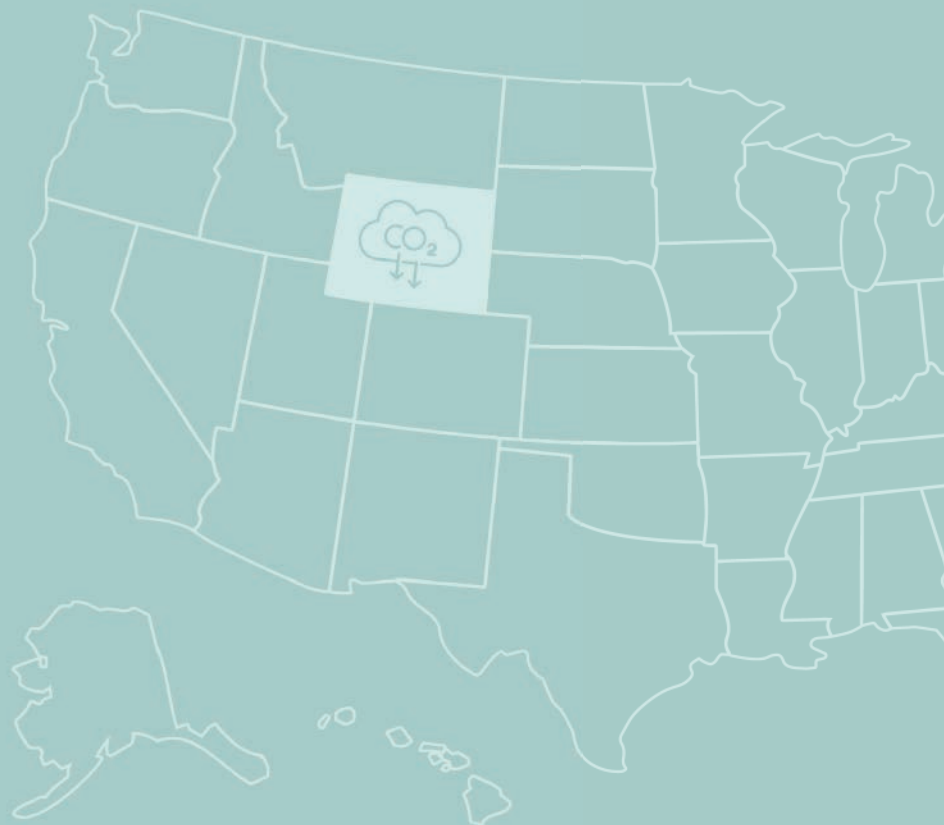




Center for Energy Regulation & Policy Analysis
School of Energy Resources

Wyoming's Class VI Regulations: Managing the Risk of CO₂ Storage



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Publication:



A publication
of the University of Wyoming School of Energy Resources
**Center for Energy Regulation and Policy
Analysis (CERPA)**

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Summary

This white paper summarizes how the Wyoming Department of Environmental Quality (“WDEQ”) regulates Class VI of the Safe Drinking Water Act’s (SDWA) Underground Injection Control (UIC) Program, including analysis of the most recent legislation addressing long-term stewardship of injected carbon dioxide (CO₂).

The purpose of the white paper is twofold:

1

First, it aims to serve as an **educational resource** for the general public regarding the safety of dedicated CO₂ storage.

2

Second, it is intended to **serve as a resource** for prospective carbon capture and storage (CCS) operators who may wish to learn more about the robust regulatory framework in place to support the state’s CCS industry.

Background

The concept of CCS dates back to at least the 1970s—tracing to the injection of carbon dioxide in Texas oil fields to boost oil recovery.¹ However, the national regulatory framework for dedicated CO₂ storage only began to take shape in the last decades. On December 10, 2010, pursuant to the federal SDWA, the U.S. Environmental Protection Agency (“EPA”) published final regulations for UIC Class VI wells—a new well class within of the UIC program designed to facilitate the injection and permanent storage of CO₂.² Those regulations, which took effect on January 10, 2011, are codified in subpart h of part 146 of Title 40 of the Code of Federal Regulations (“CFR”). EPA has separately published extensive guidance documents for the program.

Another significant federal development for the CCS industry occurred on January 3, 2014, when EPA conditionally excluded carbon dioxide (“CO₂”) streams from the definition of “hazardous waste” under the Resource Conservation &

Recovery Act (“RCRA”).³ RCRA governs EPA’s handling of “hazardous waste from cradle to grave” and imposes strict requirements for the generation, transportation, treatment, and storage of waste streams deemed hazardous.⁴ At the same time CO₂ is a valuable commodity with numerous manufacturing applications, it was historically characterized as a waste product, particularly when emitted as a byproduct.⁵ The 2014 rulemaking arose in an effort by EPA to clarify concerns related to the safety, commodity value, and non-hazardous classification of certain CO₂ streams, finding that “that the management of these CO₂ streams does not present a substantial risk to human health or the environment,” rendering regulation pursuant to RCRA’s hazardous waste regime unnecessary.⁶ The final rule published in 2014 thus exempts CO₂ streams from potentially burdensome RCRA requirements, provided those streams are: (1) captured from emission sources; (2) injected via Class VI wells; and (3) meet certain other conditions.⁷

¹ *A Brief History of CCS and Current Status*, INTERNATIONAL ENERGY AGENCY GREENHOUSE GAS R&D PROGRAMME, https://ieaghg.org/docs/General_Docs/Publications/Information_Sheets_for_CCS_2.pdf (last visited January 17, 2024).

² 75 Fed. Reg. 77230 (2010).

³ 79 Fed. Reg. 350 (2014).

⁴ *Summary of the Resource Conservation and Recovery Act*, U.S. ENVTL. PROT. AGENCY, [https://www.epa.gov/laws-regulations/summary-resource-conservation-and-recovery-act#:~:text=The%20Resource%20Conservation%20and%20Recovery%20Act%20\(RCRA\)%20gives%20EPA%20the,and%20disposal%20of%20hazardous%20waste](https://www.epa.gov/laws-regulations/summary-resource-conservation-and-recovery-act#:~:text=The%20Resource%20Conservation%20and%20Recovery%20Act%20(RCRA)%20gives%20EPA%20the,and%20disposal%20of%20hazardous%20waste) (last visited January 17, 2024).

⁵ Jada F. Garofalo & Madeleine Lewis, *Sources to Sinks: Expanding A National CO₂ Pipeline Network*, 50 ENVTL. L. REP. (ELI) 10057, 10057 (2020).

⁶ *Id.* at 350–51. The final rule was codified at 40 C.F.R. § 261.4(h).

⁷ 79 Fed. Reg. 350 (2014). For additional analysis, see Wesley Dyer, *Waste Management vs. Climate Mitigation: How CO₂ Sparked a Clash of Environmental Values*, 33 PACE ENVTL. L. REV. 76 (2015).

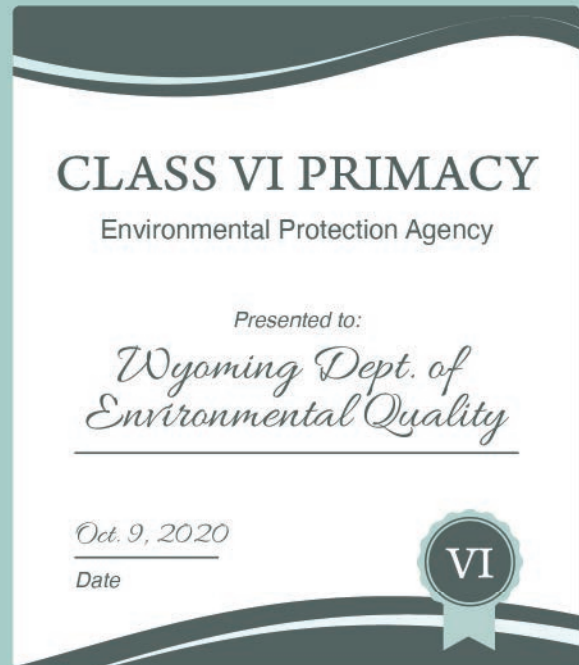
Wyoming has been and continues to be one of the leaders in CCS regulation, with legislation dating back to 2009.⁸ Following an open process with WDEQ and the public, WDEQ officially promulgated new CCS-relevant regulations in its Water Quality Rules in 2010, later amended in 2016. On January 31, 2018, WDEQ became one of the very first state agencies to file an application with EPA for state Class VI primacy.⁹ WDEQ already had primacy for UIC Classes I, III, IV and V, while the Wyoming Oil & Gas Conservation Commission (“WOGCC”) previously received primacy for UIC Class II.¹⁰ As part of the primacy process, WDEQ published proposed modifications to its Class VI regulations on September 13, 2019. Primacy programs are established pursuant to Section 1422 of the SDWA which requires applicants to meet EPA’s minimum requirements for UIC programs, including a **demonstration that the state has:**

1 jurisdiction over underground injection;

2 regulations that meet the federal requirements for 1422 programs; and

3 the necessary administrative, civil, and criminal **enforcement penalty remedies** pursuant to 40 C.F.R. § 145.13 authorities.¹¹

EPA approved WDEQ’s application for Class VI primacy on October 9, 2020,¹² making it the second state to achieve this designation (North Dakota was the first). WDEQ published its updated final Class VI regulations on October 5, 2021.¹³ WDEQ’s Class VI website contains forms, guidance, regulations and other valuable information for permit applicants¹⁴, including the below flowchart that describes the permitting process.



⁸ In 2009, Wyoming House Bill 90 (HB90) established the first permitting requirements for carbon sequestration under Wyoming Statute § 35-11-313. HB90 authorized the state geologist, oil and gas supervisor, and the WDEQ director to convene a working group to develop an appropriate bonding procedure and other appropriate financial assurance mechanisms.

⁹ 85 Fed. Reg. 64053 (2020).

¹⁰ 47 Fed. Reg. 52434 (1982).

¹¹ : 75 Fed. Reg. 77241 (2010).

¹² 85 Fed. Reg. 64053 (2020) (available at <https://www.govinfo.gov/content/pkg/FR-2020-10-09/pdf/2020-20544.pdf>).

¹³ *WDEQ Regulations, Water Quality, Chapter 24: Class VI Injection Wells and Facilities Underground Injection Control Program (2021)*. These regulations are available for download from the “Wyoming Administrative Rules” website. <https://rules.wyo.gov/>.

¹⁴ *See Class VI*, WYO. DEPT. ENV’T QUAL. (last visited January 17, 2024), <https://deq.wyoming.gov/water-quality/groundwater/uic/class-vi/>.

Figure 1: Wyoming UIC Class VI Permitting Process

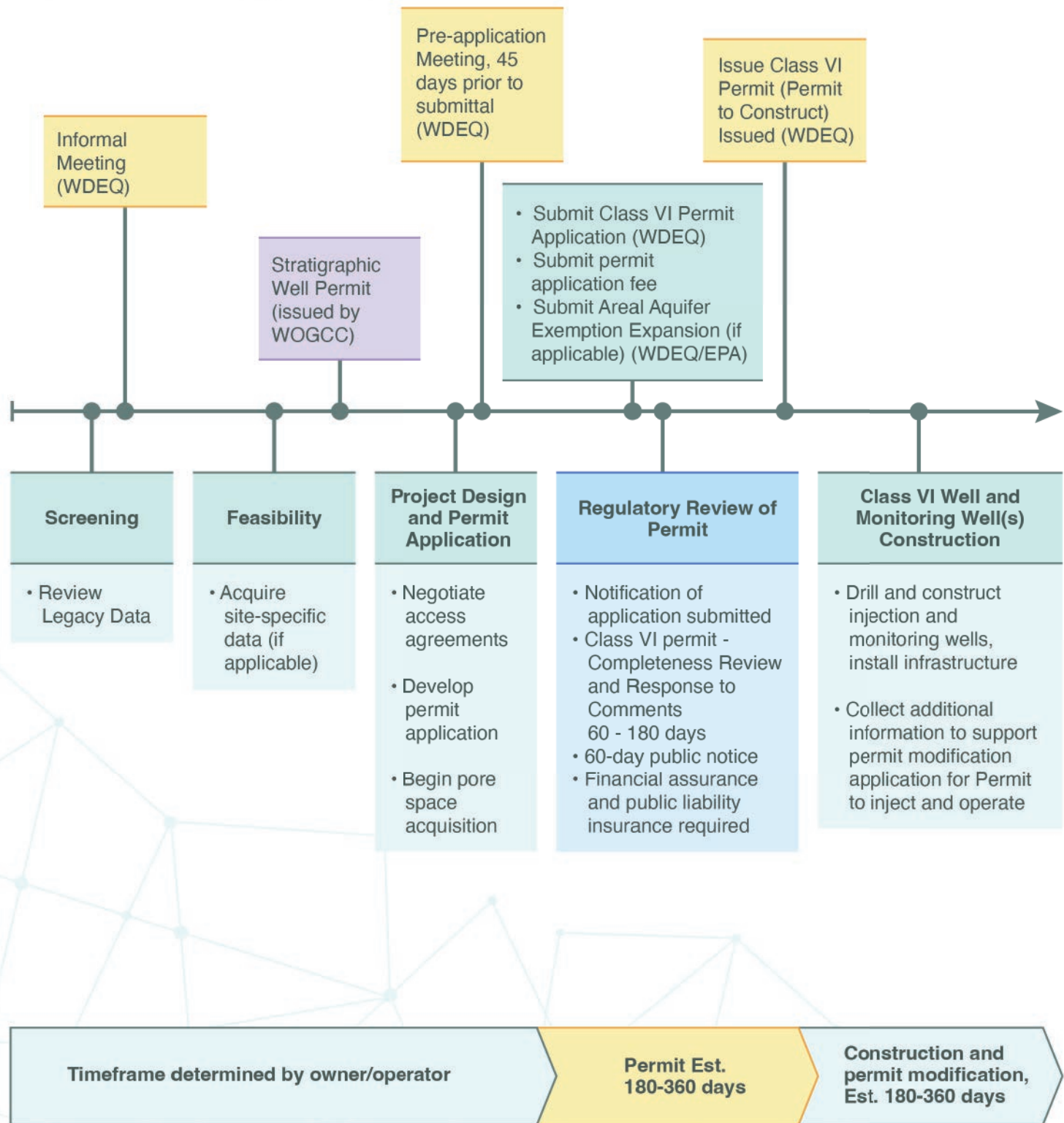
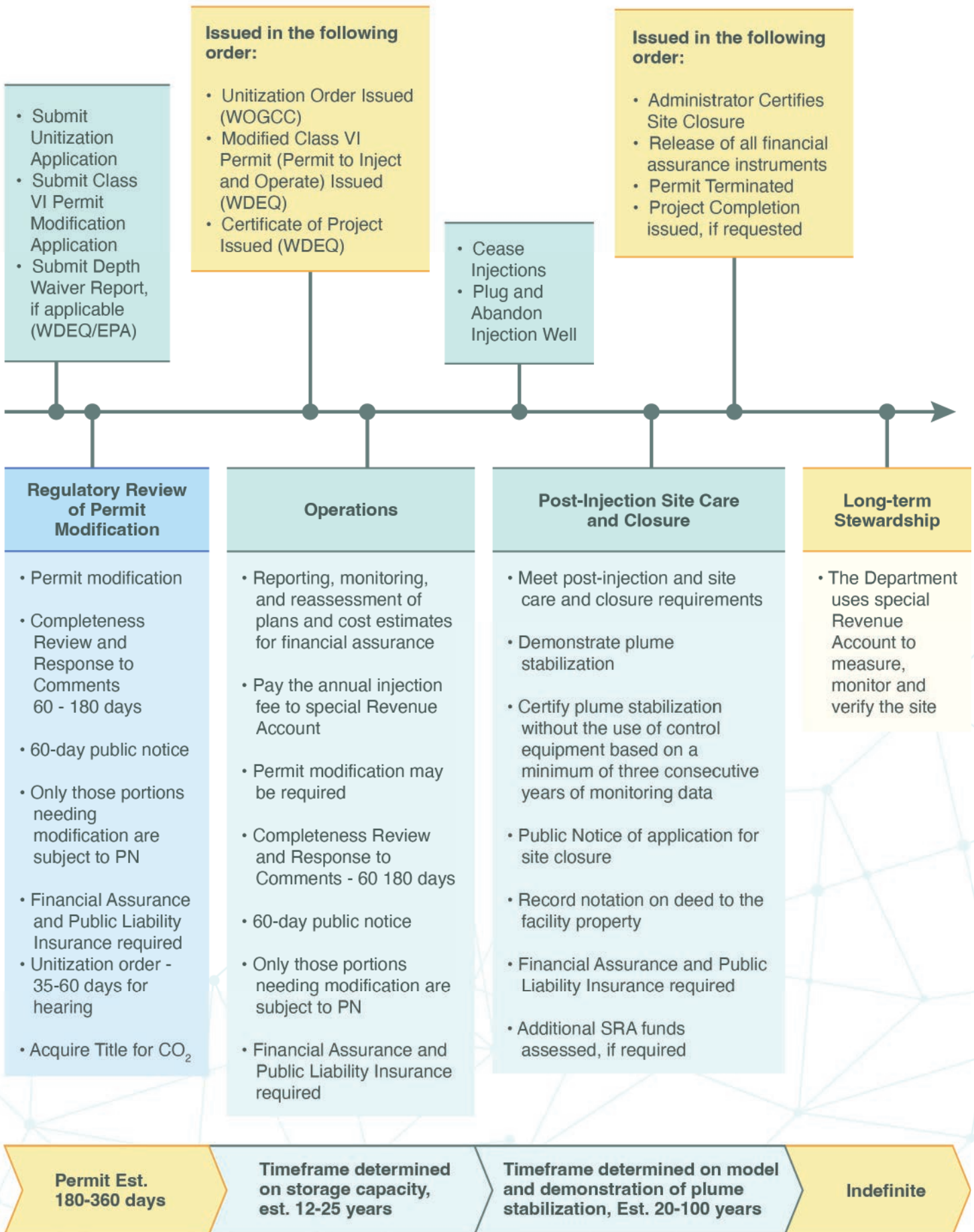


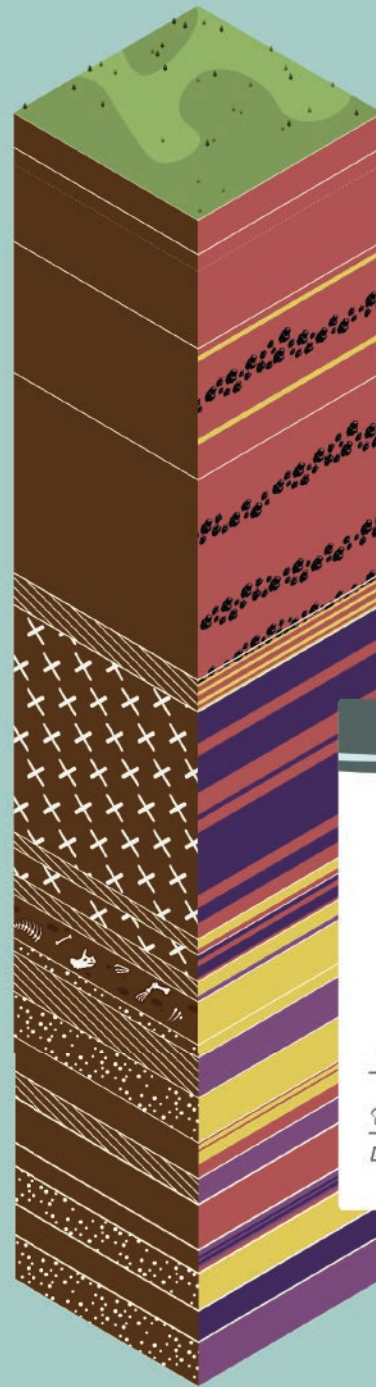
Figure 1: WDEQ Class VI Permitting Process, available on WDEQ’s website. This process is complex and can and will change as the UIC Class VI permitting program evolves in Wyoming and across the country. In addition, the process outlined on the WDEQ website is arranged and color-coded to assist UIC Class VI applicants in understanding regulatory versus the owner/operator of the UIC Class VI well responsibilities within the process. However, this process is discussed in detail during informational or pre-application meetings, and any prospective Class VI applicants should work collaboratively with WDEQ to facilitate an efficient permitting process.

Note: Other items are required for permit and site closure per Wyo. Stat. 35-11-313 and Water Quality Rules Chapter 24



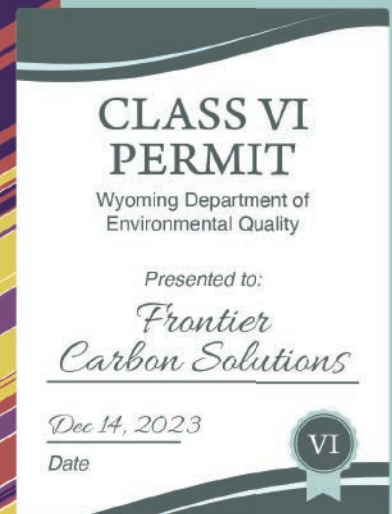
WDEQ issued Wyoming's first three Class VI permits on December 14, 2023 to **Frontier Carbon Solutions for the construction and drilling of three deep wells west of Green River as part of the Sweetwater Carbon Storage (SCS) Hub**, led in partnership with the UW School of Energy Resources.¹⁵ Operation of the wells, including the injection of CO₂, will not be authorized until the permits are modified based on site-specific data collected during the drilling and testing of the wells. The SCS wells will provide a carbon management system for key industries across the Mountain West. Other Class VI applications are pending with WDEQ, including six from Tallgrass Energy.¹⁶ WDEQ has also denied at least one permit.¹⁷

Addressing risk management of CO₂ dedicated storage is an important component of Wyoming's comprehensive statutory and regulatory framework for CCS. On March 11, 2022, the Wyoming Legislature passed Senate File 0047 ("SF47"), an act that allows the state to accept responsibility for long-term stewardship of the storage site, provided the operator meets certain requirements.¹⁸ Governor Gordon signed SF47 into law on March 21, 2022.¹⁹



Sweetwater Carbon Storage Hub

Green River, Wyoming



¹⁵ *Wyoming issues first carbon sequestration permits. National leaders take note*, CASPER STAR TRIBUNE (updated December 22, 2023), https://trib.com/news/state-regional/business/carbon-storage-sequestration-permits-energy/article_fceb40a6-9b9f-11ee-b6f1-5be731987e16.html.

¹⁶ See WDEQ, *supra* note 13.

¹⁷ *Id.*

¹⁸ 2022 Wyoming Laws Ch. 101 (S.F. 47), changes made by SF47 are codified at WYO. STAT. ANN. §§ 35-11-318– 319 (West 2024).

¹⁹ After enactment into law, SF47 was the subject of a hearing by the Joint Minerals, Business & Economic Development Committee on April 25, 2022. <https://www.youtube.com/watch?v=dhuFt9lBkJc>. This white paper takes into account additional information about the new law that was presented at that hearing. Although SF47 technically sits outside of Wyoming's Class VI regulatory program for CO₂ injection, an owner or operator of a Class VI well must meet all permit requirements for closure and post-closure care under Class VI and have their permit terminated before proceeding to long-term stewardship.

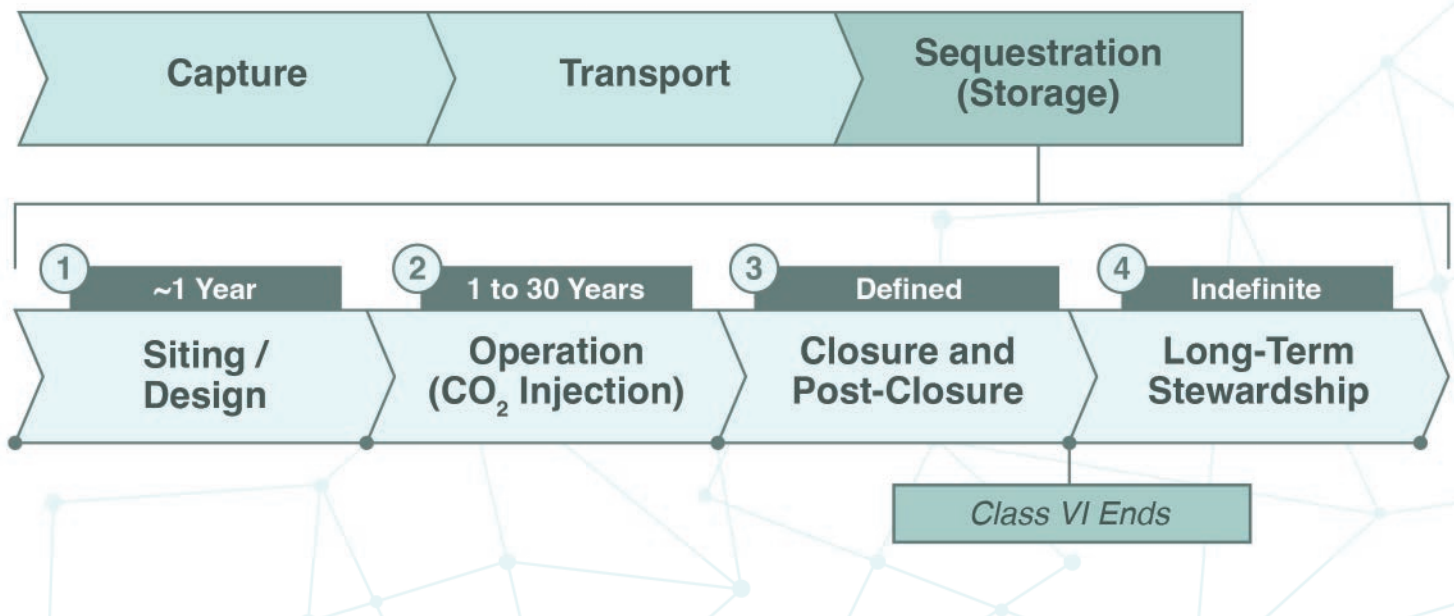
Risk Management Under Wyoming Law & Regulation

Background on Project Phases

Geologic storage projects can be divided into several time-sequenced phases (see Figure 1 below) that, individually and collectively, can span decades. These phases typically are:

- 1** siting/design, which can last one year or more.
- 2** operations/CO₂ injections, which can last several decades.
- 3** closure and post-closure, which continues until plume stabilization is achieved as defined under Wyoming Statute § 35-11-313. The soonest an operator may apply for transfer of liability and receive a certificate of project completion is 20 years after the end of carbon dioxide injections. This period is also sometimes known as the “Post Injection Site Care” or the “PISC” period.
- 4** long-term stewardship, which lasts for an indefinite period of time.²⁰

Figure 1 | Phases of a Geologic Storage Project²¹



²⁰ From a regulatory perspective, Wyoming’s Class VI regulations state that the phases of a “geologic sequestration project” are: (1) permitting/characterization; (2) testing and monitoring; (3) operations, including injection and well-plugging; (4) post-injection site care; and (5) emergency and remedial response. WYO. ADMIN. CODE 020.0011.24 § 26 (West 2024).

²¹ See Trabucchi, C. & Patton, L. *Storing Carbon: Options for Liability Risk Management, Financial Responsibility*, Fig. 1., 170 BUR. NATL. AFFAIRS WORLD CLIMATE CHANGE Report 1, 8 (September 3, 2008).

Risk Management Prior to the Long-Term Stewardship Phase

Consistent with EPA’s Class VI program, WDEQ’s Class VI regulations comprehensively identify and thereafter manage risks proactively throughout the storage phase, with all data and permittee actions requiring approval by WDEQ. The focus of the Class VI program is on risk management in the area of review (“AOR”).²² Subject to WDEQ approval, the AOR must first be extensively delineated based upon extensive computational modeling that meets stringent regulatory requirements. Then, “corrective action”²³, if required, must be conducted within the AOR.²⁴ These intertwined actions take the form of an “[AOR] and corrective action plan” that must be initially proposed, maintained, reviewed and updated at least every two (2) years during the project’s operational life and at least every five (5) years during the post-injection site care period (until site closure).²⁵

AOR and Corrective Action Plan

During Project’s Life:

Updated at
least every

2 years

Post-Injection Site Care:

Updated at
least every

5 years

Class VI wells must meet **minimum siting criteria** to ensure that CO₂ injections occur in areas with a “suitable geologic system” that is comprised of:

1 “[a]n injection zone of sufficient areal extent, thickness, porosity, and permeability to **receive the total anticipated volume** of the [CO₂] stream; and

2 [c]onfining zones that are free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected [CO₂] stream and displaced formation fluids and **allow injection** at proposed maximum pressures and volumes **without initiating or propagating fractures** in the confining zones or causing non-transmissive faults to become transmissive.”²⁶

²² The AOR means the “subsurface three-dimensional extent of the [CO₂] plume, associated pressure front, and displaced fluids, as well as the overlying formations, and surface area above that delineated region.” WYO. ADMIN. CODE 020.0011.24 § 2(c).

²³ “Corrective action” means the “use of Administrator-approved methods to ensure that wells within the [AOR] do not serve as conduits for the movement of fluids into geologic formations other than those authorized under the permit.” *Id.* § 2(q).

²⁴ *Id.* § 13.

²⁵ *Id.* §13(c). The proposed AOR and corrective action plan must be included in the original permit applications. *Id.* §10(b) (xxv).

²⁶ *Id.* § 12(a).

The siting criteria are based upon extensive **site characterization data** that are required to be documented in the Class VI permit application. Those data include, but are not limited to:

- 1 An comprehensive suite of baseline information about the proposed storage site, including but not limited to: (1) maps of the proposed injection and confining zones (isopach, contour and geologic cross-sections); (2) known or suspected faults; (3) seismic history; (4) extensive, itemized data “sufficient to demonstrate the effectiveness of the injection and confining zones”; (5) geomechanical data; and (6) geologic and topographic maps and cross-sections “illustrating regional geology, hydrogeology, and the geologic structure of the local area[.]”;²⁷
- 2 A list and description of all wells and other drill holes in and within one (1) mile of the AOR, including those that penetrate the confining or injection zone;²⁸
- 3 Detailed data regarding underground sources of drinking water (“USDWs”), water wells and springs in the AOR;²⁹
- 4 Baseline geochemical data on subsurface formations, including all USDWs in the AOR;³⁰
- 5 Proposed operating data (e.g., volumes, pressures, source, chemical analysis, physical characteristics, injection duration) regarding the CO₂ stream to be injected;³¹
- 6 Data regarding the compatibility of the CO₂ stream with fluids in the injection zone and minerals in both the injection and confining zones;³²
- 7 Proposed formation testing program, proposed stimulation program and proposed procedure that outlines steps to conduct injection operations;³³ and
- 8 Wellbore schematics of the subsurface construction details and the surface wellhead construction of the injection and monitoring wells;³⁴

²⁷ *Id.* § 10(b)(xi).

²⁸ *Id.* §§ 10(b)(xii), (xiii).

²⁹ *Id.* §§ 10(b)(xiv), (xv).

³⁰ *Id.* § 10(b)(xvi).

³¹ *Id.* § 10(b)(xvii).

³² *Id.* § 10(b)(xviii).

³³ *Id.* §§ 10(b)(xix), (xx), (xxi).

³⁴ *Id.* § 10(b)(xxii). Class VI wells must be designed, constructed and completed to satisfy rigorous standards. *Id.* §14. During the drilling and construction of a Class VI injection well, the owner or operator must “run appropriate logs, surveys, and tests to determine or verify the depth, thickness, porosity, permeability, lithology, and salinity of any formation fluids in all relevant geologic formations to ensure that the well meets [the construction requirements] and to establish accurate baseline data against which future measurements may be compared.” *Id.* §17. Once constructed and evaluated in accordance with the above, each Class VI well separately must satisfy rigorous operational requirements. *Id.* §18. Finally, each Class VI well must satisfy stringent “mechanical integrity” requirements, with “mechanical integrity” meaning: (a) no significant leak in the casing, tubing, or packer; and (b) no significant fluid movement into a USDW through channels adjacent to the injection wellbore. *Id.* §19.

WDEQ’s Class VI regulations also require the owner/operator to prepare and maintain numerous plans, each of which, in turn, is designed to manage project risks. Those plans include the:

- “[AOR] and corrective action plan” discussed above;
- Testing and monitoring plan;³⁵
- Injection and monitoring well-plugging plan;³⁶
- Post-injection site care and site closure plan;³⁷ and
- Emergency and remedial response plan.³⁸

Site risks are managed through financial responsibility obligations that are borne by the owner/operator of the Class VI well. WDEQ’s Class VI regulations state that “[o]wners or operators of Class VI wells shall establish, demonstrate and maintain financial responsibility for all applicable phases of the geologic sequestration project, including complete site reclamation in the event of default.”³⁹

Financial responsibility, in turn, is based upon a financial assurance cost estimate that the Class VI owner/operator must prepare and update annually.⁴⁰ The regulations impose stringent requirements regarding how that estimate is to be prepared and what it includes. Pursuant to WDEQ’s Class VI regulations, financial responsibility must address:

- 1 performing corrective action;
- 2 plugging injection wells;

- 3 post-injection site care and site closure;
- 4 testing and monitoring; and
- 5 emergency and remedial response.

Financial responsibility also must consider the following events:

- 1 contamination of underground sources of water, including USDWs;
- 2 mineral rights infringement;
- 3 single large-volume release of CO₂ that impacts human health and safety or that causes ecological damage;
- 4 low-level leakage of carbon dioxide to the surface that impacts human health and safety or that causes ecological damage;
- 5 storage rights infringement;
- 6 property and infrastructure damage, including changes to surface topography and structures;
- 7 entrained containment releases of contaminants other than CO₂;
- 8 accidents and unplanned events;
- 9 well capping and permitted abandonment; and
- 10 removal of aboveground facilities and site reclamation.⁴¹

WDEQ’s Class VI regulations additionally require owners/operators to “consider” a “Risk Activity Table” when making these financial assurance cost estimates.⁴² The Risk Activity Table appears below in Figure 2.

³⁵ *Id.* § 20.

³⁶ *Id.* § 23.

³⁷ *Id.* § 24(a).

³⁸ *Id.* § 25.

³⁹ *Id.* § 26.

⁴⁰ *Id.* § 26(b).

⁴¹ WYO. ADMIN. CODE 020.0011.24 § 26 (West 2024).

⁴² *Id.* § 26(b)(iii).

Figure 2 | WDEQ's Class VI "Risk Activity Table"⁴³

Major Risk (Feature, Event, or Process)	
1	Mineral Rights Infringement (Trespass)
1.1	Leakage migrates into mineral zone or hydraulic front impacts recoverable mineral zone; causes may include plume migration different than modeled.
1.2	Post-injection discovery of recoverable minerals.
1.3	New technology (or economic conditions) enables recovery of previously uneconomically recoverable minerals.
1.4	Act of God (e.g. seismic event).
1.5	Formation fluid impact due to CO ₂ injection.
1.6	Address also contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4.
2	Water Quality Contamination
2.1	Leakage of CO ₂ outside permitted area.
2.2	Leakage of drilling fluid contaminates potable water aquifer.
2.3	Rock/acid water (i.e. geochemistry) interaction contaminates potable water by carryover of dissolved contaminants.
2.4	Act of God (e.g. seismic event).
2.5	Formation fluid impact due to CO ₂ injection.
2.6	Address also contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4.
3	Single Large Volume CO₂ Release to the Surface - Asphyxiation/Health/Ecological
3.1	Overpressurization (i.e. induced).
3.2	Caprock/reservoir failure.
3.3	Well blowout (e.g. at surface or bore failure below ground), includes monitoring wells - Causes could include seal failure (e.g. well, drilling or injection equipment).
3.4	Major mechanical failure of distribution system or storage facilities above ground or below ground (i.e. near the surface).
3.5	Orphan well failure (e.g. well not identified prior to injection).
3.6	Sabotage/Terrorist attack (e.g. on surface infrastructure).
3.7	Act of God (e.g. major seismic event).

⁴³ *Id.* Appx. A.

4 Single Large Volume CO₂ Release to the Surface - Asphyxiation/Health/Ecological

- 4.1 Overpressurization (i.e. induced).
- 4.2 Caprock/reservoir failure (e.g. Plume migrates along fault line/fissure to surface).
- 4.3 Incomplete geological seal (e.g. inaccurate characterization of subsurface geology).
- 4.4 Well seal failure (e.g. well, drilling or injection equipment) including monitor wells.
- 4.5 Mechanical failure of distribution system or storage facilities above or below ground (e.g. near surface).
- 4.6 Orphan wells (e.g. well not identified prior to injection).
- 4.7 Induced seismicity leading to leakage.
- 4.8 Act of God (e.g. seismic event).

5 Storage Rights Infringement (CO₂ or other entrained contaminant gases) - Form of Mineral Rights Infringement

- 5.1 Leakage migrates into adjacent pore space; causes may include plume migrates faster than modeled.
- 5.2 Post-injection decision (e.g. due to new technology or changed economic conditions) to store gas in adjacent pore space.
- 5.3 Acts of God affecting storage capacity of pore space.
- 5.4 Formation fluid impact due to CO₂ injection.
- 5.5 Will also require primary contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4.

6 Modified Surface Topography (subsidence or uplift) Resulting in Property/Infrastructure Damage

- 6.1 Induced Seismicity - Pressure from geochemistry induced reactivation of historic fault or dissolution of material caused by subsidence.
- 6.2 Formation fluid impact due to CO₂ injection.

7 Entrained Contaminant (Non-CO₂) Releases

- 7.1 Change in CO₂ composition/properties (e.g. concentration of contaminate in CO₂ supply increases).
- 7.2 Microbial Activity initiated by injection process or composition.
- 7.3 Will also require primary contributing causes 3.1, 3.2, 3.3, 3.5, 4.3, and 4.4.

8 Accidents/Unplanned Events (Typical Insurable Events)

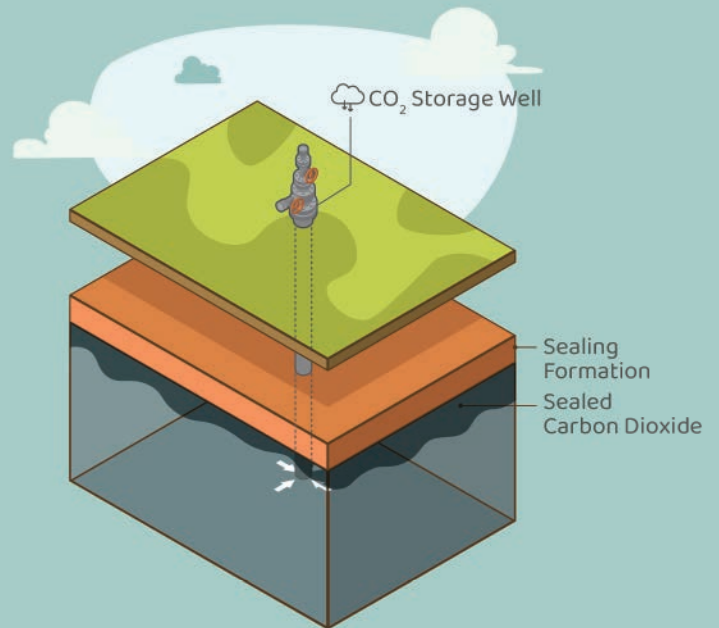
- 8.1 Surface infrastructure damage.
- 8.2 Saline water releases from surface storage impoundment.

The owner/operator of the Class VI well must post, maintain, update (as necessary) and appropriate qualifying financial instrument(s) in an amount sufficient to cover the amount(s) specified in the financial assurance cost estimate.⁴⁴

In addition to addressing financial responsibility as discussed above, WDEQ's Class VI regulations separately require owners/operators to obtain and maintain "public liability insurance" that meets certain minimum coverage requirements until WDEQ "certifies that plume stabilization has been achieved".⁴⁵

Risk Management During the Long-Term Stewardship Phase

SF47 adds to Wyoming's existing robust statutory and regulatory regime for CCS/CCUS by creating a framework for the long-term stewardship of CO₂ in geologic storage. Because SF47 amends several provisions of prior Wyoming CCS/CCUS laws, SF47 is best summarized and assessed in the complete context of those laws, as now amended, as opposed to being examined in isolation. As amended by SF47, **Wyoming's CCS/CCUS statutory regime:**



- 1 Specifies who owns the pore space (Wyoming Statute § 34-1-152 (2021));
- 2 Stipulates that all CO₂ is presumed to be owned by the injector (id. § 34-1-153(a) (as amended)), subject to SF47's newly enacted provisions related to transfer of certain site responsibilities to the State of Wyoming upon issuance of a certificate of project completion, discussed separately below;
- 3 Stipulates that "no owner of pore space, other person holding any right to control pore space or other surface or subsurface interest holder, shall be liable for the effects of injecting carbon dioxide for geologic sequestration purposes, or for the effects of injecting other substances for the purpose of geologic sequestration which substances are injected incidental to the injection of carbon dioxide, solely by virtue of their interest or by their having given consent to the injection" (id. § 34-1-153(b) (as amended)),

⁴⁴ *Id.* § 26.

⁴⁵ *Id.* § 26(l) (2021). The operator must demonstrate plume stabilization in order to terminate the Class VI permit. The public liability insurance must: (1) include coverage for the risks identified in the "Risk Activity Table"; (2) provide minimum coverage that accounts for "site-specific risk factor and bond adjustment factor calculations"; (3) provide minimum coverage that is at "least \$15 million per occurrence with an annual aggregate of at least \$45 million, exclusive of legal defense costs"; and (4) include a rider that "requires the insurer to notify [WDEQ] whenever substantive changes are made to the policy, including any termination or failure to renew." *Id.*

4 Subject to SF47’s newly enacted provisions related to transfer of certain site responsibilities to the State of Wyoming upon issuance of a certificate of project completion (discussed separately below);

5 Establishes regulatory and permitting requirements for CO₂ geologic storage sites (id. § 35-11-313 (as amended)).⁴⁶ SF47 amended this existing statutory provision in three key respects: (1) the law now clarifies that among all potential project participants only the “injector” may apply for a Class VI permit⁴⁷; (2) upon issuing a Class VI permit, WDEQ must issue a statement to that effect that includes certain information which the injector, in turn, must file with the county clerk(s) in the county(ies) where the storage site is located⁴⁸; and (3) the new requirements related to long-term stewardship (discussed separately below) now apply;⁴⁹

6 Provides a mechanism for the unitization of geologic sequestration sites (id. §§ 35-11-314, 315, 316, 317);⁵⁰

7 Stipulates that an “injector” shall: (1) “[h]ave title to any carbon dioxide the injector injects into and stores underground or within a unit area”; and (2) “[h]old title for any injected or stored carbon dioxide until the department issues a certificate of project completion” (id. § 35-11-318(b)). Further, “[d]uring any time the injector holds title to carbon dioxide under this section, the injector shall be liable for any damage that injected or stored carbon dioxide may cause, including damage caused by carbon dioxide that escapes or is released from where it is being stored underground” (id. § 35-11-318(c));



⁴⁶ This state statutory provision was enacted prior to December 2010, the date when EPA finalized the federal Class VI regulations. 75 Fed. Reg. 77230 (2010). As a result, all this state statutory provision effectively did is proactively authorize WDEQ to issue Class VI regulations.

⁴⁷ See also WYO. STAT. ANN. § 35-11-318(a) (as amended by SF47) (noting that “injector” means “a person applying for or holding a [Class VI] or certificate for geologic sequestration of carbon dioxide”).

⁴⁸ This statutory provision previously provided that notice to surface owners, mineral claimants, mineral owners, lessees and other owners of record of subsurface interests was to be given. WYO. STAT. ANN. § 35-11-313(f)(ii)(N) (prior to amendment by SF47).

⁴⁹ This statutory provision previously provided that Class VI applications must include: “A certificate issued by an insurance company authorized to do business in the United States certifying that the applicant has a public liability insurance policy in force for the geologic sequestration operations for which the permit is sought, or evidence that the applicant has satisfied other state or federal self insurance requirements. The policy shall provide for personal injury and property damage protection in an amount and for a duration as established by regulations.” WYO. STAT. ANN. § 35-11-313(f)(ii)(O) (prior to amendment by SF47).

⁵⁰ Pore space unitization is regulated by WOGCC, not WDEQ. WYO. STAT. ANN. § 35-11-315(a) (West 2024); *id.* § 30-5-104(d)(viii) (granting authority to WOGCC to “issue orders allowing the unitization of pore space associated with geologic sequestration sites”). WOGCC and WDEQ anticipate collaborating closely, however. The agencies have stated publicly that the injector should file all required Class VI permit applications with WDEQ prior to filing an application with WOGCC for pore space unitization. WOGCC has also stated publicly that: (1) an application for pore space unitization is likely to rely upon data submitted to WDEQ in the Class VI permit applications for the same project; and (2) the pore space unitization process is similar to that used to unitize CO₂-EOR fields. WOGCC’s regulations for pore space unitization are available at WOGCC, General Agency, Board or Commission Rules, Chapter 3 (*Operational Rules, Drilling Rules*), Section 43 (*Carbon Sequestration Unitization Process*). WYO. ADMIN. CODE 055.0001.3 § 43 (West 2024).

8 Under specified terms and conditions, provides for WDEQ’s issuance of a “certificate of project completion” and transfer of certain site obligations to the State of Wyoming (id. § 35-11-319):

A *Provisions related to WDEQ’s issuance of a “certificate of project completion.”* After CO₂ injections have ceased for at least twenty (20) years and upon application to WDEQ by the injector, WDEQ may issue a certificate of project completion if the injector establishes to WDEQ’s satisfaction that: (1) the injector “is in full compliance with all laws governing the injection and storage of the carbon dioxide”; (2) the injector “has addressed any pending claims regarding the injection and storage of the carbon dioxide”; (3) the “underground place or pore space where the carbon dioxide was injected or stored is expected to no longer expand vertically or horizontally and poses no threat to human health, human safety, the environment or underground sources of drinking water”; (4) the “stored or injected carbon dioxide is unlikely to cross any underground or pore space boundary and is not expected to endanger any underground source of drinking water or otherwise endanger human health, human safety or the environment”; (5) “[a]ll wells, equipment and facilities to be used in maintaining and managing stored carbon dioxide are in good condition and will retain mechanical integrity”; and (6) the “injector has plugged any injection wells and has completed all reclamation required by [WDEQ]”. Id. §§ 35-11-319(a), (b), (c).

B *Legal effect of WDEQ’s issuance of a “certificate of project completion.”* Upon WDEQ’s issuance of a certificate of project completion (id. §§ 35-11-319(d)):

I “In exchange for assuming responsibility and liability for the stored carbon dioxide as provided in this section, title to the stored or injected carbon dioxide, and any facilities used to inject or store the carbon dioxide, without payment of any compensation, shall be transferred to the state”;

II “Title acquired by the state includes all rights, and interests in, and all responsibilities associated with, the stored or injected carbon dioxide”;

III “Primary responsibility and liability for the stored or injected carbon dioxide shall be transferred to the state, provided that liability to the state shall not result in the payment of any damages in excess of the balance of the Wyoming geologic sequestration special revenue account”;

IV “The injector and all persons who generated any injected or stored carbon dioxide shall be forever released from all regulatory requirements associated with the continued storage and maintenance of the injected carbon dioxide”;

V “Any bond or financial assurance submitted to [WDEQ] ... shall be released”; and

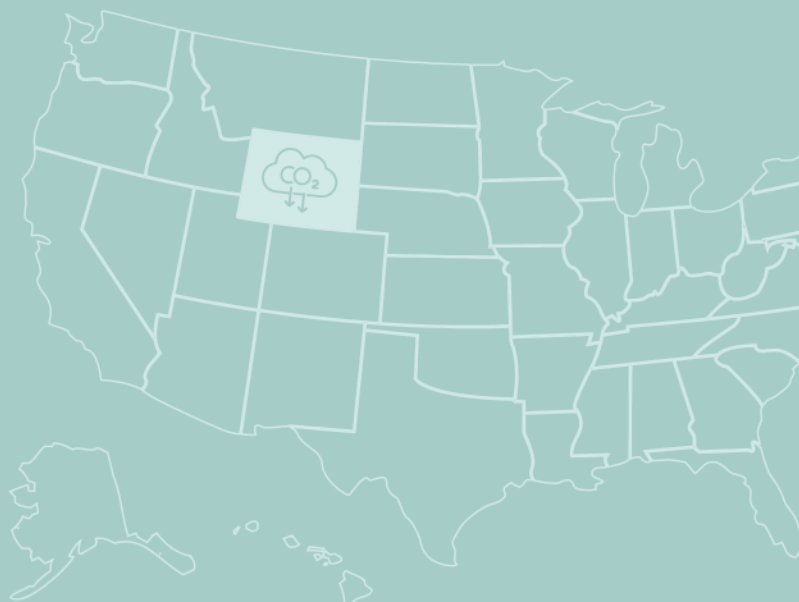
VI “The state, through [WDEQ], shall assume responsibility to manage and monitor the stored carbon dioxide until such time when the federal government assumes responsibility for the long-term monitoring and management of stored carbon dioxide”;

VII Creates a “Wyoming geologic sequestration special revenue account” that shall be administered by WDEQ with funds invested by the state treasurer (*id.* § 35-11-320 (as amended)). Funds in the account may only be used for: (1) the “testing, monitoring and long-term inspections of geologic sequestration sites”; (2) “[r]emediation of mechanical problems associated with remaining wells and infrastructure”; (3) “[p]ugging and abandoning monitoring wells”; and (4) “[a]ll future claims associated with the release of carbon dioxide from the geologic sequestration sites following project completion certification, release of all financial assurance instruments and termination of the permit.” *Id.* § 35-11-320(c);⁵¹

VIII Clarifies that vis-à-vis storage rights, production rights are dominant but cannot interfere with storage (*id.* § 30-5-501)⁵²; and

IX Upon application by the owner/operator of a CO₂-EOR project, grants authority to the WOGCC to certify the quantity of CO₂ incidentally stored during such operations (*id.* § 30-5-502). Such certification, however, does not trigger any obligation by the CO₂-EOR owner/operator to apply for a Class VI permit from WDEQ.⁵³

The substantive provisions of SF47 took effect on July 1, 2023. SF47 also authorizes both WDEQ and the WOGCC to take whatever actions are necessary, to including issuing and/or amending regulations, implement the law. WDEQ has since stated publicly that it does not believe that it needs to engage in additional rulemaking to implement SF47. Finally, SF47 directs WDEQ to “report to the joint minerals, business and economic development interim committee on the status of implementing this act, including whether legislation is necessary to retain the state’s primacy in regulating class VI injection wells and whether more time is necessary to implement this act in order to amend or retain any plan agreement for the state’s regulation of class VI injection wells.”⁵⁴



⁵¹ This statutory provision previously provided that funds in the account could only be used for the “measurement, monitoring and verification of geologic sequestration sites following site closure certification, release of all financial assurance instruments and termination of the permit.” WYO. STAT. ANN. § 35-11-318(c) (prior to amendment by SF47).

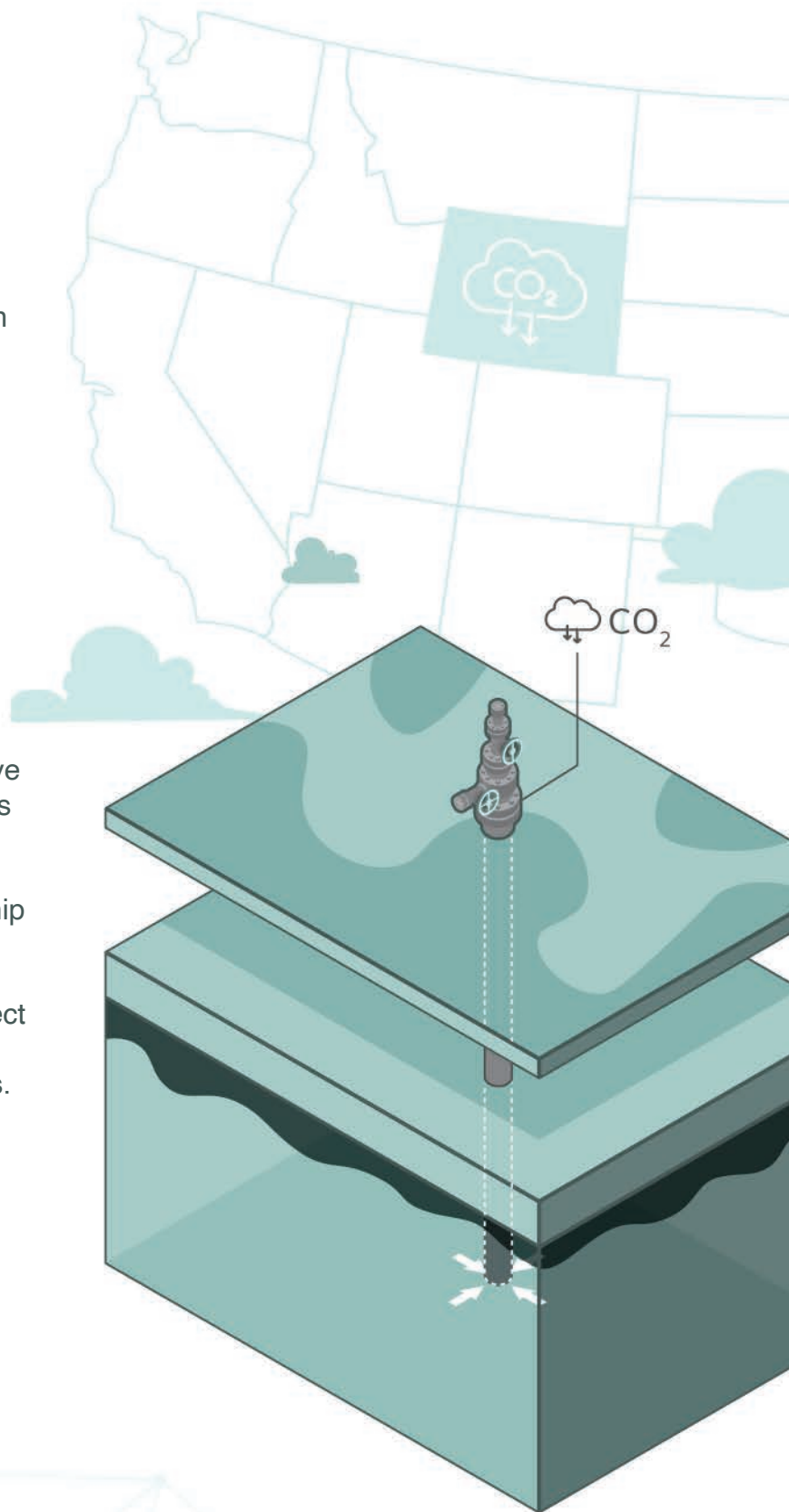
⁵² This statutory provision states that nothing in WDEQ’s Class VI regulations “shall be deemed to affect the otherwise lawful right of a surface or mineral owner to drill or bore through a geologic sequestration site ... if done in accordance with [WOGCC] rules for protecting the geologic sequestration site against the escape of carbon dioxide.” WYO. STAT. ANN. § 30-5-501. Members of the Joint Minerals, Business & Economic Development Committee have noted, however, that WOGCC’s rules do not appear to explicitly address this scenario.

⁵³ The purpose of such a CO₂ storage certification is unclear, however. At minimum, this state statutory provision likely cannot be used to support a taxpayer’s receipt of section 45Q tax credits under federal law because the Internal Revenue Service considered but explicitly rejected such a state law-based approach in the final implementing regulations for section 45Q. 26 U.S.C. § 45Q (2022); 86 Fed Reg. 4728, 4759 (2021).

⁵⁴ SF47, § 5.

Conclusion

Considerable research efforts by the CCS industry, the national labs, and institutions like UW's School of Energy Resources have proven the expected long-term safety of permanent geologic CO₂ storage.⁵⁵ However, risks—where they exist—are important to identify and quantify.⁵⁶ Well thought-out legislation and regulations are key to managing these risks to ensure both long-term safety as well as regulatory certainty within the industry. Wyoming is among only a handful of states with comprehensive CCS legislation, creating potential for the State's framework to serve as instructional precedent for risk management paradigms in CCS across the United States. WDEQ leads the nation in promulgating effective and efficient regulations to permit Class VI wells as Wyoming is only the second state to receive this category of primacy from the EPA. The passage of SF47 solidifies Wyoming's leadership role in addressing risk management associated with long-term stewardship of dedicated CO₂ storage. Both the general public and CCS project developers can take comfort in Wyoming's robust requirements for emerging CCS projects.



⁵⁵ See, e.g., *Permanence and Safety of CCS*, NATL. ENERGY TECH. LAB., <https://netl.doe.gov/coal/carbon-storage/faqs/permanence-safety> (last visited January 17, 2024).

⁵⁶ *Id.*

