

A Line in (and Under) the Sand

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Carbon capture and sequestration, or CCS, is a prominent carbon removal technology that has the unique advantage of being favored by both government and industry. CCS has emerged as a favored tool to mitigate climate change due to its potential to capture and store anthropogenic carbon dioxide, or CO₂, into deep, subsurface reservoirs.^[1] Unfortunately, it can also come with real property complexities.

As commercial-scale CCS projects are deployed, uncertainty in subsurface property rights and liabilities could stifle investment in, and the development of, this nascent industry.^[2] For lawyers who advise those contemplating or currently engaged in CCS operations in Texas, liability related to operating CCS facilities is front of mind. One of these risks is the scope of liability associated with subsurface migration of the “plume” of injected CO₂ into lands that are not owned or controlled by the developer.

Due to the natural properties of the sequestered CO₂, once injected, the plume will migrate.^[3] Thus, the risk profile for any CCS project should properly account for migration, which could result in trespass and nuisance claims. Although some of these risks have been effectively managed in the context of oil and gas activities using CO₂ that are reliant on the mineral estate’s dominance over the surface estate,^[4] none of these doctrines immunize sequestration operations from trespass liability associated with subsurface migration. As a result, the natural movement of sequestered CO₂ coupled with the fact that pore space is an interconnected matrix that is impossible to delineate with easily identifiable boundaries creates fertile ground for conflict.

In Texas, the right to inject and store substances in underground reservoirs generally belongs to surface owners. Specifically, “the surface estate owner, not the mineral estate owner, owns all non-mineral molecules of the land, i.e., the mass that undergirds the surface” estate,^[5] and “retains ownership and control of the subsurface materials...”^[6] While subsurface ownership is typically attributable to the surface estate, qualifications to this rule exist.^[7] In many instances, ownership rights to an underground reservoir are undivided and shared by numerous owners. When injected CO₂ migrates to where the pore space rights are not owned or controlled by the storage operator, this migration may constitute a trespass for which there may be liability. Once CO₂ is injected into a subsurface formation, the presence of the CO₂ can impede or preclude “competing” uses of the pore space, such as oil and gas extraction, natural gas storage, or waste disposal. Understanding the trespass risk associated with the subsurface migration of sequestered CO₂ and ways to mitigate that risk are essential to lawyers involved in

the development of Texas' CCS industry.

Identifying the Risk

“At its core, a trespass to real property is an unauthorized entry upon the land of another, and may occur when one enters—or causes something to enter—another’s property.” [8] Liability for a subsurface trespass that does not impede or interfere with an existing subsurface use remains unsettled in Texas. Despite several recent opportunities, the Supreme Court of Texas has not decided the issue of subsurface trespass for injected fluids in the context of produced water storage when that trespass did not impact any existing subsurface use. [9] Other jurisdictions have addressed this issue and have held that migration from an injection well will only amount to legal injury when the movement of injected fluids causes some degree of anticipated injury.

For instance, in *Chance v. BP Chemicals, Inc.*, the Supreme Court of Ohio held that a legal injury exists where subsurface migration of injectate interferes with a “reasonable and foreseeable use of the subsurface.” [10] Thus, although subsurface migration of injected substances is a technical trespass, showing a reasonable and foreseeable use of the subsurface could be a significant hurdle for a plaintiff not engaged in an existing subsurface use. This standard would likely be met, however, where the plaintiff’s existing subsurface uses are substantially harmed, such as where an injection operator’s activities damage or destroy another’s producing well, whether oil, gas, produced water, or otherwise. In fact, a recent case out of the 8th Court of Appeals in El Paso held that Texas law recognizes a trespass claim based on the unauthorized interference with a lessee’s right to develop minerals (i.e., an existing subsurface use) because of the migration of large amounts of produced water. [11]

Texas oil and gas practitioners might also recognize a similar version of this standard from *Lyle v. Midway Solar, LLC*. [12] Although *Lyle* involved the application of the accommodation doctrine to a dispute between a solar developer’s actual use of the surface and the mineral owners’ claimed interference with their speculative, future development of the mineral estate, the 8th Court of Appeals’ decision to affirm the dismissal of the mineral owners’ trespass claim on ripeness grounds hits many of the same notes as in *Chance*. Specifically, the court held that unless and until the mineral owners attempted to develop the mineral estate, usage of the surface estate was uninhibited by the accommodation doctrine. [13] In other words, any trespass claim was premature until the mineral owners actually sought to develop their minerals. If this were not the case, a mineral owner who undertakes no effort to develop the mineral estate could claim damages from any surface use that might hinder mineral exploration at any point in the future.

Assuming the standard established by *Chance* is adopted by Texas courts, excluding instances where an existing subsurface use is impaired, claims for trespass associated with subsurface CO₂ migration may not be viable because plaintiffs will be unable to show a “reasonable and foreseeable use of the subsurface” and interference with that use by the injected substances. Despite this current legal impediment, damages and injunctive relief associated with subsurface CO₂ migration remain a tangible risk because, as the market for pore space matures, it may become easier for landowners to show the unauthorized CO₂ is interfering with a reasonable and foreseeable use of their subsurface (e.g., CCS operations).

Minimizing the Risk

To conduct a sequestration project, an operator must have the real property rights to possess the premises where CO₂ will be injected. Determining the extent of surface and associated subsurface rights to acquire is a commercial consideration. Texas law provides some guidance, but certain risks remain that require consideration. To obtain a permit for the injection and geologic storage of CO₂ from the Railroad Commission of Texas, the applicant must “provide[] a signed statement that the applicant has a good faith claim to the *necessary and sufficient property rights for construction and operation of the geologic storage facility for at least the first five years after initiation of injection* in accordance with [16 TAC] § 5.203(d)(1)(A)...” [14] Thus, an injection operator should obtain, at least initially, the subsurface rights to the property covering the total area the injection operator forecasts will encompass the migration of the injectate plume for the first five years of injection. [15]

The area anticipated to cover the first five years of injectate migration, however, is the *minimum* quantum of subsurface rights required. A review of relevant Texas caselaw indicates that satisfying the minimal permit requirement may expose the injection operator to potential trespass and nuisance claims from neighboring surface and mineral estate owners outside the five-year migration radius because migration projections are not always accurate, and migration can exceed even the best modeling projections. [16]

Although determining the amount of additional property rights outside the five-year migration area is an important aspect of a CCS project’s risk profile, it is ultimately a commercial decision based on a combination of factors, such as project timing, acquisition costs, and migration modeling, among others. Considering the significant financial commitment required to construct and operate a sequestration facility and the uncertainties with plume modeling, best practices may dictate that subsurface storage rights be acquired for an area well beyond the minimal permit requirements.

Conclusion

Although the standard established by other jurisdictions such as in *Chance v. BP Chemicals, Inc.* represents favorable caselaw for the CCS industry and is believed by many academics to be the best standard to facilitate the effective and efficient use of pore space in the public interest, [17] Texas law on subsurface trespass when there is no competing subsurface use remains unsettled and current regulations surrounding implementation and operation of CCS projects provide minimal guidance on land rights necessary for underground CO₂ storage. Until either the Supreme Court of Texas or the Texas Legislature take the lead in clarifying the law in this area, CCS operators are left to make a multitude of commercial decisions. In the meantime, evaluating the potential risk of and ultimately adjudicating any claims for trespass and other torts associated with subsurface migration of CO₂ will be a case-by-case analysis that will likely involve the application of a variety of common law doctrines, including the accommodation doctrine, correlative-rights doctrine, and the prior appropriation doctrine, among others. [18]

[1] See Joseph A. Schremmer, *Getting Past Possession: Subsurface Property Disputes as Nuisances*, 95 Wash. L. Rev. 315, 322 (2020).

[2] *Id.*

[3] See Owen L. Anderson, *Carbon Sequestration: A Fresh Look at an Essential Tool in the War on Climate Change*, OGEL 3, 27 (2023).

[4] See *Lyle v. Midway Solar, LLC*, 618 S.W. 3d 857, 868 (Tex. App.—El Paso 2020, pet. denied) (recognizing that under Texas law, a mineral estate owner “has the right to use the surface to extract minerals, as well as those incidental rights reasonably necessary for the extraction”).

[5] *Dunn–McC Campbell Royalty Interest, Inc. v. Nat’l Park Serv.*, 630 F.3d 431, 441 (5th Cir. 2011) (apply Texas law); see also *Humble Oil & Ref. Co. v. West*, 508 S.W.2d 812, 815 (Tex. 1974) (characterizing the surface owner’s interest as ownership of the “reservoir storage space”).

[6] See *Lightning Oil Co. v. Anadarko E&P Onshore, LLC*, 520 S.W.3d 39, 47 (Tex. 2017); see also *Regency Field Servs., LLC v. Swift Energy Operating, LLC*, 622 S.W.3d 807, 820 (Tex. 2021) (“[T]he surface owner, and not the mineral lessee, owns the possessory rights to the space under the property’s surface....”); see also *West*, 508 S.W.2d at 815 (“[T]he property of [the surface estate owners] include[s] the geological structures beneath the surface.”).

[7] See Elizabeth L. McGinley et al., *Critical Issues For Carbon Capture Projects: Tax, Environmental, Land Rights, and Commercial Issues*, 68 FNREL-INST 7, 7-16 (2022).

[8] *Env’t Processing Sys., LLC. v. FPL Farming Ltd.*, 457 S.W.3d 414, 422 (Tex. 2015).

[9] *Id.* at 425 (declining to decide “whether deep subsurface wastewater migration is actionable as a common law trespass in Texas”); see also *FPL Farming Ltd. v. Env’t Processing Sys., LLC.*, 351 S.W.3d 306, 314–15 (Tex. 2011) (declining to decide “whether subsurface wastewater migration can constitute a trespass, or whether it did so in this case”); see also *Coastal Oil & Gas Corp. v. Garza Energy Trust*, 268 S.W.3d 1, 12-13 (Tex. 2008) (same); see also *Regency Field Servs., LLC*, 622 S.W.3d at 320 (Tex. 2021) (declining to decide whether subsurface migration of H2S can constitute a trespass to possessory rights because plaintiff claimed trespass to its nonpossessory rights as a mineral lessee).

[10] *Chance v. BP Chems.*, 670 N.E.2d 985, 992 (Ohio 1996) (finding no legal injury because mere speculation as to loss of property value is insufficient); see also *Baatz v. Columbia Gas Transmission, LLC*, 295 F. Supp. 776, 785 (N.D. Ohio 2018) (holding that “the Ohio Supreme Court has made it clear that subsurface trespasses are not actionable unless the invaded landowner can prove actual damage to the property or actual interference with the actual or foreseeable use of the land.”).

[11] See *Iskandia Energy Operating, Inc. v. SWEPI, LP*, No. 08-22-00103-CV, 2023 WL 7168241 at *14 (Tex. App.—El Paso October 31, 2023, no pet. h.).

[12] 618 S.W.3d 857.

[13] *Id.* at 875.

[14] 16 Tex. Admin. Code § 5.206(b)(10) (emphasis added).

[15] 16 Tex. Admin. Code § 5.203(d)(1)(A)(i)(I) (describing the variables used to calculate the necessary and sufficient property rights for construction and operation of the geologic storage

facility for at least the first five years after initiation of injection).

[\[16\]](#) See *Regency Field Servs.*, 622 S.W.3d 807 at 812 (although initial models predicted the injectate plume would take 40 years to migrate 2,220 feet, injectate was discovered 3,300 feet from injection well five years after injection began, and a revised modeling study showed the injectate may have crossed under the surface boundary of the neighboring tract as early as two years after injection began).

[\[17\]](#) See Anderson, *supra* note 3, at 29-31.

[\[18\]](#) *Id.*

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