggs v. Sw. Energy Prod. Co., 245 A.3d 1050 (Pa. Super. Ct. 2020): did not rule in favor of landowner, but recognized that the "rule of capture" does not automatically shield an extractor from trespass liability
    - Key: No allegation by landowner of physical intrusion by defendant's operations

Plaintiff lawfully owned property

Defendant intentionally caused something to enter Plaintiff's property

The entry caused damaged to Plaintiff's property

B. Nuisance

Unreasonable

Interference

With the use and enjoyment of property

- Colorado defines private nuisance as an "unreasonable interference with the use and enjoyment of property"
- Under the plain language, this cause of action appears to fit well. However, many states require some showing of either **intent** or **negligence/recklessness**
- Example case: *Parr v. Aruba Petroleum, Inc. (Dallas County, Tex. 2014)*
  - Family ranch next to drilling operation alleged nuisance when subsurface activity lead to air pollution on the ranch, causing negative health effects for the family and their animals
  - **Reversed on appeal** – court found that Aruba Petroleum did not *intentionally* create the nuisance, and therefore was not liable
    - Insufficient evidence that Aruba intentionally engaged in the conduct that caused the intereference
  - But what about "negligently" caused nuisance? – *Crosstex N. Tex Pipeline, LP v. Gardiner* (Tex. 2008)

C. Negligence

Duty

Breach

Causation

Damages

- Catch-all tort claim – perhaps the best cause of action for plaintiffs, **provided they can prove some failure** on the part of the defendant
- **Potential carbon capture claim:**
  - Adjacent property owners owe a general duty of care to neighbors
  - Carbon sequesterers breach that duty by failing to adequately map/select the subsurface or failing to follow industry standards
  - Leakage or induced seismicity harms the property/plaintiff
  - Plaintiff proves a specific damages amount – e.g. cost to repair damage
- Example case: *Alford v. E. Ohio Gas Co.*,2014 Ohio 2134 (Ohio Ct. App. 2014)
  - Jury found for plaintiff on the theory of negligence after plaintiff showed excessive noise, vibration, and fumes on their property as a result of gas operations

D. Strict Liability

- Some activities deemed so dangerous (by statute or precedent) that liability will automatically attach for harm caused
  - Intent or fault not considered – "industry protocol" or "best practices" could be followed perfectly and liability would still attach
- "Ultrahazardous Activities"
  - Certain toxic chemicals, hazardous waste disposal, explosives and blasting
  - Restatement (Second) of Torts §520 considers six factors

Existence of a high degree of risk of some harm to person or property

Likelihood that resulting harm will be great

Inability to eliminate risk by exercise of reasonable care

Extent to which the activity is not a matter of common usage

Inappropriateness of the activity to the place where it is carried out

Extent to which its value to the community is outweighed by its dangerous attributes

D. Strict Liability (continued)

- Is injection ultrahazardous? Compare:
  - *Ely v. Cabot Oil and Gas Corp*., 38 F. Supp. 3d 518 (M.D. Pa. 2014): Declined to find fracking to be abnormally dangerous: applied Restatement factors and found that ”the exercise of due care can eliminate risks posed by drilling operations”
  - *Ladra v. New Dominion*, 2015 OK 53 (OK Supreme Court, 2015): Whether defendant’s wastewater injection operations alleged to have induced earthquakes were abnormally dangerous or merely negligent was a matter for the district court, and that dismissal plaintiff’s claims on the basis that the Oklahoma Corporation Commission had exclusive jurisdiction over oil & gas operations was error.

Defendant was engaged in an abnormally dangerous activity

Plaintiff was harmed by said activity

Defendant is liable regardless of intent or fault

VII. Other possible alternatives to pore space leasing

A. Purchase the pore space

B. Unitization/Pooling – e.g. California, Kentucky, Mississippi, Montana, Nebraska, North Dakota, Utah, West Virginia, Wyoming

- Several states have adopted pooling or unitization regimes for storage of CO2 to head off conflicts over pore space ownership and tort claims for underground migration of CO2 in COs sequestration projects
- Unitization schemes are similar to those found in oil and gas development:
  - Based on preservation of correlative rights – ownership in common of geologic reservoir lying underneath multiple tracts
  - Requires establishment of geologic storage units by the State and CCS operator's development of a plan for geologic storage of CO2 in the geologic storage unit
  - Typically requires approval of a minimum percentage of property owners (e.g. 70-80%) located in the affected geologic storage unit
- Provides for sharing of economic benefits paid by the CCS Developer for use of the geologic storage unit amongst the property owners located within the geologic storage unit.
- States that have adopted unitization statutes for CCS include: Alaska, North Dakota, California, Colorado, Indiana, Kentucky, Mississippi, Montana, Nebraska, Utah, West Virginia, Wyoming, Kansas, Colorado and Louisiana
  - e.g. Wyoming (Wyoming Oil and Gas Conservation Commission, after a public hearing, may approve a unitization plan if 75-80% of the pore space owners have provided their written consent)(HB 80)
  - e.g. Colorado (Permits the Energy And Carbon Management Commission to approve pooling agreements with 75% of the owners' signatures) (House Bill 24-1346)
  - e.g. Indiana (Pore space owners may voluntarily unitize, or do so with 70% of the ownership upon application to the Department of Natural Resources) (H.R. 1209)

VII. Other possible alternatives to pore space leasing

A. Purchase the pore space

B. Unitization/Pooling – e.g. California, Kentucky, Mississippi, Montana, Nebraska, North Dakota, Utah, West Virginia, Wyoming

C. Private Condemnation
   - Louisiana – La. Stat. 330:1108
   - Alabama – Ala Code §9-17-154

D. Federal Government?

(COMPLIMENTS OF INTEL PROVIDED BY RUDY KRUPKA & SHAWN LEYBA AT PURPLE LAND MANAGEMENT CO.)

VIII. Lessons learned thus far

A. Education is Paramount

- Use the CCUS developer's subsurface data with land mapping and ownership capabilities to produce a set of displays that are useful in explaining plans, show how the geology fits with the land. Vital for planning and implementing acquisitions of pore space leases.
- Educate Landowners.
- There is a huge PR role. It is vital that the landowners are treated fairly or the public perception will be negative.

B. Be proactive. Lay the proper groundwork with public officials first.

- County Commissioners
- Mayors
- Sheriffs
- State Representatives
- Farm Bureau – [Plays a huge role in the Midwest]

VIII. Lessons learned thus far

- Find the big landowners within the development area. Are they admired or hated? Figure out their reputation, educate them on the benefits of CCUS. Try to acquire them first (this is always standard guidance on acquiring oil and gas leases; get the key tracts first).
- Be cognizant of the fact that there is tension between “townies” and “counties.”
- Be prepared to address concerns of landowners:
  - What if something goes wrong and their land is ruined?
  - Water Pollution
  - Leaks: pipelines/facilities
    - Expect the Denbury Leak in Mississippi to be brought up.
      - People were severely injured
    - ADM monitoring well leaks – may be due to bad design and/or construction – jury still out
  - Explosions
    - “It’s a bomb!”
      - Point out that CO2 is inert. It is NOT explosive.

VIII. Lessons learned thus far

- Do they have a 250 gallon propane tank on their property? THAT is a bomb. And yet, they live with that, because it's SAFE.
- Damage to roads during construction / drilling due to heavier than customary loads.
- AND…

- Consider having a scientist present to discuss technical aspects when making public presentations.
- Show them the safety provisions built into the Class VI Well permitting process by the EPA and state regulators.
- Show them the monitoring 24/7 that has to take place.

D. Consider hiring right-of-way agents to buy your pore space leases

SCHEDULE 1

Legal requirements

1. Land use – state, local, Federal
2. Discharges in surface water, 33 US 31251 et. seq.
   - State Environmental Departments, EPA
3. Discharge of dredge or fill material into water of the U.S. – 404 permits US Army Corp of Engineers and relevant State Agencies, 33 USC §1344/33; 1341
4. Endangered Species
   - State Environmental or Natural Resources Dept., U.S. Fish & Wildlife Service, NOAA
5. Greenhouse Gas Reporting
   - State Environmental Dept., U.S. EPA
6. Air permits
   - State Environmental Dept., U.S. EPA
7. CO2 Pipeline Safety
   - State & Federal Depts. of Transportation

SCHEDULE 1

Legal requirements

8. Siting CO2 Pipelines
   - State Dept. of Transportation or PUC, Federal land right agencies
9. CO2 Injection
   - State or Federal government
   - Class UIC VI permitting (for CO2)
   - Class II – required for oil and gas production
10. Clean Air Act Operating Permit (Title V permit) – covers “major source” emissions, 42 U.S.C. §7661 et al., 4 CFR Part 70.71
11. Prevention of Significant Deterioration (PSD) Permits
    - Required for new major emitting sources
12. Separate Nonattainment NSR (NNSR) Permits are required for new stationary sources or major modifications in areas that do not meet 1 or more National Ambient Air Quality Standards, 42 USC §7470-7479; 42 USC §7501-7503; 40 CFR Parts 49.51 and 52

SCHEDULE 1

Legal requirements

13. RCRA – excludes CO2 as a pollutant if sequestered per a Class VI UIC Permit. 42 USC §6901, et seq., 40 CFR Part 261.4(h)
14. Clean Water Act, 33 USC §1251 et seq.
15. NEPA – National Environmental Policy Act – significant for projects on public lands, requires an environmental impact study (EIS) or an environmental assessment (EA)
16. National Historic Preservation Act, 36 CFR 800.3; 54 U.S.C. §300101 et seq.
17. Outer Continental Shelf Lands Act, 43 USC §1334
18. National Forest Management Act, 16 USC §1600 et seq.
19. Federal Land Policy and Management Act, 43 USC §§1701-1786
20. Mineral Lease Act, 30 USC §181, 30 USC §§351-359, 43 CFR Part 2800
21. Marine Protection Research and Sanctuaries Act, 16 USC §1431 et seq.; 38 UCS §1401 et seq.
22. Hazardous Materials Transportation Act, 49 USC §5101 et seq.; 49 CFR Parts 100-185
23. Fish & Wildlife Conservation Act – Dept. of Interior, 16 U.S.C. §2901-2912; 50 CFR Part 183; 16 USC §661-667d
24. Right of Way for Pipelines through Federal Lands - Dept. of Interior, 30 USC §185; 43 CFR Part 2880

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