State Primacy Crosswalk: Texas

Note:

This table, initially prepared in August 2022 is based on Texas' proposed amendments to 16 TAC Chapter 5--Carbon Dioxide (CO2), dated May 3, 2022. EPA reviewed the amended Texas regulations and revised the text in the "Texas State citation and requirement" column where it differed from the information entered on the table by Texas in their draft of this table. These changes (all of which are minor) are tracked to identify the differences in the versions of the rule that were reviewed. The table was updated in October 2022 based on Texas' final amendments, dated August 30, 2022. Notes indicating changes in the August rule contain the phrase "August 2022."

Comments from Texas are provided in "Texas notes."

Note: **YELLOW** blocks are those federal regs are not required for State programs

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
GENERAL REQUIREMENTS						
PART 124--PROCEDURES FOR DECISION MAKING						
SUBPART A--GENERAL PROGRAM REQUIREMENTS						
40 CFR 124.3 Application for a permit						
1.	Applicable to State programs, see §145.11 (UIC). (1) Any person who requires a permit under the RCRA, UIC, NPDES, or PSD programs shall complete, sign, and submit to the Director an application for each permit required under §144.1 (UIC). Applications are not required for underground injections authorized by rules (§§ 144.21 through 144.26).	40 CFR 124.3(a)(1) (See also 145.11(a)(24)) **§145.11 Requirements for permitting.** (a) All State programs under this part must have legal authority to implement each of the following provisions and must be administered in conformance with each; except that States are not precluded from omitting or modifying any provisions to impose more stringent requirements. (24) Section 124.3(a)—(Application for a permit);	**§5.202(a) Permit required, and Draft Permit and Fact Sheet**. (1) A person shall not begin drilling or operating an anthropogenic CO_2 injection well for geologic storage regulated under this subchapter or constructing or operating a geologic storage facility regulated under this subchapter without first obtaining the necessary permits from the Commission. Following receipt of a geologic storage facility permit issued under this subchapter, the storage operator shall obtain a permit to drill, deepen, or convert a well for storage purposes in accordance with §3.5 of this title (relating to Application to Drill, Deepen, Reenter, or Plug Back).	Similar intent to the CFR.		The CFR describes the specific programs under which any person may be required to obtain a permit. The state requirement does not list these programs and does not mention authorization by rule which is not applicable to Class VI wells, but the intent is similar to the CFR. 5.202(a)(1) was changed in the August 2022 rule based on public comment to clarify that the provision applies to wells regulated under this subchapter. No concerns for stringency.
2.	The Director shall not begin the processing of a permit until the applicant has fully complied with the application requirements for that permit. See §144.31 (UIC).	40 CFR 124.3(a)(2) (See also 145.11(a)(24))	**§5.203(a)(3) Application completeness**. The commission shall not issue a permit before receiving a complete application. A permit application is complete when the director determines that the application contains information addressing each application requirement of the regulatory program and all information necessary to initiate the final review by the director.	Similar intent to the CFR.		Subsection 5.203(a)(3) is comparable to the CFR in that processing of a permit only begins when the application is complete, and the Director cannot issue a permit based on an incomplete application. No concerns for stringency.

3.	Permit applications must comply with the signature and certification requirements of § 144.32 (UIC). **§144.32 - Signatories to permit applications and reports.** **(a) Applications**. All permit applications shall be signed as follows: (1) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means; (i) A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or (ii) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (2) For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or (3) For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: (i) The chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency. (**b) Reports**. All reports required by permits, other information requested by the Director, shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if: (1) The authorization is made in writing by a person described in paragraph (a) of this section; (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent	40 CFR 124.3(a)(3) (See also 145.11(a)(24))	**§5.203(a)(1)** (A) Form and filing. Each applicant for a permit to construct and operate a geologic storage facility must file an application with the division in Austin on a form prescribed by the Commission. The applicant must file the application and all attachments with the division and with EPA Region 6 in an electronic format approved by EPA. On the same date, the applicant must file one copy with each appropriate district office and one copy with the Executive Director of the Texas Commission on Environmental Quality. (B) Signatories to permit applications. An applicant must ensure that the application is executed by a party having knowledge of the facts entered on the form and included in the required attachments. All permit applications shall be signed as specified in this subparagraph: (i) For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. (ii) For a partnership or sole proprietorship, the permit application shall be signed by a general partner or the proprietor, respectively. (iii) For a municipality, State, Federal, or other public agency, the permit application shall be signed by either a principal executive officer or ranking elected official. (C) Certification. Any person signing a permit application or permit amendment application shall make the following certification:	Similar intent to the CFR.		While there is no provision in the Texas rules analogous to 124.3(a)(3), the state has signatory requirements that are similar to 144.32. 144.32.a is reflected in 5.203(a)(1)(B). 144.32.b is reflected in 5.207(c)(1). 144.32.c is reflected in 5.207(c)(2). 144.32.d is reflected in 5.203(a)(1)(C). There are no concerns for stringency. Minor August 2022 rule changes do not affect stringency.

	responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and (3) The written authorization is submitted to the Director. **(c) Changes to authorization**. If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative. **(d) Certification**. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification: *I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations*.		*"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations*." (2) General information. (A) On the application, the applicant must include the name, mailing address, and location of the facility for which the application is being submitted and the operator's name, address, telephone number, Commission Organization Report number, and ownership of the facility. (B) When a geologic storage facility is owned by one person but is operated by another person, it is the operator's duty to file an application for a permit. (C) The application must include a listing of all relevant permits or construction approvals for the facility received or applied for under federal or state environmental programs; (D) A person making an application to the director for a permit under this subchapter must submit a copy of the application to the Texas Commission on Environmental Quality (TCEQ) and must submit to the director a letter of determination from TCEQ concluding that drilling and operating an anthropogenic CO_2 injection well for geologic storage or constructing or operating a geologic storage facility will not impact or interfere with any previous or existing Class I injection well, including any associated waste plume, or any other			

			injection well authorized or permitted by the TCEQ. The letter must be submitted to the director before any permit under this subchapter may be issued. (3) Application completeness. The Commission shall not issue a permit before receiving a complete application. A permit application is complete when the director determines that the application contains information addressing each application requirement of the regulatory program and all information necessary to initiate the final review by the director. (4) Reports. An applicant must ensure that all descriptive reports are prepared by a qualified and knowledgeable person and include an interpretation of the results of all logs, surveys, sampling, and tests required in this subchapter. The applicant must include in the application a quality assurance and surveillance plan for all testing and monitoring, which includes, at a minimum, validation of the analytical laboratory data, calibration of field instruments, and an explanation of the sampling and data acquisition techniques. (5) If otherwise required under Occupations Code, Chapter 1001, relating to Texas Engineering Practice Act, or Chapter 1002, relating to Texas Geoscientists Practice Act, respectively, a licensed professional engineer or geoscientist must conduct the geologic and hydrologic evaluations required under this subchapter and must affix the appropriate seal on the resulting reports of such evaluations. **§5.207(c)(1)** Reports. All reports required by permits and other information requested by the director, shall be signed by a person described in §5.203(a)(1)(B) of this title, or by a duly authorized representative of that person. A person is a duly authorized representative only if:			

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			(A) the authorization is made in writing by a person described in §5.203(a)(1)(B) of this title; (B) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility; and (C) the written authorization is submitted to the director. (2) Changes to authorization. If an authorization under paragraph (1) of this subsection is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (1) of this subsection must be submitted to the director prior to or together with any reports, information, or applications to be signed by an authorized representative.			
	§ 124.5 Modification, revocation and reissuance, or termination of permits.					

4.	(Applicable to State programs, see §145.11 (UIC).) Permits may be modified, revoked and reissued, or terminated either at the request of any interested person (including the permittee) or upon the Director's initiative. However, permits may only be modified, revoked and reissued, or terminated for the reasons specified in §144.39 or 144.40 (UIC). All requests shall be in writing and shall contain facts or reasons supporting the request. (a) *Causes for modification.* The following are causes for modification. For Class I hazardous waste injection wells, Class II, Class III or Class VI wells the following may be causes for revocation and reissuance as well as modification; and for all other wells the following may be cause for revocation or reissuance as well as modification when the permittee requests or agrees. (1) *Alterations.* There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit. (2) *Information.* The Director has received information. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For UIC area permits (§ 144.33), this cause shall include any information indicating that cumulative effects on the environment are unacceptable. (3) *New regulations.* The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class I hazardous waste injection wells, Class II, Class III or Class VI wells may be modified during their permit terms for this cause only as follows: (i) For promulgation of amended standards or regulations, when: (A) The permit condition requested to be modified was based on a promulgated part 146 regulation; and (B) EPA has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based, and	40 CFR 124.5(a) (See also 145.11(a)(25)) §145.11 Requirements for permitting. (a) All State programs under this part must have legal authority to implement each of the following provisions and must be administered in conformance with each; except that States are not precluded from omitting or modifying any provisions to impose more stringent requirements. (25) Section 124.5 (a), (c), (d), and (f) - (Modification of permits); §124.5 Modification, revocation and reissuance, or termination of permits. (a) (Applicable to State programs, see 145.11 (UIC). Permits may be modified, revoked and reissued, or terminated either at the request of any interested person (including the permittee) or upon the Director's initiative. However, permits may only be modified, revoked and reissued, or terminated for the reasons specified in 144.39 or 144.40 (UIC). All requests shall be in writing and shall contain facts or reasons supporting the request. (b) If the Director decides the request is not justified, he or she shall send the requester a brief written response giving a reason for the decision. Denials of requests for modification, revocation and reissuance, or termination are not subject to public notice, comment, or hearings.	**§5.202(d) Modification, revocation and reissuance, or termination, of a geologic storage facility permit.** (1) Permit review. Permits are subject to review by the Commission. Any interested person may request that the Commission review a permit issued under this subchapter for one of the reasons set forth in 18 paragraph (2) of this subsection. All requests must be in writing and must contain facts or reasons supporting the request. If the Commission determines that the request may have merit or at the Commission's initiative for one or more of the reasons set forth in paragraph (2) of this subsection, the Commission may review the permit. (2) Action by the Commission. The director may modify, revoke and reissue, or terminate a geologic storage facility permit after notice and opportunity for hearing under any of the following circumstances. (A) Causes for modification or for revocation and reissuance. The following may be causes for revocation and reissuance as well as modification: (i) Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance that justify the inclusion of permit conditions that are different or absent in the existing permit. (ii) New information. The director has received new material information that was not available at the time of permit issuance and would have justified the inclusion of different permit conditions at the time of issuance. These may include any increase greater than the permitted CO_2 storage volume, and/or changes in the chemical composition of the CO2 stream that in the judgment of the director,	Similar intent to the CFR.		Both 124.5.a and b are combined in 5.202(d)(2)(A). Similar to CFR; no concerns for stringency. [Note: Texas inserted the text of 144.41 into the table here; see below for review of these provisions.] The description of "an interested person" was moved from 5.202(d)(1) to 5.102(32) in August 2022 based on public comment. No concerns for stringency. 5.202(d)(2)(A)(ii), (iii), and (viii) were changed in the August 2022 rule based on public comment. No concerns for stringency. The public commented on 5.202(d)(2)(A)(vii), but no change was made in the August 2022 rule. Other minor August 2022 rule changes do not affect stringency.

	(C) A permittee requests modification in accordance with § 124.5 within ninety (90) days after FEDERAL REGISTER notice of the action on which the request is based. (ii) For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based and a request is filed by the permittee in accordance with § 124.5 within ninety (90) days of judicial remand. (4) *Compliance schedules.* The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also § 144.41(c) (minor modifications). (5) *Basis for modification of Class VI permits.* Additionally, for Class VI wells, whenever the Director determines that permit changes are necessary based on: (i) Area of review reevaluations under §146.84(e)(1) of this chapter; (ii) Any amendments to the testing and monitoring plan under § 146.90(j) of this chapter; (iii) Any amendments to the injection well plugging plan under § 146.92(c) of this chapter; (iv) Any amendments to the post-injection site care and site closure plan under §146.93(a)(3) of this chapter; (v) Any amendments to the emergency and remedial response plan under § 146.94(d) of this chapter; or (vi) A review of monitoring and/or testing results conducted in accordance with permit requirements. (b) *Causes for modification or revocation and reissuance.* The following are causes to modify or, alternatively, revoke and reissue a permit: (1) Cause exists for termination under § 144.40, and the Director determines that modification or revocation and reissuance is appropriate. (2) The Director has received notification (as required in the permit, see § 144.41(d)) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (§ 144.38(b)) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee. (3) A determination that the waste being injected is a hazardous waste as defined in § 261.3 either because the definition has been revised, or because a previous determination has been changed.	(c) (Applicable to State programs, see 14 §5.11 (UIC)). (1) If the Director tentatively decides to modify or revoke and reissue a permit under 40 CFR 144.39 (UIC), he or she shall prepare a draft permit under §124.6 incorporating the proposed changes. The Director may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, other than under 40 CFR 270.41(b)(3), the Director shall require the submission of a new application. In the case of revoked and reissued permits under 40 CFR 270.41(b)(3), the Director and the permittee shall comply with the appropriate requirements in 40 CFR part 124, subpart G for RCRA standardized permits. (2) In a permit modification under this section, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.	would interfere with the operation of the facility or its ability to meet the permit conditions. (iii) New regulations. The standards or regulations on which the permit was based have been materially changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. (iv) Compliance schedules. The director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage, or other events over which the permittee has little or no control and for which there is no reasonably available remedy. (v) Basis for permit modification. The director shall modify the permit whenever the director determines that permit changes are necessary based on: (I) a re-evaluation under §5.203(d) of this title (relating to Application Requirements); (II) any amendments to the testing and monitoring plan under §5.203(j) of this subchapter; (III) any amendments to the injection well plugging plan under §5.203(k) of this title; (IV) any amendments to the post-injection site care and site closure plan under §5.203(m) of this title; (V) Any amendments to the emergency and remedial response plan under §5.203(l) of this title; (VI) a review of monitoring and/or testing results conducted in accordance with permit requirements. (VII) cause exists for termination under subparagraph (B) of this paragraph, and the director determines that modification or revocation and reissuance is appropriate;			August 2022 rule changes : “any” was removed from 5.202(2)(v)(VII).

	(c) *Facility siting.* Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance. **§ 144.40 Termination of permits.** (a) The Director may terminate a permit during its term, or deny a permit renewal application for the following causes: (1) Noncompliance by the permittee with any condition of the permit; (2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or (3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;	(3) "Minor modifications" as defined in 144.41 (UIC) are not subject to the requirements of this section. (d) (1) If the Director tentatively decides to terminate: A permit under §144.40 (UIC) of this chapter, where the permittee objects, he or she shall issue a notice of intent to terminate. A notice of intent to terminate is a type of draft permit which follows the same procedures as any draft permit prepared under § 124.6 of this chapter.	(VIII) the director has received notification of a proposed transfer of the permit; or (IX) a determination that the fluid being injected is a hazardous waste as defined in 40 CFR §261.3 either because the definition has been revised, or because a previous determination has been changed. (vi) If the director tentatively decides to modify or revoke and reissue a permit, the director shall prepare a draft permit incorporating the proposed changes. The director may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, the director shall require the submission of a new application. (vii) In a permit modification, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the existing permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued. (viii) Upon the consent of the permittee, the director may modify a permit to make the corrections or allowances for minor changes in the permit, without following the procedures of subsection (e) of this section, and §5.204 of this title (relating to Notice of Permit Actions and Public Comment Period), to: (I) correct typographical errors; (II) require more frequent monitoring or reporting by the permittee; (III) change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with			

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			attainment of the final compliance date requirement; (IV) allow for a change in ownership or operational control of a facility where the director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the director; (V) change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the director, would not interfere with the operation of the facility or its ability to meet the permit conditions; (VI) change construction requirements approved by the director pursuant to §5.206 of this title (relating to Permit Standards), provided that any such alteration shall comply with the requirements of this subchapter; (VII) amend a plugging and abandonment plan which has been updated under §5.203(k) of this title; or (VIII) amend an injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the director. (3) Facility siting. Suitability of the facility location shall not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.			

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5.	If the Director decides the request is not justified, he or she shall send the requester a brief written response giving a reason for the decision. Denials of requests for modification, revocation and reissuance, or termination are not subject to public notice, comment, or hearings.	40 CFR 124.5(b)		This provision is not required for state programs.		
6.	(Applicable to State programs, see 40 CFR 145.11 (UIC)). (1) If the Director tentatively decides to modify or revoke and reissue a permit under 40 CFR 144.39 (UIC), he or she shall prepare a draft permit under §124.6 incorporating the proposed changes. The Director may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, the Director shall require the submission of a new application.	40 CFR 124.5(c)(1)	**§5.202(d)(2)(A)(vi)** If the director tentatively decides to modify or revoke and reissue a permit, the director shall prepare a draft permit incorporating the proposed changes. The director may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, the director shall require the submission of a new application.	Same as the CFR.		
7.	In a permit modification under this section, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the unmodified permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.	40 CFR 124.5(c)	**§5.202(d)(2)(A)(vii)** In a permit modification, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the existing permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.	Same as the CFR.		

8.	''Minor modifications'' as defined in §144.41 (UIC) are not subject to the requirements of this section. **§ 144.41 Minor modifications of permits.** Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of part 124. Any permit modification not processed as a minor modification under this section must be made for cause and with part 124 draft permit and public notice as required in § 144.39. Minor modifications may only: (a) Correct typographical errors; (b) Require more frequent monitoring or reporting by the permittee; (c) Change in interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or (d) Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director. (e) Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification. (f) Change construction requirements approved by the Director pursuant to § 144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this part and part 146. (g) Amend a plugging and abandonment plan which has been updated under § 144.52(a)(6).	40 CFR 124.5(c)(3) (See also 145.11(a)(25))	**§5.202(d)(2)(A)(viii)** Upon the consent of the permittee, the director may modify a permit to make the corrections or allowances for minor changes in the permit, without following the procedures of subsection (e) of this section, and §5.204 of this title (relating to Notice of Permit Actions and Public Comment Period), to: (I) correct typographical errors; (II) require more frequent monitoring or reporting by the permittee; (III) change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; (IV) allow for a change in ownership or operational control of a facility where the director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the director; (V) change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the director, would not interfere with the operation of the facility or its ability to meet the permit conditions; (VI) change construction requirements approved by the director pursuant to §5.206 of this title (relating to Permit Standards), provided that any such alteration shall comply with the requirements of this subchapter; (VII) amend a plugging and abandonment plan which has been updated under §5.203(k) of this title; or (VIII) amend an injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the director.	Similar intent to the CFR.	See all of 5.202(d), which lists causes for non-minor modifications. Item #8 only deals with "minor modifications". It is clear in 5.202(d)(2)(A)(viii) that minor modifications can be made only for the causes listed in 40 CFR 144.41	The state requirement does not clarify that non-minor modifications require cause, and minor modifications are only to be made for the listed reasons. 5.202(d)(2)(A)(viii)(VIII) has no analogous provision in the CFR. The intent of this provision is to modify a permit if any Class VI plan is updated which is similar to the intent of 40 CFR 124.5(c)(3) for Class VI permits. August 2022 rule changes partially addressed stringency concerns. The state requirement now specifies that 5.202(d)(2)(A)(viii) pertains to minor modifications, but it still does not distinguish between minor and major changes.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
9.	(Applicable to State programs, see §145.11 (UIC) of this chapter.) (1) If the Director tentatively decides to terminate: A permit under § 144.40 (UIC) of this chapter, he or she shall issue a notice of intent to terminate. A notice of intent to terminate is a type of draft permit which follows the same procedures as any draft permit prepared under §124.6 of this chapter **§ 144.40 Termination of permits.** (a) The Director may terminate a permit during its term, or deny a permit renewal application for the following causes: (1) Noncompliance by the permittee with any condition of the permit; (2) The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or (3) A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination; (b) The Director shall follow the applicable procedures in part 124 in terminating any permit under this section.	40 CFR 124.5(d)(1) (See also 145.11(a)(25))	**§5.202(d)(2)(B) Termination of permits.** (i) The following may be causes to terminate a permit during its term, or deny a permit renewal application: (I) the permittee's failure to comply with any condition of the permit or applicable Commission orders or regulations; (II) the permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; (III) fluids are escaping or are likely to escape from the injection zone; (IV) USDWs are likely to be endangered as a result of the continued operation of the geologic storage facility; or (V) a determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination. (ii) The director shall follow the applicable procedures in subsection (e) of this section, and §5.204 of this title, in terminating any permit under this section. (iii) If the director tentatively decides to terminate a permit under this subchapter, where the permittee objects, the director shall issue a notice of intent to terminate. A notice of intent to terminate is a type of draft permit.	Differs slightly in language, but the intent is the same.		5.202(d)(2)(B)(i)(III) and (IV) do not have analogous CFR provisions. The order and language of the text differs, but all points of the CFR are reflected in the state requirement. No concerns for stringency.
§ 124.6 Draft permits.						

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
10.	(Applicable to State programs, see §145.11 (UIC).) Once an application is complete, the Director shall tentatively decide whether to prepare a draft permit or to deny the application.	40 CFR 124.6(a) (See also 145.11(a)(26))	**§5.202(e) Draft permit and fact sheet** (1) Draft permit; notice of intent to deny. (A) Once a geologic storage facility permit application is complete, the director shall decide whether to prepare a draft permit or to deny the application.	Similar to the CFR.		Minor language differences do not affect stringency.
11.	If the Director tentatively decides to deny the permit application, he or she shall issue a notice of intent to deny. A notice of intent to deny the permit application is a type of draft permit which follows the same procedures as any draft permit prepared under this section. See §124.6(e). If the Director's final decision (§124.15) is that the tentative decision to deny the permit application was incorrect, he or she shall withdraw the notice of intent to deny and proceed to prepare a draft permit under paragraph (d) of this section.	40 CFR 124.6(b)	**§5.202(e)(1)(B)** If the director tentatively decides to deny the permit application, the director shall issue a notice of intent to deny. A notice of intent to deny the permit application is a type of draft permit which follows the same procedures as any draft permit prepared under this section. If the director's final decision is that the tentative decision to deny the permit application was incorrect, the director shall withdraw the notice of intent to deny and proceed to prepare a draft permit.	Same as the CFR.		Note: highlighted provisions ae optional for states.
12.	(Applicable to State programs, see §145.11 (UIC).) If the Director decides to prepare a draft permit, he or she shall prepare a draft permit that contains the following information:	40 CFR 124.6(d) (See also 145.11(a)(26))	**§5.202(e)(1)(C)** If the director decides to prepare a draft permit, the draft permit shall contain the permit conditions required under §5.206 of this title (relating to Permit Standards). If the director is issuing a denial, the permit conditions are not required.	Similar intent to the CFR.		The contents of §5.206 address all of 124.6(d). No concerns for stringency. 5.202(e)(1)(C) was changed in the August 2022 rule based on public comment. 5.202(e)(1)(C) clarifies that permit conditions are not required in the case of a denial. This appears to be a clarifying point only and does not raise concerns for stringency.
13.	All conditions under §144.51 and 144.42 (UIC);	40 CFR 124.6(d)(1) (See also 145.11(a)(26))	**§5.206 Permit standards (includes permit conditions)**	Comparable to the CFR.		See above row.
14.	All compliance schedules under §144.53 (UIC);	40 CFR 124.6(d)(2) (See also 145.11(a)(26))	**§5.206(o)(2)(J): Schedule of compliance**	Comparable to the CFR.		See above row.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
15.	All monitoring requirements under §144.54 (UIC); and	40 CFR 124.6(d)(3) (See also 145.11(a)(26))	**§5.206(e) & §5.207(a)(2)(C)(vii)**	Comparable to the CFR (refers to monitoring requirements).		See above row.
16.	For: *** UIC permits, permit conditions under § 144.52;	40 CFR 124.6(d)(4)(ii) (See also 145.11(a)(26))	**§5.206. Permit standards (includes permit conditions)**	Comparable to the CFR.		See above row.
17.	(Applicable to State programs, see §145.11 (UIC).) Draft permits prepared by a State shall be accompanied by a fact sheet if required under §124.8.	40 CFR 124.6(e) (See also 145.11(a)(26))	**§5.202(e)(2) Fact sheet.**	Same as the CFR.		State rule is similar to the CFR in that a fact sheet is required. No concerns for stringency.
§ 124.8 Fact sheet.						
18.	A fact sheet shall be prepared for every draft permit for a major, UIC facility or activity, and for every draft permit which the Director finds is the subject of wide-spread public interest or raises major issues. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit. The Director shall send this fact sheet to the applicant and, on request, to any other person.	40 CFR 124.8(a) (See also 145.11(a)(27))	**§5.202(e)(2) Fact sheet** (A) The director shall prepare a fact sheet for every draft permit. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit. (B) The director shall send this fact sheet to the applicant and, on request, to any other person. The director shall post the fact sheet on the Commission's website.	Similar intent to the CFR.		The state requires a fact sheet for every permit; this is more stringent than the CFR. The content of a fact sheet is generally the same as the CFR (see below). No concerns for stringency. 5.202(e)(2)(B) was changed in the August 2022 rule based on public comment to include posting of the fact sheet online.
19.	The fact sheet shall include, when applicable:	40 CFR 124.8(b) (See also 145.11(a)(27))	**§5.202(e)(2)(C)** The fact sheet shall include, when applicable:	Same as the CFR.		
20.	A brief description of the type of facility or activity which is the subject of the draft permit;	40 CFR 124.8(b)(1) (See also 145.11(a)(27))	**§5.202(e)(2)(C)(i)** a brief description of the type of facility or activity which is the subject of the draft permit;	Same as the CFR.		
21.	The type and quantity of wastes, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged.	40 CFR 124.8(b)(2) (See also 145.11(a)(27))	**§5.202(e)(2)(C)(ii)** the source and quantity of CO_2 proposed to be injected and stored;	Similar intent to the CFR.		The language of the state requirement is specific to the containment of CO_2. No concerns for stringency. 5.202(e)(2)(C)(ii) was changed in the August 2022 rule based on public comment to also require that a fact sheet include the source of CO_2. No concerns for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
22.	A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions;	40 CFR 124.8(b)(4) (See also 145.11(a)(27))	No reference found	Missing.	5.202(e) **(e)(2)** Fact sheet. (A) The director shall prepare a fact sheet for every draft permit. The fact sheet shall briefly set forth the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit. …. (C) The fact sheet shall include, when applicable: …. (iv) a description of the procedures for reaching a final decision on the draft permit including:	Texas does not require the fact sheet to include a summary of the basis for the draft permit. Rule was not changed in August 2022; stringency concern remains.
23.	Reasons why any requested variances or alternatives to required standards do or do not appear justified;	40 CFR 124.8(b)(5) (See also 145.11(a)(27))	**§5.202(e)(2)(C)(iii)** the reasons why any requested variances or alternatives to required standards do or do not appear justified;	Same as the CFR.		
24.	A description of the procedures for reaching a final decision on the draft permit including: (i) The beginning and ending dates of the comment period under § 124.10 and the address where comments will be received; (ii) Procedures for requesting a hearing and the nature of that hearing; and (iii) Any other procedures by which the public may participate in the final decision.	40 CFR 124.8(b)(6) (See also 145.11(a)(27))	**§5.202(e)(2)(C)(iv)** a description of the procedures for reaching a final decision on the draft permit including: (I) the beginning and ending dates of the comment period; (II) the address where comments will be received; (III) The date, time, and location of the storage facility permit hearing, if a hearing has been scheduled; and (IV) any other procedures by which the public may participate in the final decision;	Similar intent to the CFR.		Texas does not require is that the fact sheet include procedures to request a hearing; however the public may request one. See row 55.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
25.	Name and telephone number of a person to contact for additional information.	40 CFR 124.8(b)(7) (See also 145.11(a)(27))	**§5.202(e)(2)(C)(v)** the name and telephone number of a person to contact for additional information.	Same as the CFR.		
40 CFR §124.10 Public notice of permit actions and public comment period.						
26.	Scope. (a)(1) The Director shall give public notice that the following actions have occurred:	40 CFR 124.10(a)(1) (See also 145.11(a)(28))	**§5.204. Notice of permit actions and public comment period.** (a) Notice requirements. (1) The Commission shall give notice of the following actions:	Same as the CFR.		The public commented on modernizing the methods of public notice (e.g., social media) in 5.204, but no change was made in the August 2022 rule. 5.204(a)(3)(A)(v) was changed in the August 2022 rule based on public comment to include "interest owners" as recipients of public notice. This provision does not have an analogous CFR provision; no concerns for stringency. 5.204(a)(3)(A)(v), (viii), (ix), and (x) were changed in the August 2022 rule based on public comment. Various references to the storage facility were standardized to "geologic storage facility." No concerns for stringency. 5.204(a)(6) was changed in the August 2022 rule based on public comment to align with U.S. Census Bureau terminology. This provision, "Notice to certain communities" does not have an analogous CFR provision; no concerns for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
27.	A permit application has been tentatively denied under § 124.6(b);	40 CFR 124.10(a)(1)(i)	**§5.202(e)(1)** (A) Once a geologic storage facility permit application is complete, the director shall decide whether to prepare a draft permit or to deny the application. (B) If the director tentatively decides to deny the permit application, the director shall issue a notice of intent to deny. A notice of intent to deny the permit application is a type of draft permit which follows the same procedures as any draft permit prepared under this section. If the director's final decision is that the tentative decision to deny the permit application was incorrect, the director shall withdraw the notice of intent to deny and proceed to prepare a draft permit.	Not required of state programs.		§5.202(e)(1) mentions the Director's responsibility to provide a notice of intent to deny, which is similar in intent to the CFR.
28.	(Applicable to State programs, see §145.11 (UIC).) A draft permit has been prepared under §124.6(d);	40 CFR 124.10(a)(1)(ii) (See also 145.11(a)(28))	**§5.204(a)(1)(A)** a draft permit has been prepared under §5.202(e) of this title (relating to Permit Required, and Draft Permit and Fact Sheet); and	Same as the CFR.		

29.	(Applicable to State programs, see §145.11 (UIC).) A hearing has been scheduled under § 124.12; **§ 124.12 Public hearings.** (a) (*Applicable to State programs, see, 145.11 (UIC).*) (1) The Director shall hold a public hearing whenever he or she finds, on the basis of requests, a significant degree of public interest in a draft permit(s); (2) The Director may also hold a public hearing at his or her discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision; (4) Public notice of the hearing shall be given as specified in § 124.10. (c) Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under §124.10 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.	40 CFR 124.10(a)(1)(iii) (See also 145.11(a)(28))	**§5.204(a)(1)(B)** a hearing that has been scheduled under subsection (b)(2) of this section. **§5.204(b)(2) Public hearing.** (A) If the Commission receives a protest regarding an application for a new permit or for an amendment of an existing permit for a geologic storage facility from a person notified pursuant to subsection (a) of this section or from any other affected person within 30 days of the date of receipt of the application by the division, receipt of individual notice, or last publication of notice, whichever is later, then the director will notify the applicant that the director cannot administratively approve the application. Upon the written request of the applicant, the director will schedule a hearing on the application. (B) The director shall hold a public hearing whenever the director finds, on the basis of requests, a significant degree of public interest in a draft permit. (C) The director may also hold a public hearing at the director's discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision. (D) Public notice of a public hearing shall be given at least 30 days before the hearing. Public notice of a hearing may be given at the same time as public notice of the draft permit and the two notices may be combined. (E) Upon the written request of the applicant, the Commission must give notice of a hearing to all affected persons, local governments, and other persons who express, in writing, an interest in the application. After the hearing, the examiner will recommend a final action by the Commission. Notices shall include information satisfying the requirements of 40 CFR §124.10(d)(2) and the Texas Government Code, §2001.052. **§5.204(b)(1) Public comment.**	Similar intent to the CFR.		Texas includes a provision similar to 124.10(a)(1)(iii), and 5.204 is similar to 124.12. 124.12(a)(1) corresponds to 5.204(b)(2)(B). 124.12(a)(2) corresponds to 5.204(b)(2)(C). 124.12(a)(4) corresponds to 5.204(b)(2)(E). 124.12(c) corresponds to §5.204(b)(1). No concerns for stringency. The definition of "affected person" was changed in 5.102(1) in the August 2022 rule based on public comment. There is no analogous definition in the CFR; no concerns for stringency. (The change is noted for completeness.) The public commented on 5.204(b)(2), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			(A) During the public comment period, any interested person may submit written comments on the draft permit and may request a hearing if one has not already been scheduled. (B) Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. (C) The public comment period shall automatically be extended to the close of any public hearing under this section. The hearing examiner may also extend the comment period by so stating at the hearing.			
30.	An appeal has been granted under § 124.19(c);	40 CFR 124.10(a)(1)(iv)		Not required of state programs.		
31.	No public notice is required when a request for permit modification, revocation and reissuance, or termination is denied under § 124.5(b). Written notice of that denial shall be given to the requester and to the permittee.	40 CFR 124.10(a)(2)		Not required of state programs.		
32.	Timing (applicable to State programs, see §145.11 (UIC)). (1) Public notice of the preparation of a draft permit (including a notice of intent to deny a permit application) required under paragraph (a) of this section shall allow at least 30 days for public comment. (2) Public notice of a public hearing shall be given at least 30 days before the hearing. (Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.)	40 CFR 124.10(b) (See also 145.11(a)(28))	**§5.204(a)(7) Comment period for a draft permit.** Public notice of a draft permit, including a notice of intent to deny a permit application, shall allow at least 30 days for public comment. **§5.204(b)(2)(D)** Public notice of a public hearing shall be given at least 30 days before the hearing. Public notice of a hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
33.	Methods (applicable to State programs, see 40 CFR 145.11 (UIC)). Public notice of activities described in paragraph (a)(1) of this section shall be given by the following methods: (1) By mailing a copy of a notice to the following persons (any person otherwise entitled to receive notice under this paragraph may waive his or her rights to receive notice for any classes and categories of permits);	40 CFR 124.10(c)(1) (See also 145.11(a)(28))	**§5.204(a)(3)(A) Individual notice.** Notice of a draft permit or a public hearing shall be given by mailing a copy of the notice to the following persons: **§5.204(a)(3)(B)** Any person otherwise entitled to receive notice under this paragraph may waive his or her rights to receive notice of a draft permit under this subsection.	Similar intent to the CFR.		§5.204(a)(3)(B) corresponds to the parenthetical text in 124.10(c)(1). No concerns for stringency.
34.	The applicant;	40 CFR 124.10(c)(1)(i) (See also 145.11(a)(28))	**§5.204(a)(3)(A)(i)** the applicant;	Same as the CFR.		
35.	Any other agency which the Director knows has issued or is required to issue a RCRA, UIC, PSD (or other permit under the Clean Air Act), NPDES, 404, sludge management permit, or ocean dumping permit under the Marine Research Protection and Sanctuaries Act for the same facility or activity (including EPA when the draft permit is prepared by the State);	40 CFR 124.10(c)(1)(ii) (See also 145.11(a)(28))	**§5.204(a)(3)(A)** (ii) the United State Environmental Protection Agency; (iii) the Texas Commission on Environmental Quality, the Texas Water Development Board, the Texas Department of State Health Services, the Texas Parks and Wildlife Department, the Texas General Land Office, the Texas Historical Commission, the United States Fish and Wildlife Service, other Federal and State agencies with jurisdiction over fish, shellfish, and wildlife resources, and coastal zone management plans, the Advisory Council on Historic Preservation, including any affected States (Indian Tribes) and any agency that the Commission knows has issued or is required to issue a permit for the same facility under any federal or state environmental program;	Similar intent to the CFR.		The state requirement lists the specific entities for notification that correspond to the entities listed in the CFR. While it might be appropriate to describe these relationships in the program description, there is no concern for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
36.	Federal and State agencies with jurisdiction over fish, shellfish, and wildlife resources and over coastal zone management plans, the Advisory Council on Historic Preservation, State Historic Preservation Officers, including any affected States (Indian Tribes).	40 CFR 124.10(c)(1)(iii) (See also 145.11(a)(28))	**§5.204(a)(3)(A)(iii)** the Texas Commission on Environmental Quality, the Texas Water Development Board, the Texas Department of State Health Services, the Texas Parks and Wildlife Department, the Texas General Land Office, the Texas Historical Commission, the United States Fish and Wildlife Service, other Federal and State agencies with jurisdiction over fish, shellfish, and wildlife resources, and coastal zone management plans, the Advisory Council on Historic Preservation, including any affected States (Indian Tribes) and any agency that the Commission knows has issued or is required to issue a permit for the same facility under any federal or state environmental program;	Similar intent to the CFR.		The state requirement lists the specific entities for notification that correspond to the entities listed in the CFR. While it might be appropriate to describe these relationships in the program description, there is no concern for stringency.
37.	Persons on a mailing list developed by: (A) Including those who request in writing to be on the list; (B) Soliciting persons for ''area lists'' from participants in past permit proceedings in that area; and (C) Notifying the public of the opportunity to be put on the mailing list through periodic publication in the public press and in such publications as Regional and State funded newsletters, environmental bulletins, or State law journals.	40 CFR 124.10(c)(1)(ix) (See also 145.11(a)(28))	**§5.204(a)(3)(A)(xi)** persons on the mailing list developed by the Commission, including those who request in writing to be on the list and by soliciting participants in public hearings in that area for their interest in being included on area mailing lists; and	Similar intent to the CFR.	Add language to the Program description specific language indicating that the Commission would notify the public of the opportunity to be put on the mailing list by including a notice on the RRC website.	Texas does not specify how the public would be notified of the opportunity to be put on the mailing list. Rule was not changed in August 2022; stringency concern remains.
38.	(A) To any unit of local government having jurisdiction over the area where the facility is proposed to be located; and (B) to each State agency having any authority under State law with respect to the construction or operation of such facility.	40 CFR 124.10(c)(1)(x) (See also 145.11(a)(28))	**§5.204(a)(3)(A)(x)** any other unit of local government having jurisdiction over the area where the geologic storage facility is or is proposed to be located, and each state agency having any authority under state law with respect to the construction or operation of the geologic storage facility;	Same as the CFR.		August 2022 rule changes do not affect stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
39.	For Class VI injection well UIC permits, mailing or emailing a notice to State and local oil and gas regulatory agencies and State agencies regulating mineral exploration and recovery, the Director of the Public Water Supply Supervision program in the State, and all agencies that oversee injection wells in the State.	40 CFR §124.10(c)(1)(xi)	**§5.204(a)(3)(A)(iii)** the Texas Commission on Environmental Quality, the Texas Water Development Board, the Texas Department of State Health Services, the Texas Parks and Wildlife Department, the Texas General Land Office, the Texas Historical Commission, the United States Fish and Wildlife Service, other Federal and State agencies with jurisdiction over fish, shellfish, and wildlife resources, and coastal zone management plans, the Advisory Council on Historic Preservation, including any affected States (Indian Tribes) and any agency that the Commission knows has issued or is required to issue a permit for the same facility under any federal or state environmental program;	See Texas Notes.	RRC is the state oil and gas regulatory agency and regulates mineral exploration and recovery. TCEQ regulates Public Water Supply and oversees injection wells not regulated by RRC.	While it might be appropriate to describe these relationships in the program description, there is no concern for stringency.
40.	For permits publication of a notice in a daily or weekly newspaper within the area affected by the facility or activity;	40 CFR 124.10(c)(2)(i) (See also 145.11(a)(28))	**§5.204(a)(2)** General notice by publication. The Commission shall publish notice of a draft permit once a week for three consecutive weeks in a newspaper of general circulation in each county where the storage facility is located or is to be located. The Commission shall also post notice of a draft permit on the Commission's website.	Similar intent to the CFR.		The state rule specifies that this applies to notices of draft permits and requires notice in similar types of newspapers. No concern for stringency. 5.204(a)(2) was changed in the August 2022 rule based on public comment to require the posting of notices of draft permits online. No concern for stringency.
41.	When the program is being administered by an approved State, in a manner constituting legal notice to the public under State law; and	40 CFR 124.10(c)(3) (See also 145.11(a)(28))	**§5.204(b)(2)(E)** Upon the written request of the applicant, the Commission must give notice of a hearing to all affected persons, local governments, and other persons who express, in writing, an interest in the application. After the hearing, the examiner will recommend a final action by the Commission. Notices shall include information satisfying the requirements of 40 CFR §124.10(d)(2) and the Texas Government Code, §2001.052.	The underlined portion is equivalent to the CFR.		§2001.052 is the state law for legal notice to the public, no concerns for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
42.	Any other method reasonably calculated to give actual notice of the action in question to the persons potentially affected by it, including press releases or any other forum or medium to elicit public participation.	40 CFR 124.10(c)(4) (See also 145.11(a)(28))		Missing.	**The methods required should be adequate. In addition, the rules require publication of notice.** **§5.204(a)(2)** requires general notice by publication of a draft permit once a week for three consecutive weeks in a newspaper of general circulation in each county where the storage facility is located or is to be located. Also requires RRC to post notice of a draft permit on the Commission's website.	Texas does not require notice by any other method reasonably calculated to give actual notice. Rule was not changed in August 2022; stringency concern remains.
43.	Contents (applicable to State programs, see §145.11 (UIC))—(1) All public notices. All public notices issued under this part shall contain the following minimum information:	40 CFR 124.10(d)(1) (See also 145.11(a)(28))	**§5.204(a)(4) Content of notice.** Individual notice must consist of: (F) information satisfying the requirements of 40 CFR §124.10(d)(1).	Cites the CFR.		5.204(a)(4)(F) incorporates 124.10(d)(1) by reference. No concerns for stringency for all of 124.10(d)(1).
44.	Name and address of the office processing the permit action for which notice is being given;	40 CFR 124.10(d)(1)(i) (See also 145.11(a)(28))	**§5.204(a)(4)(F)** information satisfying the requirements of 40 CFR §124.10(d)(1).	Cites the CFR.		See row 43.
45.	Name and address of the permittee or permit applicant and, if different, of the facility or activity regulated by the permit;	40 CFR 124.10(d)(1)(ii) (See also 145.11(a)(28))	**§5.204(a)(4)(F)** information satisfying the requirements of 40 CFR §124.10(d)(1).	Cites the CFR.		See row 43.
46.	A brief description of the business conducted at the facility or activity described in the permit application or the draft permit.	40 CFR 124.10(d)(1)(iii) (See also 145.11(a)(28))	**§5.204(a)(4)(F)** information satisfying the requirements of 40 CFR §124.10(d)(1).	Cites the CFR.		See row 43.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
47.	Name, address and telephone number of a person from whom interested persons may obtain further information, including copies of the draft permit, fact sheet, and the application; and	40 CFR 124.10(d)(1)(iv) (See also 145.11(a)(28))	**§5.204(a)(4)(F)** information satisfying the requirements of 40 CFR §124.10(d)(1).	Cites the CFR.		See row 43.
48.	A brief description of the comment procedures required by §§ 124.11 and 124.12 and the time and place of any hearing that will be held, including a statement of procedures to request a hearing (unless a hearing has already been scheduled) and other procedures by which the public may participate in the final permit decision.	40 CFR 124.10(d)(1)(v) (See also 145.11(a)(28))	**§5.204(a)(4)(F)** information satisfying the requirements of 40 CFR §124.10(d)(1).	Cites the CFR.		See row 43.
49.	Any additional information considered necessary or proper.	40 CFR 124.10(d)(1)(x) (See also 145.11(a)(28))	**§5.204(a)(4)(F)** information satisfying the requirements of 40 CFR §124.10(d)(1).	Cites the CFR.		See row 43.
50.	Public notices for hearings. In addition to the general public notice described in paragraph (d)(1) of this section, the public notice of a hearing under § 124.12 shall contain the following information:	40 CFR 124.10(d)(2) (See also 145.11(a)(28))	**§5.204 (b)(2)** (D) Public notice of a public hearing shall be given at least 30 days before the hearing. Public notice of a hearing may be given at the same time as public notice of the draft permit and the two notices may be combined. (E) Upon the written request of the applicant, The Commission must give notice of a hearing to all affected persons, local governments, and other persons who express, in writing, an interest in the application. After the hearing, the examiner will recommend a final action by the Commission. Notices shall include information satisfying the requirements of 40 CFR §124.10(d)(2) and the Texas Government Code, §2001.052.	Cites the CFR.		See row 43.
51.	Reference to the date of previous public notices relating to the permit;	40 CFR 124.10(d)(2)(i) (See also 145.11(a)(28))	**§5.204 (b)(2)(E)**	Cites the CFR.		See row 43.
52.	Date, time, and place of the hearing;	40 CFR 124.10(d)(2)(ii) (See also 145.11(a)(28))	**§5.204 (b)(2)(E)**	Cites the CFR.		See row 43.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
53.	A brief description of the nature and purpose of the hearing, including the applicable rules and procedures;	40 CFR 124.10(d)(2)(iii) (See also 145.11(a)(28))	**§5.204 (b)(2)(E)**	Cites the CFR.		See row 43.
54.	(Applicable to State programs, see §145.11 (UIC).) In addition to the general public notice described in paragraph (d)(1) of this section, all persons identified in paragraphs (c)(1) (i), (ii), (iii), and (iv) of this section shall be mailed a copy of the fact sheet, the permit application (if any) and the draft permit (if any).	40 CFR 124.10(e) (See also 145.11(a)(28))	**§5.204(a)(4) Content of notice.** Individual notice must consist of (C) a copy of any draft permit and fact sheet;	Similar intent to the CFR.		5.204(a)(4)(C) includes the draft permit and fact sheet as additional notice contents. No concerns for stringency.
§ 124.11 Public comments and requests for public hearings.						

55.	(Applicable to State programs, see §145.11 (UIC).) During the public comment period provided under §124.10, any interested person may submit written comments on the draft permit and may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments shall be considered in making the final decision and shall be answered as provided in §124.17.	40 CFR 124.11 (See also 145.11(a)(29))	**§5.204(b) Public comment and hearing requirements** **(1) Public comment** (A) During the public comment period, any interested person may submit written comments on the draft permit and may request a hearing if one has not already been scheduled. (B) Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. (C) The public comment period shall automatically be extended to the close of any public hearing under this section. The hearing examiner may also extend the comment period by so stating at the hearing. **(2) Public hearing** (A) If the Commission receives a protest regarding an application for a new permit or for an amendment of an existing permit for a geologic storage facility from a person notified pursuant to subsection (a) of this section or from any other affected person within 30 days of the date of receipt of the application by the division, receipt of individual notice, or last publication of notice, whichever is later, then the director will notify the applicant that the director cannot administratively approve the application. Upon the written request of the applicant, the director will schedule a hearing on the application. **§5.204(b)(2) Public hearing.** (E) Upon the written request of the applicant, the Commission must give notice of a hearing to all affected persons, local governments, and other persons who express, in writing, an interest in the application. After the hearing, the examiner will recommend a final action by the Commission. Notices shall include information satisfying the requirements of 40 CFR §124.10(d)(2) and the Texas Government Code, §2001.052.	Similar intent to the CFR.		The state requirement appears to include all aspects of the CFR. No concerns for stringency.
§ 124.12 Public hearings.						

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
56.	(Applicable to State programs, see §145.11 (UIC).) (1) The Director shall hold a public hearing whenever he or she finds, on the basis of requests, a significant degree of public interest in a draft permit(s);	40 CFR 124.12(a)(1) (See also 145.11(a)(30))	**§5.204(b)(2)(B)** The director shall hold a public hearing whenever the director finds, on the basis of requests, a significant degree of public interest in a draft permit.	Same as the CFR.		
57.	The Director may also hold a public hearing at his or her discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision;	40 CFR 124.12(a)(2) (See also 145.11(a)(30))	**§5.204(c)(2)(C)** The director may also hold a public hearing at the director's discretion, whenever, for instance, such a hearing might clarify one or more issues involved in the permit decision.	Same as the CFR.		

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
58.	Public notice of the hearing shall be given as specified in **§124.10 Public notice of permit actions and public comment period.** **(a)** ***Scope****.* (1) The Director shall give public notice that the following actions have occurred: (i) A permit application has been tentatively denied under §124.6(b); (ii) *(Applicable to State programs, see 145.11 (UIC)).* A draft permit has been prepared under §124.6(d); (iii) *(Applicable to State programs, see §145.11 (UIC).* A hearing has been scheduled under § 124.12, subpart E or subpart F; (iv) An appeal has been granted under §124.19(c); (2) No public notice is required when a request for permit modification, revocation and reissuance, or termination is denied under § 124.5(b). Written notice of that denial shall be given to the requester and to the permittee. (3) Public notices may describe more than one permit or permit actions. **(b)** ***Timing*** *(applicable to State programs, 145.11 (UIC)* (1) Public notice of the preparation of a draft permit (including a notice of intent to deny a permit application) required under paragraph (a) of this section shall allow at least 30 days for public comment. (2) Public notice of a public hearing shall be given at least 30 days before the hearing. (Public notice of the hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.)	40 CFR 124.12(a)(4) (See also 145.11(a)(30))	**§5.204(a)(1)** The Commission shall give notice of the following actions: (A) a draft permit has been prepared under §5.202(e) of this title (relating to Permit Required, and Draft Permit and Fact Sheet); and (B) a hearing that has been scheduled under subsection (b)(2) of this section. **§5.202(e)(1)(B)** If the director tentatively decides to deny the permit application, the director shall issue a notice of intent to deny. A notice of intent to deny the permit application is a type of draft permit which follows the same procedures as any draft permit prepared under this section. If the director's final decision is that the tentative decision to deny the permit application was incorrect, the director shall withdraw the notice of intent to deny and proceed to prepare a draft permit. **§5.204(a)(7)** Comment period for a draft permit. Public notice of a draft permit, including a notice of intent to deny a permit application, shall allow at least 30 days for public comment. **§5.204(b)(2)(D)** Public notice of a public hearing shall be given at least 30 days before the hearing. Public notice of a hearing may be given at the same time as public notice of the draft permit and the two notices may be combined.	The contents of §124.10 are separated in the state requirement, but the intent is the same.		The intent of the Texas rules is the same as 124.12 in that hearing must be given; see also 124.10.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
59.	Any person may submit oral or written statements and data concerning the draft permit. Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. The public comment period under §124.10 shall automatically be extended to the close of any public hearing under this section. The hearing officer may also extend the comment period by so stating at the hearing.	40 CFR 124.12(c)	**§5.204(b)(1) Public comment.** (A) During the public comment period, any interested person may submit written comments on the draft permit and may request a hearing if one has not already been scheduled. (B) Reasonable limits may be set upon the time allowed for oral statements, and the submission of statements in writing may be required. (C) The public comment period shall automatically be extended to the close of any public hearing under this section. The hearing examiner may also extend the comment period by so stating at the hearing.	Same as the CFR.		Minor differences do not affect stringency. This provision is not required of states. The public commented on 5.204(b)(1)(B), but no change was made in the August 2022 rule. No concern for stringency.
60.	A tape recording or written transcript of the hearing shall be made available to the public.	40 CFR 124.12(d)		Not required of state programs.		This provision is not required of states.
§ 124.17 Response to comments.						
61.	(Applicable to State programs, see §145.11 (UIC).) At the time that any final permit decision is issued under §124.15, the Director shall issue a response to comments. States are only required to issue a response to comments when a final permit is issued. This response shall:	40 CFR 124.17(a) (See also 145.11(a)(31))		Missing.	Add to program description	The state does not have requirements for preparing a response to comments document. Texas says this information is posted on the Commission's website. It is recommended that this be described in the program prescription. Rule was not changed in August 2022; stringency concern remains.
62.	Specify which provisions, if any, of the draft permit have been changed in the final permit decision, and the reasons for the change; and	40 CFR 124.17(a)(1) (See also 145.11(a)(31))		Missing.	Add to program description	See row 61.
63.	Briefly describe and respond to all significant comments on the draft permit raised during the public comment period, or during any hearing.	40 CFR 124.17(a)(2) (See also 145.11(a)(31))		Missing.	Add to program description	See row 61.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
64.	(Applicable to State programs, see §145.11 (UIC).) The response to comments shall be available to the public.	40 CFR 124.17(c) (See also 145.11(a)(31))		Missing.	Add to program description All draft permits, fact sheets, permits and responses to comments will be placed on the Commission's website.	See row 61.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
PART 144--UNDERGROUND INJECTION CONTROL PROGRAM						
SUBPART A--GENERAL PROVISIONS						
40 CFR §144.1 Purpose and scope of Part 144.						
65.	Subpart H of part 146 sets forth requirements for owners or operators of Class VI injection wells.	40 CFR §144.1(f)(1)(viii)		Missing.	No equivalent provision is needed.	See Texas Notes. No concerns for stringency as this is introductory text.
66.	*Scope of the permit or rule requirement.* The UIC permit program regulates underground injection by six classes of wells (see definition of ''well injection,'' §144.3). The six classes of wells are set forth in §144.6. All owners or operators of these injection wells must be authorized either by permit or rule by the Director. In carrying out the mandate of the SDWA, this subpart provides that no injection shall be authorized by permit or rule if it results in the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 141 or may adversely affect the health of persons (§144.12). No aquifer is an exempted aquifer until it has been affirmatively designated under the procedures at §144.7. During initial Class VI program development, the Director shall not expand the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption for Class VI injection wells and EPA shall not approve a program that applies for aquifer exemption expansions of Class II-Class VI exemptions as part of the program description. All Class II to Class VI aquifer exemption expansions previously issued by EPA must be incorporated into the Class VI program descriptions pursuant to requirements at §145.23(f)(9).***	40 CFR §144.1(g)		Missing.	No equivalent provision is needed.	See Texas Notes. No concerns for stringency as this is introductory text.
40 CFR §144.3 Definitions. DEFINE MAJOR FACILITY – any Class VI facility or activity classified as such by the RA in conjunction with the Director.						

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
67.	*Administrator* means the Administrator of the United States Environmental Protection Agency, or an authorized representative.		No reference found.	Not required of state programs.	This language is required only if the state's regulation does not explicitly use the term "EPA Administrator" when referring to the EPA Administrator. For example, if the state refers to the EPA Administrator as simply "the Administrator," this definition is required. If the state uses the term "EPA Administrator" in its rule language, no definition is required.	The state rules refer to the director throughout. No concerns for stringency
68.	*Application* means the EPA standard national forms for applying for a permit, including any additions, revisions or modifications to the forms; or forms approved by EPA for use in approved States, including any approved modifications or revisions.		No reference found.	Not required of state programs.		No concerns for stringency
69.	*Approved State Program* means a UIC program administered by the State or Indian Tribe that has been approved by EPA according to SDWA sections 1422 and/or 1425.		No reference found.	Not required of state programs.		No concerns for stringency
70.	*Aquifer* means a geological "formation," group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.		**§5.102(4)** Aquifer--A geologic formation, group of formations, or part of a formation that is capable of yielding a significant amount of water to a well or spring.	Same as the CFR.		
71.	*Contaminant* means any physical, chemical, biological, or radiological substance or matter in water.		**§5.102(13)** Contaminant – Any physical, chemical, biological, or radiological substance or matter in water, excluding indigenous flora and fauna.	Missing.	Don't know what happened here.	This definition is not in the version of the state rule reviewed.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
72.	*Director* means the Regional Administrator, the State director or the Tribal director as the context requires, or an authorized representative. When there is no approved State or Tribal program, and there is an EPA administered program, "Director" means the Regional Administrator. When there is an approved State or Tribal program, "Director" normally means the State or Tribal director. In some circumstances, however, EPA retains the authority to take certain actions even when there is an approved State or Tribal program. In such cases, the term "Director" means the Regional Administrator and not the State or Tribal director.		**§5.102(16)** Director--The director of the Oil and Gas Division of the Railroad Commission of Texas or the director's delegate.	Differs from the CFR, but not required of state programs.		Texas refers to the Director throughout the regulations. No concerns for stringency
73.	*Draft permit* means a document prepared under §124.6 indicating the Director's tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a "permit." A notice of intent to terminate a permit, and a notice of intent to deny a permit, as discussed in §124.5 are types of "draft permits." A denial of a request for modification, revocation and reissuance, or termination, as discussed in §124.5 is not a "draft permit."		**§5.102(18)** Draft permit -- A document prepared indicating the director's tentative decision to issue or deny, modify, revoke and reissue, terminate, or reissue a permit. A notice of intent to terminate a permit, and a notice of intent to deny a permit are types of "draft permits." A denial of a request for modification, revocation and reissuance, or termination is not a draft permit.	Same as the CFR.		
74.	*Drilling mud* means a heavy suspension used in drilling an "injection well," introduced down the drill pipe and through the drill bit.		No reference found.	Not required of state programs.		No concerns for stringency
75.	*Eligible Indian Tribe* is a Tribe that meets the statutory requirements established at 42 U.S.C. 300j-11(b)(1).		No reference found.	Not required of state programs.		No concerns for stringency
76.	*Environmental Protection Agency* ("EPA") means the United States Environmental Protection Agency.		No reference found.	Not required of state programs.		No concerns for stringency
77.	*Exempted aquifer* means an "aquifer" or its portion that meets the criteria in the definition of "underground source of drinking water" but which has been exempted according to the procedures in §144.7.		**§5.102(20)** Exempted aquifer -- An aquifer or its portion that meets the criteria in the definition of underground source of drinking water but which has been exempted according to the procedures in 40 CFR §144.7.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
78.	*Existing injection* well means an "injection well" other than a "new injection well."		No reference found.		This definition is optional if the state does not distinguish between new and existing injection wells.	No concerns for stringency
79.	*Facility or activity* means any UIC "injection well," or an other facility or activity that is subject to regulation under the UIC program.		**§5.102(27)** Geologic storage facility or storage facility--The underground geologic formation, underground equipment, injection wells, and surface buildings and equipment used or to be used for the geologic storage of anthropogenic CO_2 and all surface and subsurface rights and appurtenances necessary to the operation of a facility for the geologic storage of anthropogenic CO_2. The term includes the subsurface three-dimensional extent of the CO2 plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region, and any reasonable and necessary areal buffer and subsurface monitoring zones. The term does not include a pipeline used to transport CO_2 from the facility at which the CO_2 is captured to the geologic storage facility. The storage of CO_2 incidental to or as part of enhanced recovery operations does not in itself automatically render a facility a geologic storage facility.	Differs from the CFR.		The state requirement is more specific to Class VI wells but is similar to the CFR definition of a geologic sequestration project. 5.102(27), (28), and (45) were change in the August 2022 rule based on public comment on 5.102(27) to clarify the definition and usage of the term "reservoir." No concern for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
80.	*Fluid* means any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.		**Texas Water Code, §27.002(7)** "Fluid" means a material or substance that flows or moves in a liquid, gaseous, solid, semi-solid, sludge, or other form or state. **§5.102(23)** Fluid--Any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state.	Similar intent to the CFR.		The definition in the Texas Water Code is similar intent to the CFR. It is recommended to reference this definition in the rule or the program description. 5.102(23) was added in the August 2022 rule based on public comment to include a definition for "fluid." August 2022 rule changes addressed stringency concerns (i.e., to incorporate the definition within the UIC rules).
81.	*Formation* means a body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.		**§5.102(24)** Formation – A body of consolidated or unconsolidated rock characterized by a degree of lithologic homogeneity which is prevailingly, but not necessarily, tabular and is mappable on the earth's surface or traceable in the subsurface.	Same as the CFR.		
82.	*Formation fluid* means "fluid" present in a "formation" under natural conditions as opposed to introduced fluids, such as "drilling mud."		**§5.102(25)** Formation fluid—Fluid present in a formation under natural conditions.	Similar intent to the CFR.		The term drilling mud is not used in the state rule. No concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
83.	*Geologic sequestration* means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.***	40 CFR §144.3	**§5.102(27)** Geologic storage—The long-term containment of anthropogenic CO_2 in subsurface geologic formations. 5.201(g) This subchapter does not apply to the injection of any CO2 stream that meets the definition of a hazardous waste under 40 CFR Part 26.	Similar intent to the CFR.	5.102(10) Class VI well--Any well used to inject anthropogenic CO_2 specifically for the purpose of the long-term containment of a gaseous, liquid, or supercritical CO_2 in subsurface geologic formations. 5.102(23) Fluid--Any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas, or any other form or state. Include in the program description that the rule applies to any CO2 that is injected in any phase.	The state requirement is less specific than the CFR in that it does not reference the various phases of CO2 and refers to anthropogenic CO2 only. While the intent may be similar, they may have the potential to make the rules less stringent. It may be appropriate to revise the rule or describe in the program description that the rule applies to any CO2 that is injected in any phase. The public commented on clarification of "long-term" in 5.102(27), but no change was made in the August 2022 rule. 5.201(g) was changed in the August 2022 rule based on public comment to clarify that the chapter does not apply to any CO_2 stream that meets the definition of a hazardous waste under 40 CFR Part 261. This is consistent with the CFR definition of a carbon dioxide stream.
84.	*Ground water* means water below the land surface in a zone of saturation.		**Texas Water Code §26.001(5)** "Water" or "water in the state" means groundwater, percolating or otherwise, lakes, bays, ponds, impounding reservoirs, springs, rivers, streams, creeks, estuaries, wetlands, marshes, inlets, canals, the Gulf of Mexico, inside the territorial limits of the state, and all other bodies of surface water, natural or artificial, inland or coastal, fresh or salt, navigable or nonnavigable, and including the beds and banks of all watercourses and bodies of surface water, that are wholly or partially inside or bordering the state or inside the jurisdiction of the state.		Include in program description	The definition in the Texas Water Code is more detailed than the CFR. It may be appropriate to add or reference this definition in the state rule or describe this in the program description. However. the intent is similar and there are no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
85.	*Hazardous waste* means a hazardous waste as defined in 40 CFR 261.3.		No reference found.	This provision is not required of state programs.	The state regulation does not include this definition in the context of Class VI well requirements.	No concerns for stringency
86.	*Indian Tribe* means any Indian Tribe having a Federally recognized governing body carrying out substantial governmental duties and powers over a defined area.		No reference found.	This provision is not required of state programs.	Negligible Indian lands in Texas.	No concerns for stringency
87.	*Injection well* means a "well" into which "fluids" are being injected.		**§5.102(31)** Injection well—A well into which fluids are injected.	Same as the CFR.		
88.	*New injection* wells means an "injection well" which began injection after a UIC program for the State applicable to the well is approved or prescribed.		No reference found.	This provision is not required of state programs.	This language is optional if the state regulation does not distinguish between new and existing wells.	No concerns for stringency
89.	*Owner or operator* means the owner or operator of any "facility or activity" subject to regulation under the UIC program.		**§5.102(38)** Operator—A person, acting for itself or as an agent for others, designated to the Railroad Commission of Texas as the person with responsibility for complying with the rules and regulations regarding the permitting, physical operation, closure, and post-closure care of a geologic storage facility, or such person's authorized representative.	Similar intent to the CFR.	RRC holds the "operator" responsible for compliance.	The difference in the definitions does not raise concerns for stringency. The public commented on 5.102(38), but no change was made in the August 2022 rule.
90.	*Permit* means an authorization, license, or equivalent control document issued by EPA or an approved State to implement the requirements of this part, parts 145, 146 and 124. "Permit" includes an area permit (§144.33) and an emergency permit (§144.34). Permit does not include UIC authorization by rule (§144.21), or any permit which has not yet been the subject of final agency action, such as a "draft permit."		**§5.102(40)** Permit – An authorization, license, or equivalent control document issued by the Commission to implement the requirements of this chapter.	Similar intent to the CFR.		The state requirement does not discuss area permits or authorization by rule, which is appropriate for Class VI. 5.102(40) was changed in the August 2022 rule based on public comment. No concern for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
91.	*Person* means an individual, association, partnership, corporation, municipality, state, federal, or tribal agency, or an agency or employee thereof		**§5.102(41)** Person—A natural person, corporation, organization, government, governmental subdivision or agency, business trust, estate, trust, partnership, association, or any other legal entity.	Similar intent to the CFR.		No concerns for stringency.
92.	*RCRA* means the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Pub. L. 94–580, as amended by Pub. L. 95–609, Pub. L. 96–510, 42 U.S.C. 6901 *et seq*.).		No reference found.	Not required of state programs.		No concerns for stringency
93.	*Regional Administrator* means the Regional Administrator of the appropriate Regional Office of the Environmental Protection Agency or the authorized representative of the Regional Administrator.		No reference found.	Not required of state programs.		No concerns for stringency
94.	*SDWA* means the Safe Drinking Water Act (Pub. L. 93–523, as amended; 42 U.S.C. 300f *et seq*.).		No reference found.	Not required of state programs.		No concerns for stringency
95.	*Site* means the land or water area where any "facility or activity" is physically located or conducted, including adjacent land used in connection with the facility or activity.		No reference found.	Missing		The state does not include this definition in the context of Class VI well requirements; however they define a geologic sequestration project. No concerns for stringency
96.	*State* means any of the 50 States, the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Trust Territory of the Pacific Islands, the Commonwealth of the Northern Mariana Islands, or an Indian Tribe treated as a State.		No reference found.	Not required of state programs.		No concerns for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
97.	*State Director* means the chief administrative officer of any State, interstate, or Tribal agency operating an "approved program," or the delegated representative of the State director. If the responsibility is divided among two or more States, interstate, or Tribal agencies, "State Director" means the chief administrative officer of the State, interstate, or Tribal agency authorized to perform the particular procedure or function to which reference is made.		**§5.102(16)** Director—The director of the Oil and Gas Division of the Railroad Commission of Texas or the director's delegate.	Differs from the CFR.		The state rules refer to the director throughout. No concerns for stringency.
98.	*Stratum* (plural strata) means a single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.		**§5.102(46)** Stratum (or strata) – A single sedimentary bed or layer, regardless of thickness, that consists of generally the same kind of rock material.	Same as the CFR.		
99.	*Total dissolved solids* means the total dissolved (filterable) solids as determined by use of the method specified in 40 CFR part 136.		No reference found.	Not required of state programs.		
100.	*UIC* means the Underground Injection Control program under Part C of the Safe Drinking Water Act, including an "approved State program."		No reference found.	Not required of state programs.		
101.	*Underground injection* means a "well injection."		No reference found.		Understood in the context of Class VI injection wells.	See Texas Notes. This presents no concern since Texas defines Class VI well similarly to/same as the CFR. See row 111.
102.	*Underground source of drinking water* (USDW) means an aquifer or its portion: (a)(1) Which supplies any public water system; or (2) Which contains a sufficient quantity of ground water to supply a public water system; and (i) Currently supplies drinking water for human consumption; or (ii) Contains fewer than 10,000 mg/l total dissolved solids; and (b) Which is not an exempted aquifer.		**§5.102(49)** Underground source of drinking water (USDW)—An aquifer or its portion which is not an exempt aquifer as defined in 40 CFR §146.4 and which: (A) supplies any public water system; or (B) contains a sufficient quantity of ground water to supply a public water system; and (i) currently supplies drinking water for human consumption; or (ii) contains fewer than 10,000 mg/l total dissolved solids.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
103.	*Well* means: A bored, drilled, or driven shaft whose depth is greater than the largest surface dimension; or, a dug hole whose depth is greater than the largest surface dimension; or, an improved sinkhole; or, a subsurface fluid distribution system.		**Texas Water Code §27.102** (11) "Injection well" means an artificial excavation or opening in the ground made by digging, boring, drilling, jetting, driving, or some other method, and used to inject, transmit, or dispose of industrial and municipal waste or oil and gas waste into a subsurface stratum; or a well initially drilled to produce oil and gas which is used to transmit, inject, or dispose of industrial and municipal waste or oil and gas waste into a subsurface stratum; or a well used for the injection of any other fluid; but the term does not include any surface pit, surface excavation, or natural depression used to dispose of industrial and municipal waste or oil and gas waste.	Similar intent to the CFR.		The state definition is different than the CFR in that it does not refer to a well that is deeper than it is wide. However, in the context of the Class VI rule, which defines a Class VI well there, is no concern for stringency.
104.	*Well injection* means the subsurface emplacement of fluids through a well.		**§5.102(50)** Well injection – The subsurface emplacement of fluids through a well.	Same as the CFR.		
40 CFR §144.6 Classification of wells.						
105.	Injection wells are classified as follows:	40 CFR 144.6 (See also 145.11(a)(2))		Missing.		The state citation is specific to only Class VI wells. No concerns for stringency.
106.	*Class II.* Wells which inject fluids:	40 CFR 144.6(b) (See also 145.11(a)(2))	No reference found.	Not required of state programs.		The state citation is specific to only Class VI wells. No concerns for stringency.
107.	Which are brought to the surface in connection with natural gas storage operations, or conventional oil or natural gas production and may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection.	40 CFR 144.6(b)(1) (See also 145.11(a)(2))	No reference found.	Not required of state programs.		The state citation is specific to only Class VI wells. No concerns for stringency.
108.	For enhanced recovery of oil or natural gas; and	40 CFR 144.6(b)(2) (See also 145.11(a)(2)	No reference found.	Not required of state programs.		The state citation is specific to only Class VI wells. No concerns for stringency.
109.	For storage of hydrocarbons which are liquid at standard temperature and pressure.	40 CFR 144.6(b)(3) (See also 145.11(a)(2))	No reference found.	Not required of state programs.		The state citation is specific to only Class VI wells. No concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
110.	*Class V*. Injection wells not included in Class I, II, III, IV, or VI. Specific types of Class V injection wells are described in §144.81.	40 CFR §144.6(e)	No reference found.	Not required of state programs.		The state citation is specific to only Class VI wells. No concerns for stringency.
111.	*Class VI*. Wells that are not experimental in nature that are used for geologic sequestration of carbon dioxide beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at §146.95 of this chapter; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to §§146.4 of this chapter and 144.7(d).	40 CFR §144.6(f)	**§5.201(a) Applicability and Compliance** (a) Scope of jurisdiction. This subchapter applies to the geologic storage and associated injection of anthropogenic CO_2 in this state, both onshore and offshore. **§5.102(10)** Class VI well—Any well used to inject anthropogenic CO_2 specifically for the purpose of the long-term containment of a gaseous, liquid, or supercritical CO_2 in subsurface geologic formations.		The rule applicability clearly indicates that wells injecting CO_2 for geological storage must be permitted as Class VI wells.	The state definition of a Class VI well is less specific than the CFR in that it does not refer to injection of the CO2 below the lowermost USDW or reference injection depth waivers or aquifer exemption expansions. However, these are addressed elsewhere in the regulations. While inclusion of similar information in the regulation or program description would improve clarity, there is no concern for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §144.7 Identification of underground sources of drinking water and exempted aquifers.						
112.	The Director may identify (by narrative description, illustrations, maps, or other means) and shall protect as underground sources of drinking water, all aquifers and parts of aquifers which meet the definition of "underground source of drinking water" in §144.3, except to the extent there is an applicable aquifer exemption under paragraph (b) of this section or an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration under paragraph (d) of this section. Other than EPA approved aquifer exemption expansions that meet the criteria set forth in §146.4(d) of this chapter, new aquifer exemptions shall not be issued for Class VI injection wells. Even if an aquifer has not been specifically identified by the Director, it is an underground source of drinking water if it meets the definition in §144.3.	40 CFR §144.7(a)	**§5.101 Purpose.** The purpose of this chapter is to implement the state program for geologic storage of anthropogenic CO_2 consistent with state and federal law related to protection of underground sources of drinking water. **§5.201(e) Expansion of aquifer exemption.** The areal extent of an aquifer exemption for a Class II enhanced recovery well may be expanded for the exclusive purpose of Class VI injection for geologic storage if the aquifer does not currently serve as a source of drinking water; and the total dissolved solids content is more than 3,000 milligrams per liter (mg/l) and less than 10,000 mg/l; and it is not reasonably expected to supply a public water system in accordance with 40 CFR §146.4. An operator seeking such an expansion shall submit, concurrent with the permit application, a supplemental report that complies with 40 CFR §144.7(d). The Commission adopts 40 CFR §144.7 and §146.4 by reference, effective September 20, 2022.	Differs from the CFR.		The state text is less specific than the CFR in that it does not limit expansions to previously approved Class II exemptions. However the state adopts 144.7 and 146.4 by reference and all aquifer exemptions must be approved by EPA. There is no concern for stringency. Minor August 2022 rule changes do not affect stringency.
113.	The Director may identify (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) which are clear and definite, all aquifers or parts thereof which the Director proposes to designate as exempted aquifers using the criteria in §146.4 of this chapter.	40 CFR §144.7(b)(1)		Missing.	Not required	See row 112.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
114.	No designation of an exempted aquifer submitted as part of a UIC program shall be final until approved by the Administrator as part of a UIC program. No designation of an expansion to the areal extent of a Class II enhanced oil recovery or enhanced gas recovery aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration shall be final until approved by the Administrator as a revision to the applicable Federal UIC program under part 147 or as a substantial revision of an approved State UIC program in accordance with §145.32 of this chapter. ***	40 CFR §144.7(b)(2)		Missing.		See row 112.
115.	*Expansion to the Areal Extent of Existing Class II Aquifer Exemptions for Class VI Wells*. Owners or operators of Class II enhanced oil recovery or enhanced gas recovery wells may request that the Director approve an expansion to the areal extent of an aquifer exemption already in place for a Class II enhanced oil recovery or enhanced gas recovery well for the exclusive purpose of Class VI injection for geologic sequestration. Such requests must be treated as a revision to the applicable Federal UIC program under part 147 or as a substantial program revision to an approved State UIC program under §145.32 of this chapter and will not be final until approved by EPA.	40 CFR §144.7(d)		Missing		See row 112.
116.	The owner or operator of a Class II enhanced oil recovery or enhanced gas recovery well that requests an expansion of the areal extent of an existing aquifer exemption for the exclusive purpose of Class VI injection for geologic sequestration must define (by narrative description, illustrations, maps, or other means) and describe in geographic and/or geometric terms (such as vertical and lateral limits and gradient) that are clear and definite, all aquifers or parts thereof that are requested to be designated as exempted using the criteria in §146.4 of this chapter.	40 CFR §144.7(d)(1)	**§5.201(e)**			See row 112.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
117.	In evaluating a request to expand the areal extent of an aquifer exemption of a Class II enhanced oil recovery or enhanced gas recovery well for the purpose of Class VI injection, the Director must determine that the request meets the criteria for exemptions in §146.4. In making the determination, the Director shall consider:	40 CFR §144.7(d)(2)	**§5.201(e)**			See row 112.
118.	Current and potential future use of the USDWs to be exempted as drinking water resources;	40 CFR §144.7(d)(2)(i)	**§5.201(e)**			See row 112.
119.	The predicted extent of the injected carbon dioxide plume, and any mobilized fluids that may result in degradation of water quality, over the lifetime of the GS project, as informed by computational modeling performed pursuant to §146.84(c)(1), in order to ensure that the proposed injection operation will not at any time endanger USDWs including non-exempted portions of the injection formation;	40 CFR §144.7(d)(2)(ii)		Missing		See row 112.
120.	Whether the areal extent of the expanded aquifer exemption is of sufficient size to account for any possible revisions to the computational model during reevaluation of the area of review, pursuant to §146.84(e); and	40 CFR §144.7(d)(2)(iii)	**§5.201(e)**			See row 112.
121.	Any information submitted to support a waiver request made by the owner or operator under §146.95, if appropriate.	40 CFR §144.7(d)(2)(iv)		Missing.		See row 112.
40 CFR §144.8 Noncompliance and program reporting by the Director.						
122.	The Director shall prepare quarterly and annual reports as detailed below. When the State is the permit-issuing authority, the State Director shall submit any reports required under this section to the Regional Administrator. (a) *Quarterly reports.* The Director shall submit quarterly narrative reports for major facilities as follows:	40 CFR 144.8(a) (See also 145.11(a)(4))	No reference found.	Missing.		This is a requirement of the state, and need not be included in a state's Class VI regulation. No concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
123.	*Format.* The report shall use the following format: (i) Provide an alphabetized list of permittees. When two or more permittees have the same name, the lowest permit number shall be entered first.	40 CFR 144.8(a)(1)(i) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
124.	For each entry on the list, include the following information in the following order: (A) Name, location, and permit number of the noncomplying permittees. (B) A brief description and date of each instance of noncompliance for that permittee. Instances of noncompliance may include one or more the kinds set forth in paragraph (a)(2) of this section. When a permittee has noncompliance of more than one kind, combine the information into a single entry for each such permittee. (C) The date(s) and a brief description of the action(s) taken by the Director to ensure compliance. (D) Status of the instance(s) of noncompliance with the date of the review of the status or the date of resolution. (E) Any details which tend to explain or mitigate the instance(s) of noncompliance.	40 CFR 144.8(a)(1)(ii) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
125.	*Instances of noncompliance to be reported.* Any instances of noncompliance within the following categories shall be reported in successive reports until the noncompliance is reported as resolved. Once noncompliance is reported as resolved it need not appear in subsequent reports.	40 CFR 144.8(a)(2) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
126.	*Failure to complete construction elements.* When the permittee has failed to complete, by the date specified in the permit, an element of a compliance schedule involving either planning for construction or a construction step (for example, begin construction, attain operation level); and the permittee has not returned to compliance by accomplishing the required elements of the schedule within 30 days from the date a compliance schedule report is due under the permit.	40 CFR 144.8(a)(2)(i) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
127.	*Modifications to schedules of compliance.* When a schedule of compliance in the permit has been modified under §§**144**.39 or **144**.41 because of the permittee's noncompliance.	40 CFR 144.8(a)(2)(ii) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
128.	*Failure to complete or provide compliance schedule or monitoring reports.* When the permittee has failed to complete or provide a report required in a permit compliance schedule (for example, progress report or notice of noncompliance or compliance) or a monitoring report; and the permittee has not submitted the complete report within 30 days from the date it is due under the permit for compliance schedules, or from the date specified in the permit for monitoring reports.	40 CFR 144.8(a)(2)(iii) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
129.	*Deficient reports.* When the required reports provided by the permittee are so deficient as to cause misunderstanding by the Director and thus impede the review of the status of compliance.	40 CFR 144.8(a)(2)(iv) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
130.	*Noncompliance with other permit requirements.* Noncompliance shall be reported in the following circumstances: (A) Whenever the permittee has violated a permit requirement (other than reported under paragraph (a)(2) (i) or (ii) of this section), and has not returned to compliance within 45 days from the date reporting of noncompliance was due under the permit; or (B) When the Director determines that a pattern of noncompliance exists for a major facility permittee over the most recent four consecutive reporting periods. This pattern includes any violation of the same requirement in two consecutive reporting periods, and any violation of one or more requirements in each of four consecutive reporting periods; or (C) When the Director determines significant permit noncompliance or other significant event has occurred, such as a migration of fluids into a USDW.	40 CFR 144.8(a)(2)(v) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
131.	*All other.* Statistical information shall be reported quarterly on all other instances of noncompliance by major facilities with permit requirements not otherwise reported under paragraph (a) of this section.	40 CFR 144.8(a)(2)(vi) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
132.	*Annual reports* — (1) *Annual noncompliance report.* Statistical reports shall be submitted by the Director on nonmajor UIC permittees indicating the total number reviewed, the number of noncomplying nonmajor permittees, the number of enforcement actions, and number of permit modifications extending compliance deadlines. The statistical information shall be organized to follow the types of noncompliance listed in paragraph (a) of this section.	40 CFR 144.8(b)(1) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
133.	For State-administered UIC Programs only. In addition to the annual noncompliance report, the State Director shall: Submit each year a program report to the Administrator (in a manner and form prescribed by the Administrator) consisting of:	40 CFR 144.8(b)(2)(i) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
134.	A detailed description of the State's implementation of its program;	40 CFR 144.8(b)(2)(i)(A) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
135.	Suggested changes, if any to the program description (see § 145.23(f)) which are necessary to reflect more accurately the State's progress in issuing permits;	40 CFR 144.8(b)(2)(i)(B) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
136.	An updated inventory of active underground injection operations in the State.	40 CFR 144.8(b)(2)(i)(C) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
137.	All Class VI program reports shall be consistent with reporting requirements set forth in §146.91 of this chapter.	40 CFR §144.8(b)(2)(iii)	No reference found	Missing.		See row 122.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
138.	Schedule. (1) For all quarterly reports. On the last working day of May, August, November, and February, the State Director shall submit to the Regional Administrator information concerning noncompliance with permit requirements by major facilities in the State in accordance with the following schedule. The Regional Administrator shall prepare and submit information for EPA-issued permits to EPA Headquarters in accordance with the same schedule. QUARTERS COVERED BY REPORTS ON NONCOMPLIANCE BY MAJOR FACILITIES [Date for completion of reports] January, February, and March ..... 1 May 31 April, May, and June ..... 1 Aug. 31 July, August, and September ..... 1 Nov. 30 October, November, and December ..... 1 Feb. 28 1 Reports must be made available to the public for inspection and copying on this date.	40 CFR 144.8(c)(1) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.
139.	For all annual reports. The period for annual reports shall be for the calendar year ending December 31, with reports completed and available to the public no more than 60 days later.	40 CFR 144.8(c)(2) (See also 145.11(a)(4))	No reference found.	Missing.		See row 122.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
SUBPART B--GENERAL PROGRAM REQUIREMENTS						
40 CFR 144.11 Prohibition of unauthorized injection.						
140.	Any underground injection, except into a well authorized by rule or except as authorized by permit issued under the UIC program, is prohibited. The construction of any well required to have a permit is prohibited until the permit has been issued.	40 CFR 144.11 (See also 145.11(a)(5))	**§5.202(a) Permit required.** (1) A person shall not begin drilling or operating an anthropogenic CO_2 injection well regulated under this subchapter for geologic storage or constructing or operating a geologic storage facility regulated under this subchapter without first obtaining the necessary permits from the Commission. Following receipt of a geologic storage facility permit issued under this subchapter, the storage operator shall obtain a permit to drill, deepen, or convert a well for storage purposes in accordance with §3.5 of this title (relating to Application to Drill, Deepen, Reenter, or Plug Back)	Similar intent to the CFR.		The intent is the same with regards to authorization by permit for Class VI wells. No concerns for stringency. Minor August 2022 rule changes do not affect stringency.
40 CFR §144.12 Prohibition of movement of fluid into underground sources of drinking water.						
141.	No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.	40 CFR 144.12(a) (See also 145.11(a)(6))	**§5.203(e)(1)(A) General.** The operator of a geologic storage facility must ensure that all anthropogenic CO_2 injection wells are constructed and completed in a manner that will: (i) prevent the movement of injected CO_2 or displaced formation fluids into any unauthorized zones or into any areas where they could endanger USDWs.	Similar intent to the CFR.	5.206**(b) General criteria**. The director may issue a permit under this subchapter if the applicant demonstrates and the director finds that: … (3) the injection of anthropogenic CO_2 will not endanger or injure human health and safety;	The state text does not specifically refer to endangerment as causing a violation of an NPDWR (National Primary Drinking Water Regulations) or affecting the health of persons. While these have similar meaning to the CFR and likely would not affect stringency, clarification is recommended. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
142.	If any water quality monitoring of an USDW indicates the movement of any contaminant into the USDW, except as authorized under part 146, the Director shall prescribe such additional requirements for construction, corrective action, operation, monitoring, or reporting (including closure of the injection well) as are necessary to prevent such movement.	40 CFR §144.12(b)	**§5.206(h)(3) Action.** If an operator obtains evidence that the injected CO_2 stream and associated pressure front may cause an endangerment to USDWs, the operator must: (A) immediately cease injection; (B) take all steps reasonably necessary to identify and characterize any release; (C) notify the director as soon as practicable but within at least 24 hours; and (D) implement the approved emergency and remedial response plan.	Similar intent to the CFR.	Include in Program Description a description of state's response to contamination or endangerment events,	The state requirement includes specific action items that the operator (not the director) would take in the case of USDW contamination but does not contain an explicit prohibition of fluid movement within the Class VI regulation. It may be appropriate for the program description to describe the state's response to contamination or endangerment events. Rule was not changed in August 2022; stringency concern remains.
143.	Notwithstanding any other provision of this section, the Director may take emergency action upon receipt of information that a contaminant which is present in or likely to enter a public water system or USDW may present an imminent and substantial endangerment to the health of persons.	40 CFR 144.12(e) (See also 145.11(a)(6))	**§5.202(d)(4) Emergency shutdown.** Notwithstanding the provisions of paragraph (2) of this subsection, in the event of an emergency that threatens endangerment to USDWs or to life or property, or an imminent threat of uncontrolled release of CO_2, the director may immediately order suspension of the operation of the geologic storage facility until a final order is issued pursuant to a hearing, if any.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
40 CFR §144.15 Prohibition of non-experimental Class V wells for geologic sequestration.						

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
144.	The construction, operation or maintenance of any non-experimental Class V geologic sequestration well is prohibited.	40 CFR §144.15	No reference found		The state regulation does not contain this prohibition; however, the statutes and rules require a Class VI permit for the construction, operation and maintenance of geologic sequestration wells. Add in Program Description.	The state does not explicitly prohibit CO2 injection for GS in a Class V well. This **is less stringent** than the CFR. It may be appropriate to describe Texas' approach in the program description. Rule was not changed in August 2022; stringency concern remains.
40 CFR 144.16 Waiver of requirement by Director.						
145.	When injection does not occur into, through or above an USDW, the Director may authorize a well or project with less stringent requirements for area of review, construction, mechanical integrity, operation, monitoring, and reporting than required in 40 CFR part 146 or § 144.52 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.	40 CFR 144.16(a)	No reference found.	Not required of state programs.		
146.	When injection occurs through or above an USDW, but the radius of endangering influence when computed under §146.06(a) is smaller or equal to the radius of the well, the Director may authorize a well or project with less stringent requirements for operation, monitoring, and reporting than required in 40 CFR part 146 or § 144.52 to the extent that the reduction in requirements will not result in an increased risk of movement of fluids into an underground source of drinking water.	40 CFR 144.16(b)	No reference found.	Not required of state programs.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
147.	When reducing requirements under paragraph (a) or (b) of this section, the Director shall prepare a fact sheet under §124.8 explaining the reasons for the action.	40 CFR 144.16(c)	No reference found.	Not required of state programs.		
40 CFR 144.17 Records.						
148.	The Director may require, by written notice on a selective well-by-well basis, an owner or operator of an injection well to establish and maintain records, make reports, conduct monitoring, and provide other information as is deemed necessary to determine whether the owner or operator has acted or is acting in compliance with Part C of the SDWA or its implementing regulations.	40 CFR 144.17	**§5.206(e) Monitoring, sampling, and testing requirements**. (1) The operator of an anthropogenic CO_2 injection well must maintain and comply with the approved monitoring, sampling, and testing plan to verify that the geologic storage facility is operating as permitted and that the injected fluids are confined to the injection zone. (3) The director may require additional monitoring as necessary to support, upgrade, and improve computational modeling of the AOR evaluation and to determine compliance with the requirement that the injection activity not allow movement of fluid that would endanger USDWs. (4) The director may require measures and actions designed to minimize and respond to risks associated with potential seismic events, including seismic monitoring.	Similar intent to the CFR.		Other state citations require operators to keep records and conduct monitoring (see 146.90). The intent is similar to the CFR; no concerns for stringency. August 2022 revisions allow the director to require measures to address seismic risk; this is more stringent/specific than the CFR.
40 CFR §144.18 Requirements for Class VI wells.						

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
149.	Owners or operators of Class VI wells must obtain a permit. Class VI wells cannot be authorized by rule to inject carbon dioxide.	40 CFR §144.18	**§5.202(a) Permit required**. (1) A person shall not begin drilling or operating an anthropogenic CO_2 injection well for geologic storage or constructing or operating a geologic storage facility regulated under this subchapter without first obtaining the necessary permits from the Commission. Following receipt of a geologic storage facility permit issued under this subchapter, the storage operator shall obtain a permit to drill, deepen, or convert a well for storage purposes in accordance with §3.5 of this title (relating to Application to Drill, Deepen, Reenter, or Plug Back).	Similar intent to the CFR.	Neither the statutes nor the regulations provide for authorization by rule for Class VI injection wells.	The requirement to obtain a permit is the same. No concerns for stringency.

Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §144.19 Transitioning from Class II to Class VI.					

150.	Owners or operators that are injecting carbon dioxide for the primary purpose of long- term storage into an oil and gas reservoir must apply for and obtain a Class VI geologic sequestration permit when there is an increased risk to USDWs compared to Class II operations. In determining if there is an increased risk to USDWs, the owner or operator must consider the factors specified in §144.19(b).	40 CFR §144.19(a)	**§5.201 Applicability and Compliance** (b) Injection of CO_2 for enhanced recovery. (1) This subchapter does not apply to the injection of fluid through the use of an injection well regulated under §3.46 of this title (relating to Fluid Injection into Productive Reservoirs) for the primary purpose of enhanced recovery operations from which there is reasonable expectation of more than insignificant future production volumes of oil, gas, or geothermal energy and operating pressures are no higher than reasonably necessary to produce such volumes or rates. However, the operator of an enhanced recovery project may propose to also permit the enhanced recovery project as a CO_2 geologic storage facility simultaneously. (2) If the director determines that an injection well that is permitted for the injection of CO_2 for the purpose of enhanced recovery regulated under §3.46 of this title should be regulated under this subchapter because the injection well is no longer being used for the primary purpose of enhanced recovery operations or there is an increased risk to USDWs, the director must notify the operator of such determination and allow the operator at least 30 days to respond to the determination and to file an application under this subchapter or cease operation of the well. In determining if there is an increased risk to USDWs, the director shall consider the following factors: (A) increase in reservoir pressure within the injection zone; (B) increase in CO2 injection rates; (C) decrease in reservoir production rates; (D) distance between the injection zone and USDWs; (E) suitability of the enhanced oil or gas recovery AOR delineation; (F) quality of abandoned well plugs within the AOR; (G) the storage operator's plan for recovery of CO2 at the cessation of injection;	Similar intent to the CFR.		The state text is more extensive than the CFR. However, the intent for a well to transition to Class VI if risk is increased is included (see the rows below). No concerns for stringency. Minor August 2022 rule changes do not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			(H) the source and properties of injected CO2; and (I) any additional site-specific factors as determined by the director			
151.	The Director shall determine when there is an increased risk to USDWs compared to Class II operations and a Class VI permit is required. In order to make this determination the Director must consider the following:	40 CFR §144.19(b)	**§5.201(b)(2)** If the director determines that an injection well that is permitted for the injection of CO_2 for the purpose of enhanced recovery regulated under §3.46 of this title should be regulated under this subchapter because the injection well is no longer being used for the primary purpose of enhanced recovery operations or there is an increased risk to USDWs, the director must notify the operator of such determination and allow the operator at least 30 days to respond to the determination and to file an application under this subchapter or cease operation of the well. In determining if there is an increased risk to USDWs, the director shall consider the following factors:	Similar intent to the CFR.		The state requirement includes additional provisions and requirements that the Director notify the operator that do not affect stringency. 5.201(b)(2) was changed in the August 2022 rule based on public comment to clarify that this provision applies to wells permitted for enhanced recovery. No concerns for stringency.
152.	Increase in reservoir pressure within the injection zone(s);	40 CFR §144.19(b)(1)	**§5.201(b)(2)(A)** increase in reservoir pressure within the injection zone;	Same as the CFR.		
153.	Increase in carbon dioxide injection rates;	40 CFR §144.19(b)(2)	**§5.201(b)(2)(B)** increase in CO_2 injection rates;	Same as the CFR.		
154.	Decrease in reservoir production rates;	40 CFR §144.19(b)(3)	**§5.201(b)(2)(C)** decrease in reservoir production rates;	Same as the CFR.		
155.	Distance between the injection zone(s) and USDWs;	40 CFR §144.19(b)(4)	**§5.201(b)(2)(D)** distance between the injection zone and USDWs;	Same as the CFR.		
156.	Suitability of the Class II area of review delineation;	40 CFR §144.19(b)(5)	**§5.201(b)(2)(E)** suitability of the enhanced oil or gas recovery AOR delineation;	Same as the CFR.		
157.	Quality of abandoned well plugs within the area of review;	40 CFR §144.19(b)(6)	**§5.201(b)(2)(F)** quality of abandoned well plugs within the AOR;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
158.	The owner's or operator's plan for recovery of carbon dioxide at the cessation of injection;	40 CFR §144.19(b)(7)	**§5.201(b)(2)(G)** the storage operator's plan for recovery of CO_2 at the cessation of injection;	Same as the CFR.		
159.	The source and properties of injected carbon dioxide; and	40 CFR §144.19(b)(8)	**§5.201(b)(2)(H)** the source and properties of injected CO_2; and	Same as the CFR.		
160.	Any additional site-specific factors as determined by the Director.	40 CFR §144.19(b)(9)	**§5.201(b)(2)(I)** any additional site-specific factors as determined by the director	Same as the CFR.		Minor August 2022 rule changes do not affect stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
SUBPART C--AUTHORIZATION OF UNDERGROUND INJECTION BY RULE						
40 CFR §144.22 Existing Class II enhanced recovery and hydrocarbon storage wells.						
161.	Duration of well authorization by rule. Well authorization under this section expires upon the effective date of a permit issued pursuant to §§144.19, 144.25, 144.31, 144.33 or 144.34; after plugging and abandonment in accordance with an approved plugging and abandonment plan pursuant to §§144.28(c) and 146.10 of this chapter; and upon submission of a plugging and abandonment report pursuant to §144.28(k); or upon conversion in compliance with §144.28(j).	40 CFR §144.22(b)	No reference found.	Authorization by rule is not applicable to Class VI wells.		While this provision is not included in the state rule, authorization by rule is not allowed for Class VI wells and requirements for transitioning are described. No concerns for stringency.
SUBPART D--AUTHORIZATION BY PERMIT						
40 CFR §144.31 Application for a permit; authorization by permit.						
162.	Permit application. Unless an underground injection well is authorized by rule under subpart C of this part, all injection activities including construction of an injection well are prohibited until the owner or operator is authorized by permit. An owner or operator of a well currently authorized by rule must apply for a permit under this section unless well authorization by rule was for the life of the well or project. Authorization by rule for a well or project for which a permit application has been submitted terminates for the well or project upon the effective date of the permit. Procedures for applications, issuance and administration of emergency permits are found exclusively in § 144.34.	40 CFR 144.31(a) (See also 145.11(a)(10))	**§5.202(a) Permit required**. (1) A person shall not begin drilling or operating an anthropogenic CO_2 injection well for geologic storage or constructing or operating a geologic storage facility regulated under this subchapter without first obtaining the necessary permits from the Commission. Following receipt of a geologic storage facility permit issued under this subchapter, the storage operator shall obtain a permit to drill, deepen, or convert a well for storage purposes in accordance with §3.5 of this title (relating to Application to Drill, Deepen, Reenter, or Plug Back).	Similar intent the CFR.		Authorization by rule is not allowed for Class VI. The intent is similar to the CFR; No concerns for stringency.
163.	Who applies? When a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain a permit.	40 CFR 144.31(b) (See also 145.11(a)(10))	**§5.202(a)**	Similar intent to the CFR.	The state regulation requires that the operator apply for the permit.	No concerns for stringency. See row 162.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
164.	Time to apply. Any person who performs or proposes an underground injection for which a permit is or will be required shall submit an application to the Director in accordance with the UIC program as follows:	40 CFR 144.31(c) (See also 145.11(a)(10))	**§5.202(a)**	Differs from the CFR.		The state rule does not specify timing but requires a permit before injecting CO2. The intent is similar to the CFR and there are no concerns stringency.
165.	For existing wells, as expeditiously as practicable and in accordance with the schedule in any program description under § 145.23(f), but no later than 4 years from the approval or promulgation of the UIC program.	40 CFR 144.31(c)(1) (See also 145.11(a)(10))	No reference found.	Not required of state programs.		
166.	For new injection wells, except new wells in projects authorized under §144.21(d) or authorized by an existing area permit under §144.33(c), a reasonable time before construction is expected to begin.	40 CFR 144.31(c)(2) (See also 145.11(a)(10))	**§5.202(a)**		There is no specific provision related to the timing of permit applications; however construction may not commence without a permit.	See Texas Notes. No concerns for stringency. See row 164.
167.	Completeness. The Director shall not issue a permit before receiving a complete application for a permit except for emergency permits. An application for a permit is complete when the Director receives an application form and any supplemental information which are completed to his or her satisfaction. The completeness of any application for a permit shall be judged independently of the status of any other permit application or permit for the same facility or activity.	40 CFR 144.31(d) (See also 145.11(a)(10))	**§5.203(a)(3) Application completeness**. The Commission shall not issue a permit before receiving a complete application. A permit application is complete when the director determines that the application contains information addressing each application requirement of the regulatory program and all information necessary to initiate the final review by the director.	Same as the CFR.	State rules do not provide for issuance of emergency permits for Class VI wells.	See Texas Notes. No concerns for stringency.
168.	**(e)** ***Information requirements.*** All applicants for Class I, II, III, and V permits shall provide the following information to the Director, using the application form provided by the Director. Applicants for Class VI permits shall follow the criteria provided in § 146.82 of this chapter.	40 CFR §144.31(e)		Missing.		Permit application requirements for Class VI wells are provided. See 146.82.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
169.	The activities conducted by the applicant which require it to obtain permits under RCRA, UIC, the National Pollution Discharge Elimination system (NPDES) program under the Clean Water Act, or the Prevention of Significant Deterioration (PSD) program under the Clean Air Act.	40 CFR 144.31(e)(1) (See also 145.11(a)(10))	**§5.203(a)(2)(C) General information.** The application must include a listing of all relevant permits or construction approvals for the facility received or applied for under federal or state environmental programs;		Add to Program Description	The state rule is less specific as to the types of relevant permits to list. The program description should describe how this provision is equivalent (i.e., in the context of the state's organization). Rule was not changed in August 2022; stringency concern remains.
170.	Name, mailing address, and location of the facility for which the application is submitted.	40 CFR 144.31(e)(2) (See also 145.11(a)(10))	**§5.203(a)(2)(A) General information.** On the application, the applicant must include the name, mailing address, and location of the facility for which the application is being submitted and the operator's name, address, telephone number, Commission Organization Report number, and ownership of the facility.	Similar to CFR		Similar to CFR; no concerns for stringency.
171.	Up to four SIC codes which best reflect the principal products or services provided by the facility.	40 CFR 144.31(e)(3) (See also 145.11(a)(10))		Missing		The state does not require that permit applications include SIC codes.
172.	The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity.	40 CFR 144.31(e)(4) (See also 145.11(a)(10))	**§5.203(a)(2)(A) General information.** On the application, the applicant must include the name, mailing address, and location of the facility for which the application is being submitted and the operator's name, address, telephone number, Commission Organization Report number, and ownership of the facility.	Similar to CFR		Similar to CFR; no concerns for stringency.
173.	Whether the facility is located on Indian lands.	40 CFR 144.31(e)(5) (See also 145.11(a)(10))		Missing	Very minimal Indian lands in Texas Add to Program Description	This should be described in the program description. Rule was not changed in August 2022; deficiency remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
174.	A listing of all permits or construction approvals received or applied for under any of the following programs:	40 CFR 144.31(e)(6) (See also 145.11(a)(10))	**§5.203(a)(2)(C) General information.** The application must include a listing of all relevant permits or construction approvals for the facility received or applied for under federal or state environmental programs;	Similar to CFR	Add to Program Descrption	The state rule is less specific as to the types of relevant permits to list. The program description should describe how this provision is equivalent (i.e., in the context of the state's organization). Rule was not changed in August 2022; stringency concern remains.
175.	Hazardous Waste Management program under RCRA.	40 CFR 144.31(e)(6)(i) (See also 145.11(a)(10))		Missing		See row 174.
176.	UIC program under SDWA.	40 CFR 144.31(e)(6)(ii) (See also 145.11(a)(10))		Missing		See row 174.
177.	NPDES program under CWA.	40 CFR 144.31(e)(6)(iii) (See also 145.11(a)(10))		Missing		See row 174.
178.	Prevention of Significant Deterioration (PSD) program under the Clean Air Act.	40 CFR 144.31(e)(6)(iv) (See also 145.11(a)(10))		Missing		See row 174.
179.	Nonattainment program under the Clean Air Act.	40 CFR 144.31(e)(6)(v) (See also 145.11(a)(10))		Missing		See row 174.
180.	National Emission Standards for Hazardous Pollutants (NESHAPS) preconstruction approval under the Clean Air Act.	40 CFR 144.31(e)(6)(vi) (See also 145.11(a)(10))		Missing		See row 174.
181.	Ocean dumping permits under the Marine Protection Research and Sanctuaries Act.	40 CFR 144.31(e)(6)(vii) (See also 145.11(a)(10))		Missing		See row 174.
182.	Dredge and fill permits under section 404 of CWA.	40 CFR 144.31(e)(6)(viii) (See also 145.11(a)(10))		Missing		See row 174.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
183.	Other relevant environmental permits, including State permits.	40 CFR 144.31(e)(6)(ix) (See also 145.11(a)(10))		Missing		See row 174.
§ 144.32 Signatories to permit applications and reports.						
184.	Applications. All permit applications, except those submitted for Class II wells (see paragraph (b) of this section), shall be signed as follows:	40 CFR 144.32(a) (See also 145.11(a)(11))	**§5.203(a)(1)(B) Signatories to permit applications.** An applicant must ensure that the application is executed by a party having knowledge of the facts entered on the form and included in the required attachments. All permit applications shall be signed as specified in this subparagraph:	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
185.	For a corporation: by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means;	40 CFR 144.32(a)(1) (See also 145.11(a)(11))	**§5.203(a)(1)(B)** (i) For a corporation, the permit application shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
186.	A president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or	40 CFR 144.32(a)(1)(i) (See also 145.11(a)(11))	**§5.203(a)(1)(B)** (i) For a corporation, the permit application shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.	Same as the CFR.		
187.	the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures. NOTE: I does not require specific assignments or delegations of authority to responsible corporate officers identified in § 144.32(a)(1)(i). The Agency will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Director to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under § 144.32(a)(1)(ii) rather than to specific individuals.	40 CFR 144.32(a)(1)(ii) (See also 145.11(a)(11))	**§5.203(a)(1)(B)** (i) For a corporation, the permit application shall be signed by a responsible corporate officer. For the purpose of this section, a responsible corporate officer means a president, secretary, treasurer, or vice president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or having gross annual sales or expenditures exceeding $25 million (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.	Similar intent to the CFR.		The state requirement does not include the NOTE in the CFR. No concerns for stringency. See row 174.
188.	For a partnership or sole proprietorship: by a general partner or the proprietor, respectively; or	40 CFR 144.32(a)(2) (See also 145.11(a)(11))	**§5.203(a)(1)(B)** (ii) For a partnership or sole proprietorship, the permit application shall be signed by a general partner or the proprietor, respectively.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
189.	For a municipality, State, Federal, or other public agency: by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes:	40 CFR 144.32(a)(3) (See also 145.11(a)(11))	**§5.203(a)(1)(B)** (iii) For a municipality, State, Federal, or other public agency, the permit application shall be signed by either a principal executive officer or ranking elected official.	Same as the CFR.		
190.	The chief executive officer of the agency, or	40 CFR 144.32(a)(3)(i) (See also 145.11(a)(11))		Missing.	The state regulation does not describe acceptable federal signatories. Add to Program Description. Are federal agencies planning to apply for Class VI permits?	See Texas Notes. The state rule does not describe federal signatories. It may be appropriate to describe in the program description whether federally owned Class VI wells are prohibited in the state or who would be required to sign the permit application. Rule was not changed in August 2022; stringency concern remains.
191.	a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of EPA).	40 CFR 144.32(a)(3)(ii) (See also 145.11(a)(11))		Missing.	The state regulation does not describe acceptable federal signatories. Add to Program Description	See above. Rule was not changed in August 2022; stringency concern remains.
192.	Reports. All reports required by permits, other information requested by the Director, and all permit applications submitted for Class II wells under § 144.31 shall be signed by a person described in paragraph (a) of this section, or by a duly authorized representative of that person. A person is a duly authorized representative only if:	40 CFR 144.32(b) (See also 145.11(a)(11))	**§5.207(c)(1)** Reports. All reports required by permits and other information requested by the director, shall be signed by a person described in §5.203(a)(1)(B) of this title, or by a duly authorized representative of that person. A person is a duly authorized representative only if:	Same as the CFR.		
193.	The authorization is made in writing by a person described in paragraph (a) of this section;	40 CFR 144.32(b)(1) (See also 145.11(a)(11))	**§5.207(c)(1)(A)** the authorization is made in writing by a person described in §5.203(a)(1)(B) of this title;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
194.	The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and	40 CFR 144.32(b)(2) (See also 145.11(a)(11))	**§5.207(c)(1)(B)** the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, or position of equivalent responsibility; and	Same as the CFR.		The state requirement does not include the parenthetical statement, but no concerns for stringency.
195.	The written authorization is submitted to the Director.	40 CFR 144.32(b)(3) (See also 145.11(a)(11))	**§5.207(c)(1)(C)** The written authorization is submitted to the director.	Same as the CFR.		
196.	Changes to authorization. If an authorization under paragraph (b) of this section is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (b) of this section must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.	40 CFR 144.32(c) (See also 145.11(a)(11))	**§5.207(c)(2)** Changes to authorization. If an authorization under paragraph (1) of this subsection is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph (1) of this subsection must be submitted to the director prior to or together with any reports, information, or applications to be signed by an authorized representative.	Same as the CFR.		

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
197.	Certification. Any person signing a document under paragraph (a) or (b) of this section shall make the following certification: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.	40 CFR 144.32(d) (See also 145.11(a)(11))	**§5.207(d) Certification**. All reports required by permits and other information requested by the director under this subchapter, shall be certified as follows: *"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."*	Same as the CFR.		
40 CFR §144.33 Area permits.						
198.	The Director may issue a permit on an area basis, rather than for each well individually, provided that the permit is for injection wells:	40 CFR 144.33(a) (See also 145.11(a)(12))	No reference found	Missing.	The state regulations do not provide for area permits. Add to Program Description	Area permits are not allowed for Class VI wells. No concerns for stringency. It is recommended to clarify this in the program description. Rule was not changed in August 2022; stringency concern remains.
199.	Used to inject other than hazardous waste; and	40 CFR §144.33(a)(4)	No reference found	Missing.	The state regulations do not provide for area permits.	See row 198
200.	Other than Class VI wells.	40 CFR §144.33(a)(5)	No reference found	Missing.	The state regulations do not provide for area permits.	See row 198
§ 144.35 Effect of a permit.						

	Except for Class II and III wells, compliance with a permit during its term constitutes compliance, for purposes of enforcement, with Part C of the SDWA. However, a permit may be modified, revoked and reissued, or terminated during its term for cause as set forth in §§ 144.39 and 144.40. (a) Causes for modification. The following are causes for modification. For …. Class VI wells the following may be causes for revocation and reissuance as well as modification….. (1) Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit. (2) Information. The Director has received information. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. (3) New regulations. The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class I hazardous waste injection wells, Class II, Class III or Class VI may be modified during their terms for this cause only as follows: (4) Compliance schedules. The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also §144.41(c) (minor modifications). (5) Basis for modification of Class VI permits. Additionally, for Class VI wells, whenever the Director determines that permit changes are necessary based on:	40 CFR 144.35(a) (See also 145.11(a)(14))	**§5.202(d) Modification, revocation and reissuance, or termination of a geologic storage facility permit.** (1) Permit review. Permits are subject to review by the Commission. Any interested person may request that the Commission review permits issued under this subchapter for one of the reasons set forth below. All requests must be in writing and must contain facts or reasons supporting the request. If the Commission determines that the request may have merit or at the Commission's initiative for one or more of the reasons set forth in paragraph (2) of this subsection, the Commission may review the permit. (2) Action by the Commission. The director may modify, revoke and reissue, or terminate a geologic storage facility permit after notice and opportunity for hearing under any of the following circumstances. (A) Causes for modification or for revocation and reissuance. The following may be causes for revocation and reissuance as well as modification: (i) Alterations. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance that justify the inclusion of permit conditions that are different from or absent in the existing permit. (ii) New information. The director has received new material information that was not available at the time of permit issuance and would have justified the inclusion of different permit conditions at the time of issuance. This may include any increase greater than the permitted CO_2 storage volume, and/or changes in the chemical composition of the CO_2 stream that in the judgment of the director, would interfere with the operation of the facility or its ability to meet the permit conditions. (iii) New regulations. The standards or regulations on which the permit was based have been materially changed by	Similar intent to the CFR.		144.35(b)(3) does not appear to be represented in the state requirement (i.e., that compliance with a permit during its term constitutes compliance with SDWA). This would not cause stringency concerns under a SDWA-approved primacy program. However the state has provisions for modification, revocation and reissuance, or termination of permits; see below. August 2022 rule changes do not affect stringency (but do not address stringency concern above).

	(i) Area of review reevaluations under § 146.84(e)(1) of this chapter; (ii) Any amendments to the testing and monitoring plan under §146.90(j) of this chapter; (iii) Any amendments to injection well plugging plan under § 146.92(c) of this chapter; (iv) Any amendments to the post-injection site care and site closure plan under §146.93(a)(3) of this chapter; (v) Any amendments to the emergency and remedial response plan under §146.94(d) of this chapter; or (vi) A review of monitoring and/or testing results conducted in accordance with permit requirements. (b) Causes for modification or revocation and reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit: (1) Cause exists for termination under § 144.40, and the Director determines that modification or revocation and reissuance is appropriate. (2) The Director has received notification (as required in the permit, see §144.41(d)) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (§ 144.38(b)) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee. (3) A determination that the waste being injected is a hazardous waste as defined in § 261.3 either because the definition has been revised, or because a previous determination has been changed. (c) Facility siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.		promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. (iv) Compliance schedules. The director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage, or other events over which the permittee has little or no control and for which there is no reasonably available remedy. (v) Basis for permit modification. The director shall modify the permit whenever the director determines that permit changes are necessary based on: (I) a re-evaluation under §5.203(d) of this title (relating to Application Requirements); (II) any amendments to the testing and monitoring plan under §5.203(j) of this subchapter; (III) any amendments to the injection well plugging plan under §5.203(k) of this title; (IV) any amendments to the post-injection site care and site closure plan under §5.203(m) of this title; (V) any amendments to the emergency and remedial response plan under §5.203(l) of this title; (VI) a review of monitoring and/or testing results conducted in accordance with permit requirements; (VII) cause exists for termination under subparagraph 24 (B) of this paragraph, and the director determines that modification or revocation and reissuance is appropriate. (VIII) the director has received notification of a proposed transfer of the permit; or (IX) a determination that the fluid being injected is a hazardous waste as			

			defined in 40 CFR §261.3 either because the definition has been revised, or because a previous determination has been changed. (vi) If the director tentatively decides to modify or revoke and reissue a permit, the director shall prepare a draft permit incorporating the proposed changes. The director may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, the director shall require the submission of a new application. (vii) In a permit modification, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the existing permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued. (viii) Upon the consent of the permittee, the director may modify a permit to make the corrections or allowances for minor changes in the permit, without following the procedures of subsection (e) of this section, and §5.204 of this title (relating to Notice of Permit Actions and Public Comment Period), to: (I) correct typographical errors; (II) require more frequent monitoring or reporting by the permittee; (III) change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; (IV) allow for a change in ownership or operational control of a facility			

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			where the director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the director; (V) change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the director, would not interfere with the operation of the facility or its ability to meet the permit conditions; (VI) change construction requirements approved by the director pursuant to §5.206 of this title (relating to Permit Standards), provided that any such alteration shall comply with the requirements of this subchapter; (VII) amend a plugging and abandonment plan which has been updated under §5.203(k) of this title; or (VIII) amend an injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the director. **§5.202(d)(3) Facility siting.** Suitability of the facility location shall not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.			
201.	The issuance of a permit does not convey any property rights of any sort, or any exclusive privilege.	40 CFR 144.35(b) (See also 145.11(a)(14))	**§5.206(o)(2)(E)** Property rights not conveyed. The issuance of a permit does not convey any property rights of sort, or any exclusive privilege.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
202.	The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.	40 CFR 144.35(c) (See also 145.11(a)(14))	**§5.206(o)(2)(F)** Activities not authorized. The issuance of a permit does not authorize any injury to persons or property or invasion of other private rights, or any infringement of State or local law or regulations.	Same as the CFR.		

Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §144.36 Duration of permits.					

203.	…….UIC permits for Class VI wells shall be issued for the operating life of the facility and the post-injection site care period. The Director shall review each issued Class … VI well UIC permit at least once every 5 years to determine whether it should be modified, revoked and reissued, terminated or a minor modification made as provided in §§144.39, 144.40, or 144.41.	40 CFR §144.36(a)	**§5.206(o) Other permit terms and conditions**. (1) Protection of USDWs. In any permit for a geologic storage facility, the director must impose terms and conditions reasonably necessary to protect USDWs. Permits issued under this subchapter continue in effect until revoked, modified, or terminated by the Commission. The operator must comply with each requirement set forth in this subchapter as a condition of the permit unless modified by the terms of the permit. **§5.207(a)(2)(D) Annual reports.** The operator must submit an annual report detailing: (iii) re-calculated AOR unless the operator submits a statement signed by an appropriate company official confirming that monitoring and operational data supports the current delineation of the AOR on file with the Commission; (vi) The operator must maintain and update required plans in accordance with the provisions of this subchapter. (I) Operators must submit an annual statement, signed by an appropriate company official, confirming that the operator has: (-a-) reviewed the monitoring and operational data that are relevant to a decision on whether to reevaluate the AOR and the monitoring and operational data that are relevant to a decision on whether to update an approved plan required by §5.203 or §5.206 of this title; and (-b-) determined whether any updates were warranted by material change in the monitoring and operational data or in the evaluation of the monitoring and operational data by the operator. (II) Operators must submit either the updated plan or a summary of the modifications for each plan for which an update the operator determined to be warranted pursuant to subclause (I) of this clause. The director may require submission of copies of any updated plans and/or	Differs from the CFR.	5.206**(j)** (1) Post-injection storage facility care and closure plan. (B) The operator must update the plan in accordance with §5.207(a)(2)(D)(vi). At any time during the life of the sequestration project, the operator may modify and resubmit the PISC and site closure plan for the director's approval within 30 days of such change. Any amendments to the post-injection site care and site closure plan must be approved by the director, be incorporated into the permit, and are subject to the permit modification requirements in §5.202, as appropriate. Add language to Program Description.	The state rule does specify that the duration of a permit is throughout the post-injection site care period It also does not describe the 5-year permit review. However, there are provisions for AoR reevaluations. It may be appropriate to describe the equivalency in the program description. Rule was not changed in August 2022; stringency concern remains. The public commented on 5.206(o)(2)(G), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			additional information regarding whether or not updates of any particular plans are warranted.			

Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §144.38 Transfer of permits.					

204.	Transfers by modification. Except as provided in paragraph (b) of this section, a permit may be transferred by the permittee to a new owner or operator only if the permit has been modified or revoked and reissued (under § 144.39(b)(2)), or a minor modification made (under § 144.41(d)), to identify the new permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act.	40 CFR 144.38(a) (See also 145.11(a)(16))	**§5.202(c) Permit transfer**. An operator may transfer its geologic storage facility permit to another operator if the requirements of this subsection are met. A new operator shall not assume operation of the geologic storage facility without a valid permit. (1) **Notice.** An applicant must submit written notice of an intended permit transfer to the director at least 45 days prior to the date the transfer of operations is proposed to take place, unless such action could trigger U. S. Securities and Exchange Commission fiduciary and insider trading restrictions and/or rules. (A) The applicant's notice to the director must contain: (i) the name and address of the person to whom the geologic storage facility will be sold, assigned, transferred, leased, conveyed, exchanged, or otherwise disposed; (ii) the name and location of the geologic storage facility and a legal description of the land upon which the storage facility is situated; (iii) the date that the sale, assignment, transfer, lease conveyance, exchange, or other disposition is proposed to become final; and (iv) the date that the transferring operator will relinquish possession as a result of the sale, assignment, transfer, lease conveyance, exchange, or other disposition. (B) The person acquiring a geologic storage facility, whether by purchase, transfer, assignment, lease, conveyance, exchange, or other disposition, must notify the director in writing of the acquisition as soon as it is reasonably possible but not later than five business days after the date that the acquisition of the geologic storage facility becomes final. The director shall not approve the transfer of a geologic storage facility permit until the new operator provides all of the following: (i) the name and address of the operator from which the geologic storage facility was acquired;	Differs from the CFR.	~~The state regulation requires approval of a transfer of a permit, but does not specify that the permit be modified or revoked and reissued.~~ 5.202(d)(2)(A) (v) Basis for permit modification. The director shall modify the permit whenever the director determines that permit changes are necessary based on: ….. (VIII) the director has received notification of a proposed transfer of the permit; or	Texas should describe how it would modify permits to reflect a new operator upon transfer in its program description. The public commented on 5.202(c)(1), but no change was made in the August 2022 rule; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			(ii) the name and location of the geologic storage facility and a description of the land upon which the geologic storage facility is situated; (iii) the date that the acquisition became or will become final; (iv) the date that possession was or will be acquired; and (v) the financial assurance required by this subchapter. (2) **Evidence of financial responsibility**. The operator acquiring the permit must provide the director with evidence of financial responsibility satisfactory to the director in accordance with §5.205 of this title (relating to Fees, Financial Responsibility, and Financial Assurance). (3) **Transfer of responsibility**. An operator remains responsible for the geologic storage facility until the director approves in writing the sale, assignment, transfer, lease, conveyance, exchange, or other disposition and the person acquiring the storage facility complies with all applicable requirements.			
205.	Automatic transfers. As an alternative to transfers under paragraph (a) of this section, any UIC permit for a well not injecting hazardous waste or injecting carbon dioxide for geologic sequestration may be automatically transferred to a new permittee if:	40 CFR §144.38(b)	**N/A**		See above row	See above row. Rule was not changed in August 2022; stringency concern remains.
40 CFR §144.39 Modification or revocation and reissuance of permits.						

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
206.	When the Director receives any information (for example, inspects the facility, receives information submitted by the permittee as required in the permit (see § 144.51 of this chapter), receives a request for modification or revocation and reissuance under §124.5, or conducts a review of the permit file) he or she may determine whether or not one or more of the causes listed in paragraphs (a) and (b) of this section for modification or revocation and reissuance or both exist. If cause exists, the Director may modify or revoke and reissue the permit accordingly, subject to the limitations of paragraph (c) of this section, and may request an updated application if necessary. When a permit is modified, only the conditions subject to modification are reopened. If a permit is revoked and reissued, the entire permit is reopened and subject to revision and the permit is reissued for a new term. See §124.5(c)(2) of this chapter. If cause does not exist under this section or § 144.41 of this chapter, the Director shall not modify or revoke and reissue the permit. If a permit modification satisfies the criteria in §144.41 for ''minor modifications'' the permit may be modified without a draft permit or public review. Otherwise, a draft permit must be prepared and other procedures in part 124 must be followed.	40 CFR 144.39 (See also 145.11(a)(17))	**§5.202(d) Modification, revocation and reissuance, or termination of a geologic storage facility permit.** (1) Permit review. Permits are subject to review by the Commission. Any interested person may request that the Commission review a permit issued under this subchapter for one of the reasons set forth in paragraph (2) of this subsection. All requests must be in writing and must contain facts or reasons supporting the request. If the Commission determines that the request may have merit or at the Commission's initiative for one or more of the reasons set forth in paragraph (2) of this subsection, the Commission may review the permit (2) Action by the Commission. The director may modify, revoke and reissue, or terminate a geologic storage facility permit after notice and opportunity for hearing under any of the following circumstances.	Differs from the CFR, but the intent is the same.	Add to Program Description	The actions of the Commission as defined in the state rule adequately cover the requirements of the Director in the CFR. No concerns for stringency. This provision differs from the CFR. However, it appears to imply that there is a procedure for initiating a modification of a permit, and the specific causes for modification are the same as the CFR (as described in the rows below). It is recommended that Texas describe how the provisions are similar in their program description and that the intent of 144.39 is met. August 2022 rule changes do not address stringency concerns. Description of an "interested person moved;" see Row 26.
207.	Causes for modification. The following are causes for modification. For …. Class VI wells the following may be causes for revocation and reissuance as well as modification…..	40 CFR 144.39(a) (See also 145.11(a)(17))	**§5.202(d)(2)(A) Causes for modification or for revocation and reissuance.** The following may be causes for revocation and reissuance as well as modification:	Same as the CFR.		
208.	*Alterations*. There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance which justify the application of permit conditions that are different or absent in the existing permit.	40 CFR 144.39(a)(1) (See also 145.11(a)(17))	**§5.202(d)(2)(A)(i) Alterations.** There are material and substantial alterations or additions to the permitted facility or activity which occurred after permit issuance that justify the inclusion of permit conditions that are different from or absent in the existing permit.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
209.	*Information.* The Director has received information. Permits other than for Class II and III wells may be modified during their terms for this cause only if the information was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and would have justified the application of different permit conditions at the time of issuance. For UIC area permits (§ 144.33), this cause shall include any information indicating that cumulative effects on the environment are unacceptable.	40 CFR 144.39(a)(2) (See also 145.11(a)(17))	**§5.202(d)(2)(A)(ii) New information.** The director has received new material information that was not available at the time of permit issuance and would have justified the inclusion of different permit conditions at the time of issuance. This may include any increase greater than the permitted CO_2 storage volume, and/or changes in the chemical composition of the CO_2 stream that in the judgment of the director, would interfere with the operation of the facility or its ability to meet the permit conditions.;	Similar intent to the CFR.		The text of the state requirement is more specific to Class VI, but there are no concerns for stringency. August 2022 rule changes do not affect stringency.
210.	*New regulations*. The standards or regulations on which the permit was based have been changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued. Permits other than for Class I hazardous waste injection wells, Class II, Class III or Class VI wells may be modified during their permit terms for this cause only as follows:	40 CFR 144.39(a)(3) (See also 145.11(a)(17))	**§5.202(d)(2)(A)(iii) New regulations.** The standards or regulations on which the permit was based have been materially changed by promulgation of new or amended standards or regulations or by judicial decision after the permit was issued.	Similar to the CFR.		Similar to CFR; no concerns for stringency. Minor August 2022 rule changes do not affect stringency.
211.	*Compliance schedules.* The Director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage or other events over which the permittee has little or no control and for which there is no reasonably available remedy. See also §144.41(c) (minor modifications).	40 CFR 144.39(a)(4) (See also 145.11(a)(17))	**§5.202 (d)(2)(A)(iv) Compliance schedules.** The director determines good cause exists for modification of a compliance schedule, such as an act of God, strike, flood, or materials shortage, or other events over which the permittee has little or no control and for which there is no reasonably available remedy.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
212.	*Basis for modification of Class VI permits.* Additionally, for Class VI wells, whenever the Director determines that permit changes are necessary based on:	40 CFR §144.39(a)(5)	**§5.202(d)(2)(A)(v) Basis for permit modification.** The director shall modify the permit whenever the director determines that permit changes are necessary based on:	Same as the CFR.	Add to Program Description.	In addition, §5.202(d)(2)(A)(viii) allows modifying the permit without public notice for minor changes to the project plans. It is recommended that the program description clarify what constitutes a major versus minor modification to a plan and how the public would be informed of significant changes to a Class VI project plan. Rule was not changed in August 2022; stringency concern remains.
213.	Area of review reevaluations under §146.84(e)(1) of this chapter;	40 CFR §144.39(a)(5)(i)	**§5.202(d)(2)(A)(v)(I)** a re-evaluation under §5.203(d) of this title (relating to Application Requirements);	Same as the CFR.		5.203(d) discusses Area of Review, no concerns for stringency.
214.	Any amendments to the testing and monitoring plan under §146.90(j) of this chapter;	40 CFR §144.39(a)(5)(ii)	**§5.202(d)(2)(A)(v)(II)** any amendments to the testing and monitoring plan under §5.203(j) of this subchapter;	Same as the CFR.		See row 212.
215.	Any amendments to the injection well plugging plan under §146.92(c) of this chapter;	40 CFR §144.39(a)(5)(iii)	**§5.202(d)(2)(A)(v)(III)** any amendments to the injection well plugging plan under §5.203(k) of this title;	Same as the CFR.		
216.	Any amendments to the post-injection site care and site closure plan under §146.93(a)(3) of this chapter;	40 CFR §144.39(a)(5)(iv)	**§5.202(d)(2)(A)(v)(IV)** any amendments to the post-injection site care and site closure plan under §5.203(m) of this title;	Same as the CFR.		See row 212
217.	Any amendments to the emergency and remedial response plan under §146.94(d) of this chapter; or	40 CFR §144.39(a)(5)(v)	**§5.202(d)(2)(A)(v)(V)** any amendments to the emergency and remedial response plan under §5.203(l) of this title;	Same as the CFR.		See row 212
218.	A review of monitoring and/or testing results conducted in accordance with permit requirements.	40 CFR §144.39(a)(5)(vi)	**§5.202(d)(2)(A)(v)(VI)** a review of monitoring and/or testing results conducted in accordance with permit requirements;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
219.	Causes for modification or revocation and reissuance. The following are causes to modify or, alternatively, revoke and reissue a permit:	40 CFR 144.39(b) (See also 145.11(a)(17))	**§5.202(d)(2)(A)(v)** (VII) cause exists for termination under subparagraph (B) of this paragraph, and the director determines that modification or revocation and reissuance is appropriate; (VIII) the director has received notification of a proposed transfer of the permit; or (IX) a determination that the fluid being injected is a hazardous waste as defined in 40 CFR §261.3 either because the definition has been revised, or because a previous determination has been changed. (vi) If the director tentatively decides to modify or revoke and reissue a permit, the director shall prepare a draft permit incorporating the proposed changes. The director may request additional information and, in the case of a modified permit, may require the submission of an updated application. In the case of revoked and reissued permits, the director shall require the submission of a new application. (vii) In a permit modification, only those conditions to be modified shall be reopened when a new draft permit is prepared. All other aspects of the existing permit shall remain in effect for the duration of the existing permit. When a permit is revoked and reissued under this section, the entire permit is reopened just as if the permit had expired and was being reissued. During any revocation and reissuance proceeding, the permittee shall comply with all conditions of the existing permit until a new final permit is reissued.		See above for causes to modify a permit. See below for discussion of causes to revoke and reissue or terminate a permit.	See Texas Notes. No concerns for stringency. August 2022 rule changes do not affect stringency.
220.	Cause exists for termination under §144.40, and the Director determines that modification or revocation and reissuance is appropriate.	40 CFR 144.39(b)(1) (See also 145.11(a)(17))	**§5.202(d)(2)(A)(v)(VII)** cause exists for termination under subparagraph (B) of this paragraph, and the director determines that modification or revocation and reissuance is appropriate;	Same as the CFR.	The state regulation identifies broad reasons for revoking or reissuing a permit.	

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
221.	The Director has received notification (as required in the permit, see § 144.41(d)) of a proposed transfer of the permit. A permit also may be modified to reflect a transfer after the effective date of an automatic transfer (§ 144.38(b)) but will not be revoked and reissued after the effective date of the transfer except upon the request of the new permittee.	40 CFR 144.39(b)(2) (See also 145.11(a)(17))	**§5.202(d)(2)(A)(v)(VIII)** the director has received notification of a proposed transfer of the permit; or	Similar intent to the CFR.	The state regulations do not allow for automatic transfers.	See Texas Notes. No concerns for stringency.
222.	A determination that the waste being injected is a hazardous waste as defined in § 261.3 either because the definition has been revised, or because a previous determination has been changed.	40 CFR 144.39(b)(3) (See also 145.11(a)(17))	**§5.202(d)(2)(A)(v)(IX)** a determination that the fluid being injected is a hazardous waste as defined in 40 CFR §261.3 either because the definition has been revised, or because a previous determination has been changed.	Same as the CFR.		
223.	Facility siting. Suitability of the facility location will not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.	40 CFR 144.39(c) (See also 145.11(a)(17))	**§5.202(d)(3)** Facility siting. Suitability of the facility location shall not be considered at the time of permit modification or revocation and reissuance unless new information or standards indicate that a threat to human health or the environment exists which was unknown at the time of permit issuance.	Same as the CFR.		
40 CFR 144.40 Termination of permits.						
224.	The Director may terminate a permit during its term, or deny a permit renewal application for the following causes:	40 CFR 144.40(a) (See also 145.11(a)(18))	**§5.202(d)(2)(B)** Termination of permits. (i) The following may be causes to terminate a permit during its term, or deny a permit renewal application:	Similar intent to the CFR.		§5.202(d)(2) states that the Director may terminate a permit. No concerns for stringency.
225.	Noncompliance by the permittee with any condition of the permit;	40 CFR 144.40(a)(1) (See also 145.11(a)(18))	**§5.202(d)(2)(B)(i)(I)** the permittee's failure to comply with any condition of the permit or applicable Commission orders or regulations;	Same as the CFR.		
226.	The permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time; or	40 CFR 144.40(a)(2) (See also 145.11(a)(18))	**§5.202(d)(2)(B)(i)(II)** the permittee's failure in the application or during the permit issuance process to disclose fully all relevant facts, or the permittee's misrepresentation of any relevant facts at any time;	Same as the CFR.		
227.	A determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination;	40 CFR 144.40(a)(3) (See also 145.11(a)(18))	**§5.202(d)(2)(B)(i)(V)** a determination that the permitted activity endangers human health or the environment and can only be regulated to acceptable levels by permit modification or termination.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
228.	The Director shall follow the applicable procedures in part 124 in terminating any permit under this section.	40 CFR 144.40(b) (See also 145.11(a)(18))	**§5.202(d)(2)(B)(ii)** The director shall follow the applicable procedures in subsection (e) of this section, and §5.204 of this title, in terminating any permit under this section.	Same as the CFR.		
40 CFR §144.41 Minor modifications of permits.						
229.	Upon the consent of the permittee, the Director may modify a permit to make the corrections or allowances for changes in the permitted activity listed in this section, without following the procedures of part 124. Any permit modification not processed as a minor modification under this section must be made for cause and with part 124 draft permit and public notice as required in §144.39. Minor modifications may only:	40 CFR 144.41	**§5.202(d)(2)(A)(viii)** Upon the consent of the permittee, the director may modify a permit to make the corrections or allowances for minor changes in the permit, without following the procedures of subsection (e) of this section, and §5.204 of this title (relating to Notice of Permit Actions and Public Comment Period), to:	Similar intent to the CFR.		The state provision does not mention non-minor modifications, but these are addressed elsewhere in 5.202(d). No concerns for stringency. Minor August 2022 rule changes do not affect stringency.
230.	Correct typographical errors;	40 CFR 144.41(a)	**§5.202(d)(2)(A)(viii)(I)** correct typographical errors;	Same as the CFR.		
231.	Require more frequent monitoring or reporting by the permittee;	40 CFR 144.41(b)	**§5.202(d)(2)(A)(viii)(II)** require more frequent monitoring or reporting by the permittee;	Same as the CFR.		
232.	Change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement; or	40 CFR 144.41(c)	**§5.202(d)(2)(A)(viii)(III)** change an interim compliance date in a schedule of compliance, provided the new date is not more than 120 days after the date specified in the existing permit and does not interfere with attainment of the final compliance date requirement;	Same as the CFR.		
233.	Allow for a change in ownership or operational control of a facility where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the Director.	40 CFR 144.41(d)	**§5.202(d)(2)(A)(viii)(IV)** allow for a change in ownership or operational control of a facility where the director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittees has been submitted to the director;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
234.	Change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the Director, would not interfere with the operation of the facility or its ability to meet conditions described in the permit and would not change its classification.	40 CFR 144.41(e)	**§5.202(d)(2)(A)(viii)(V)** change quantities or types of fluids injected which are within the capacity of the facility as permitted and, in the judgment of the director, would not interfere with the operation of the facility or its ability to meet the permit conditions;	Similar to the CFR.		The state does not include the CFR phrase "and would not change its classification." No concerns for stringency.
235.	Change construction requirements approved by the Director pursuant to § 144.52(a)(1) (establishing UIC permit conditions), provided that any such alteration shall comply with the requirements of this part and part 146.	40 CFR 144.41(f)	**§5.202(d)(2)(A)(viii)(VI)** change construction requirements approved by the director pursuant to §5.206 of this title (relating to Permit Standards), provided that any such alteration shall comply with the requirements of this subchapter;	Same as the CFR.		
236.	Amend a Class VI injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the Director.	40 CFR §144.41(h)	**§5.202(d)(2)(A)(viii)(VII)** amend a plugging and abandonment plan which has been updated under §5.203(k) of this title; or (VIII) amend an injection well testing and monitoring plan, plugging plan, post-injection site care and site closure plan, or emergency and remedial response plan where the modifications merely clarify or correct the plan, as determined by the director.	Similar to the CFR.		The state requirement also describes updates to a plugging and abandonment plan. No concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
SUBPART E—PERMIT CONDITIONS						
40 CFR §144.51 Conditions applicable to all permits.						
237.	The following conditions apply to all UIC permits. All conditions applicable to all permits shall be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to these regulations (or the corresponding approved State regulations) must be given in the permit.	40 CFR 144.51 (See also 145.11(a)(19))	**§5.206. Permit Standards.** (a) Each condition applicable to a permit shall be incorporated into the permit either expressly or by reference. If incorporated by reference, a specific citation to the rules in this chapter shall be given in the permit. The requirements listed in this section are directly enforceable regardless of whether the requirement is a condition of the permit.	Similar to the CFR.	Add to Program Description	Texas includes many of the provisions of 144.51, but only the provisions in §5.206 are required to be a permit condition. It may be appropriate to describe in the program description how Texas will ensure that all permits would have all of these requirements (i.e., elements of other sections). Rule was not changed in August 2022; stringency concern remains. 5.206(h)(2)(C) was changed in the August 2022 rule based on public comment to require operators to provide training schedules, training dates, and course outlines to Commission personnel annually. There is no analogous provision in the CFR; no concerns for stringency. The public commented on 5.206(h)(4)(i) and 5.206(i), but no changes were made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
238.	Duty to comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application; except that the permittee need not comply with the provisions of this permit to the extent and for the duration such noncompliance is authorized in an emergency permit under §144.34.	40 CFR 144.51(a) (See also 145.11(a)(19))	**§5.206(o)(2)(A) Duty to comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Safe Drinking Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. However, the permittee need not comply with the provisions of the permit to the extent and for the duration such noncompliance is authorized in an emergency permit under 40 CFR §144.34.	Similar intent to the CFR.		
239.	Duty to reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.	40 CFR 144.51(b) (See also 145.11(a)(19))		Missing.	Class VI permits are issued for the life of the project and PISC	See Texas Notes. No concerns for stringency.
240.	Need to halt or reduce activity not a defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.	40 CFR 144.51(c) (See also 145.11(a)(19))	**§5.206(o)(2)(B) Need to halt or reduce activity not a defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.	Similar intent to the CFR.		
241.	Duty to mitigate. The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.	40 CFR 144.51(d) (See also 145.11(a)(19))	**§5.206(o)(2)(C) Duty to mitigate.** The permittee shall take all reasonable steps to minimize or correct any adverse impact on the environment resulting from noncompliance with this permit.	Similar intent to the CFR.		The public commented on 5.206(o)(2)(C), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
242.	Proper operation and maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.	40 CFR 144.51(e) (See also 145.11(a)(19))	**§5.206(o)(2)(D) Proper operation and maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of the permit.	Similar intent to the CFR.		
243.	Permit actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.	40 CFR 144.51(f) (See also 145.11(a)(19))	No reference found	Missing.	Add to Program Description. Permittees must comply with the rule, which includes the requirements for modification, revocation and reissuance and termination for cause.	Texas does not require that all permits include a provision for Permit actions.
244.	Property rights. This permit does not convey any property rights of any sort, or any exclusive privilege.	40 CFR 144.51(g) (See also 145.11(a)(19))	**§5.206(o)(2)(E) Property rights not conveyed.** The issuance of a permit does not convey property rights of any sort, or any exclusive privilege.	Similar intent to the CFR.		
245.	Duty to provide information. The permittee shall furnish to the Director, within a time specified, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.	40 CFR 144.51(h) (See also 145.11(a)(19))	**§5.206(o)(2)(H) Duty to provide information.** The operator shall furnish to the Commission, within a time specified by the Commission, any information that the Commission may request to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit, or to determine compliance with the permit. The operator shall also furnish to the Commission, upon request, copies of records required to be kept under the conditions of the permit.	Similar to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
246.	Inspection and entry. The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:	40 CFR 144.51(i) (See also 145.11(a)(19))	**§5.206(o)(2)(I) Inspection and entry.** The operator shall allow any member or employee of the Commission, on proper identification, to:	Similar intent to the CFR.		The state rule is less specific as to what constitutes proper identification, but there are no concerns for stringency.
247.	Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;	40 CFR 144.51(i)(1) (See also 145.11(a)(19))	**§5.206(o)(2)(I)(i)** enter upon the premises where a regulated activity is conducted or where records are kept under the conditions of the permit; **See also Texas Water Code, Chapter 27,** **§27.071.** POWER TO ENTER PROPERTY. **§27.072.** POWER TO EXAMINE RECORDS.	Similar intent to the CFR.		
248.	Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;	40 CFR 144.51(i)(2) (See also 145.11(a)(19))	**§5.206(o)(2)(I)(ii)** have access to and copy, during reasonable working hours, any records required to be kept under the conditions of the permit; **See also Texas Water Code, Chapter 27,** **§27.071.** POWER TO ENTER PROPERTY. **§27.072.** POWER TO EXAMINE RECORDS.	Similar intent to the CFR.		
249.	Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and	40 CFR 144.51(i)(3) (See also 145.11(a)(19))	**§5.206(o)(2)(I)(iii)** inspect any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under the permit; and **See also Texas Water Code, Chapter 27,** **§27.071.** POWER TO ENTER PROPERTY. **§27.072.** POWER TO EXAMINE RECORDS.	Similar intent to the CFR.		The state requirement does not include "reasonable times" for inspections, but this does not affect stringency.
250.	Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the SDWA, any substances or parameters at any location.	40 CFR 144.51(i)(4) (See also 145.11(a)(19))	**§5.206(o)(2)(I)(iv)** sample or monitor any substance or parameter for the purpose of assuring compliance with the permit or as otherwise authorized by the Texas Water Code, §27.071, or the Texas Natural Resources Code, §91.1012. **See also Texas Water Code, Chapter 27,** **§27.071.** POWER TO ENTER PROPERTY. **§27.072.** POWER TO EXAMINE RECORDS.	Similar intent to the CFR.		The state requirement does not include "reasonable times" for inspections, but this does not affect stringency

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
251.	Monitoring and records. (1) Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.	40 CFR 144.51(j)(1) (See also 145.11(a)(19))	**§5.206(e) Monitoring, sampling, and testing requirements.** (1) The operator of an anthropogenic CO_2 injection well must maintain and comply with the approved monitoring, sampling, and testing plan to verify that the geologic storage facility is operating as permitted and that the injected fluids are confined to the injection zone. (2) All permits shall include the following requirements: (A) the proper use, maintenance, and installation of monitoring equipment or methods; (B) monitoring including type, intervals, and frequency sufficient to yield data that are representative of the monitored activity including, when required, continuous monitoring; (C) reporting no less frequently than as specified in §5.207 of this title (relating to Reporting and Record-Keeping). (3) The director may require additional monitoring as necessary to support, upgrade, and improve computational modeling of the AOR evaluation and to determine compliance with the requirement that the injection activity not allow movement of fluid that would endanger USDWs.	Similar intent to the CFR.		5.206(e)(2)(B) is similar in intent to the CFR. No concerns for stringency. The public commented on 5.206(e), but no change was made in the August 2022 rule. 5.206(e)(4) and 5.203(l) were added in the August 2022 rule based on public comment concerning monitoring for potential seismicity.
252.	The permittee shall retain records of all monitoring information, including the following:	40 CFR 144.51(j)(2) (See also 145.11(a)(19))	**§5.206(m) Retention of records.** The operator must retain for 10 years following storage facility closure records collected during the post-injection storage facility care period. The operator must deliver the records to the director at the conclusion of the retention period, and the records must thereafter be retained at the Austin headquarters of the Commission.	Similar intent to the CFR.	All records are required to be submitted to the Commission. Such records are retained. Add to the Program Description. Add to record retention schedule.	The state rule does not identify the specific types of records to be kept. See Texas Notes. It is recommended that the program description explain how adequate records will be kept. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
253.	Calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least 3 years from the date of the sample, measurement, report, or application. This period may be extended by request of the Director at any time; and	40 CFR 144.51(j)(2)(i) (See also 145.11(a)(19))		Missing.	All records are required to be submitted to the Commission. Such records are retained.	See row 252.
254.	The nature and composition of all injected fluids until three years after the completion of any plugging and abandonment procedures specified under §144.52(a)(6), or under part 146 subpart G as appropriate. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.	40 CFR 145.1(j)(2)(ii) (See also 145.11(a)(19))		Missing	All records are required to be submitted to the Commission. Such records are retained.	See row 252.

255.	Records of monitoring information shall include:	40 CFR 144.51(j)(3) (See also 145.11(a)(19))	**§5.207 Reporting and Record-Keeping** (a) The operator of a geological storage facility must provide, at a minimum, the following reports to the director and retain the following information. (1) Test records. The operator must file a complete record of all tests in duplicate with the district office within 30 days after the testing. In conducting and evaluating the tests enumerated in this subchapter or others to be allowed by the director, the operator and the director must apply methods and standards generally accepted in the industry. When the operator reports the results of mechanical integrity tests to the director, the operator must include a description of any tests and methods used. In making this evaluation, the director must review monitoring and other test data submitted since the previous evaluation. (2) Operating reports. The operator also must include summary cumulative tables of the information required by the reports listed in this paragraph. (A) Report within 24 hours. The operator must report to the appropriate district office the discovery of any significant pressure changes or other monitoring data that indicate the presence of leaks in the well or the lack of confinement of the injected gases to the geologic storage reservoir. Such report must be made orally as soon as practicable, but within 24 hours, following the discovery of the leak, and must be confirmed in writing within five working days. (B) Report within 30 days. The operator must report: (i) the results of periodic tests for mechanical integrity; (ii) the results of any other test of the injection well conducted by the operator if required by the director; and (iii) a description of any well workover. (C) Semi-annual report. The operator must report:			See row 252. 5.207(a)(2)(C) and (D) were changed in the August 2022 rule based on public comment to provide clarification on reporting requirements. 5.203(d)(1)(A), 5.203(e)(2)(D), 5.203(h)(1)(C), 5.203(i)(1), 5.203(j)(2), 5.206(d)(2), 5.206(k)(6)(C), 5.206(l)(5), and 5.207(a)(2)(C) were changed in the August 2022 rule based on public comment to address comments on measuring CO_2 by mass. These changes do not affect stringency.

			(i) a summary of well head pressure monitoring; (ii) changes to the source as well as the physical, chemical, and other relevant characteristics of the CO2 stream from the proposed operating data; (iii) monthly average, maximum and minimum values for injection pressure, flow rate, temperature, and volume and/or mass, and annular pressure; (iv) monthly annulus fluid volume added; (v) a description of any event that significantly exceeds operating parameters for annulus pressure or injection pressure as specified in the permit; (vi) a description of any event that triggers a shutdown device and the response taken; and (vii) the results of monitoring prescribed under §5.206(e) of this title (relating to Permit Standards). (D) Annual reports. The operator must submit an annual report detailing: (i) corrective action performed; (ii) new wells installed and the type, location, number, and information required in 5.203(e) of this title (relating to Application Requirements); (iii) re-calculated AOR unless the operator submits a statement signed by an appropriate company official confirming that monitoring and operational data supports the current delineation of the AOR on file with the commission; (iv) the updated area for which the operator has a good faith claim to the necessary and sufficient property rights to operate the geologic storage facility; (v) tons of CO2 injected; and (vi) The operator must maintain and update required plans in accordance with the provisions of this subchapter.			

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			(I) Operators must submit an annual statement, signed by an appropriate company official, confirming that the operator has: (-a-) reviewed the monitoring and operational data that are relevant to a decision on whether to reevaluate the AOR and the monitoring and operational data that are relevant to a decision on whether to update an approved plan required by §5.203 or §5.206 of this title; and (-b-) determined whether any updates were warranted by material change in the monitoring and operational data or in the evaluation of the monitoring and operational data by the operator. (II) Operators must submit either the updated plan or a summary of the modifications for each plan for which an update the operator determined to be warranted pursuant to subclause (I) of this clause. The director may require submission of copies of any updated plans and/or additional information regarding whether or not updates of any particular plans are warranted. (vii) other information as required by the permit.			
256.	The date, exact place, and time of sampling or measurements;	40 CFR 144.51(j)(3)(i) (See also 145.11(a)(19))	**§5.203(f)**	Missing.		See row 252.
257.	The individual(s) who performed the sampling or measurements;	40 CFR 144.51(j)(3)(ii) (See also 145.11(a)(19))	**§5.203(f)**	Missing.		See row 252.
258.	The date(s) analyses were performed;	40 CFR 144.51(j)(3)(iii) (See also 145.11(a)(19))	**§5.203(f)**	Missing.		See row 252.
259.	The individual(s) who performed the analyses;	40 CFR 144.51(j)(3)(iv) (See also 145.11(a)(19))	**§5.203(f)**	Missing.		See row 252.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
260.	The analytical techniques or methods used; and	40 CFR 144.51(j)(3)(v) (See also 145.11(a)(19))	**§5.203(f)**	Missing.		See row 252.
261.	The results of such analyses.	40 CFR 144.51(j)(3)(vi) (See also 145.11(a)(19))	**§5.203(f)**	Missing.		See row 252.

262.	Owners or operators of Class VI wells shall retain records as specified in subpart H of part 146, including §§146.84(g), 146.91(f), 146.92(d), 146.93(f), and 146.93(h) of this chapter. 146.84(g) All modeling inputs and data used to support area of review reevaluations under paragraph (e) of this section shall be retained for 10 years. (f) Records shall be retained by owner or operator as follows: (1) All data collected under § 146.82 for Class VI permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure. (2) Data on the nature and composition of all injected fluids collected pursuant to § 146.90(a) shall be retained until 10 years after site closure. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period. (3) Monitoring data collected pursuant to § 146.90(b) through (i) shall be retained for 10 years after it is collected. (4) Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at §§ 146.93(f) and (h) shall be retained for 10 years following site closure. (5) The Director has authority to require the owner or operator to retain any records required in this subpart for longer than 10 years after site closure. 146.92(d) Plugging report. Within 60 days after plugging, the owner or operator must submit, pursuant to § 146.91(e), a plugging report to the Director. The report must be certified as accurate by the owner or operator and by the person who performed the plugging operation (if other than the owner or operator.) The owner or operator shall retain the well plugging report for 10 years following site closure.	40 CFR §144.51(j)(4)	**§5.206(m) Retention of records**. The operator must retain for 10 years following storage facility closure records collected during the post-injection storage facility care period. The operator must deliver the records to the director at the conclusion of the retention period, and the records must thereafter be retained at the Austin headquarters of the commission. **§5.206(k)(6) Storage facility closure report.** Once the director has authorized storage facility closure, the operator must submit a storage facility closure report within 90 days that must thereafter be retained by the Commission in Austin. The report must include the following information: (A) documentation of appropriate injection and monitoring well plugging. The operator must provide a copy of a survey plat that has been submitted to the Regional Administrator of Region 6 of the United States Environmental Protection Agency. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks including the Latitude/Longitude or X/Y coordinates of the surface location in the NAD 27, NAD 83, or WGS 84 coordinate system, a labeled scale bar, and northerly direction arrow; (B) documentation of appropriate notification and information to such state and local authorities as have authority over drilling activities to enable such state and local authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zones; and (C) records reflecting the nature, composition, volume, and mass of the CO_2 stream. If mass is determined using volume, the operator must provide calculations.			5.206(k)(6) is similar in intent to the record retention requirement at 146.93(f). 5.206(k)(6)(a) was changed in the August 2022 rule based on public comment. The requirements of the survey plat were clarified. These and other minor changes do not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
	146.93(f) The owner or operator must submit a site closure report to the Director within 90 days of site closure, which must thereafter be retained at a location designated by the Director for 10 years. The report must include: (1) Documentation of appropriate injection and monitoring well plugging as specified in § 146.92 and paragraph (e) of this section. The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the Director. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the Regional Administrator of the appropriate EPA Regional Office; (2) Documentation of appropriate notification and information to such State authorities that have authority over drilling activities to enable such State authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and (3) Records reflecting the nature, composition, and volume of the CO2 stream. 146.93(h) The owner or operator must retain for 10 years following site closure, records collected during the post-injection site care post-injection site care period. The owner or operator must deliver the records to the Director at the conclusion of the retention period, and the records must thereafter be retained at a location designated by the Director for that purpose.					

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
263.	Signatory requirement. All applications, reports, or information submitted to the Administrator shall be signed and certified. (See §144.32.)	40 CFR 144.51(k) (See also 145.11(a)(19))	**§5.203(a)(1)(B) Signatories to permit applications.** An applicant must ensure that the application is executed by a party having knowledge of the facts entered on the form and included in the required attachments. All permit applications shall be signed as specified in this subparagraph: …. **§5.207(d) Certification.** All reports required by permits and other information requested by the director under this subchapter, shall be certified as follows: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."	Similar intent to the CFR.		The state rule describes signatories and certification in separate sections (see 144.32); no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
264.	Reporting requirements. (1) Planned changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility.	40 CFR 144.51(l)(1) (See also 145.11(a)(19))			Any planned changes would be a violation of the permit which includes approval of the various plans (construction, testing, monitoring, etc.) Changes that do not impact operation, monitoring, and testing would be beyond the scope of the Class VI regulations. Add to Program Description	See Texas Notes. It is recommended that this be described in the program description. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
265.	Anticipated noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.	40 CFR 144.51(l)(2) (See also 145.11(a)(19))			Any planned changes would be a violation of the permit which includes approval of the various plans (construction, testing, monitoring, etc.) Any planned changes would be a violation of the permit which includes approval of the various plans (construction, testing, monitoring, etc.) Changes that do not impact operation, monitoring, and testing would be beyond the scope of the Class VI regulations. Add to Program description	See Texas Notes. It is recommended that this be described in the program description. Rule was not changed in August 2022; stringency concern remains.
266.	Transfers. This permit is not transferable to any person except after notice to the Director. The Director may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Safe Drinking Water Act. (See §144.38; in some cases, modification or revocation and reissuance is mandatory.)	40 CFR 144.51(l)(3) (See also 145.11(a)(19))	**§5.202(c) Permit transfer**. An operator may transfer its geologic storage facility permit to another operator if the requirements of this subsection are met. A new operator shall not assume operation of the geologic storage facility without a valid permit.		Add to Program Description	Similar intent as the CFR. See row 237. It may be appropriate to describe in the program description how Texas will ensure that all permits would have all of these requirements (i.e., elements of other sections).] Rule was not changed in August 2022; stringency concern remains.
267.	Monitoring reports. Monitoring results shall be reported at the intervals specified elsewhere in this permit.	40 CFR 144.51(l)(4) (See also 145.11(a)(19))	**§5.207(a)(2)**			Similar intent as the CFR. See row 237.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
268.	Compliance schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this permit shall be submitted no later than 30 days following each schedule date.	40 CFR 144.51(l)(5) (See also 145.11(a)(19))	**§5.206(o)(2)(J) Schedule of compliance:** The permit may, when appropriate, specify a schedule of compliance leading to compliance with all provisions of this subchapter and Chapter 3 of this title. (i) Any schedule of compliance shall require compliance as soon as possible, and in no case later than three years after the effective date of the permit. (ii) If the schedule of compliance is for a duration of more than one year from the date of permit issuance, then interim requirements and completion dates (not to exceed one year) must be incorporated into the compliance schedule and permit. (iii) Progress reports must be submitted no later than 30 days following each interim date and the final date of compliance.	Similar intent to the CFR.		5.206(o)(2)(J)(iii) is similar to 144.51(l)(5). See row 237.
269.	Twenty-four hour reporting. The permittee shall report any noncompliance which may endanger health or the environment, including:	40 CFR 144.51(l)(6) (See also 145.11(a)(19))	**§5.207(a)(2)(A) Report within 24 hours.** The operator must report to the appropriate district office the discovery of any significant pressure changes or other monitoring data that indicate the presence of leaks in the well or the lack of confinement of the injected gases to the geologic storage reservoir. Such report must be made orally as soon as practicable, but within 24 hours, following the discovery of the leak, and must be confirmed in writing within five working days.	Similar intent to the CFR.		The state requirement describes the following rows in this citation See row 237.
270.	Any monitoring or other information which indicates that any contaminant may cause an endangerment to a USDW; or	40 CFR 144.51(l)(6)(i) (See also 145.11(a)(19))	**§5.207(a)(2)(A) Report within 24 hours.** The operator must report to the appropriate district office the discovery of any significant pressure changes or other monitoring data that indicate the presence of leaks in the well or the lack of confinement of the injected gases to the geologic storage reservoir. Such report must be made orally as soon as practicable, but within 24 hours, following the discovery of the leak, and must be confirmed in writing within five working days.	Similar intent to the CFR.		The state rule describes what constitutes endangerment to USDWs. See row 237.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
271.	Any noncompliance with a permit condition or malfunction of the injection system which may cause fluid migration into or between USDWs. Any information shall be provided orally within 24 hours from the time the permittee becomes aware of the circumstances. A written submission shall also be provided within 5 days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause, the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.	40 CFR 144.51(l)(6)(ii) (See also 145.11(a)(19))	**§5.207(a)(2)(A) Report within 24 hours.** The operator must report to the appropriate district office the discovery of any significant pressure changes or other monitoring data that indicate the presence of leaks in the well or the lack of confinement of the injected gases to the geologic storage reservoir. Such report must be made orally as soon as practicable, but within 24 hours, following the discovery of the leak, and must be confirmed in writing within five working days.	See EPA comments.		The state requirement is on the timing of noncompliance reporting is similar to the CFR but does not describe the content of the report; **this is less stringent than the CFR**. See row 237. Rule was not changed in August 2022; stringency concern remains.
272.	Other noncompliance. The permittee shall report all instances of noncompliance not reported under paragraphs (l) (4), (5), and (6) of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph (l)(6) of this section.	40 CFR 144.51(l)(7) (See also 145.11(a)(19))		Missing.		Texas does not require reporting of Other noncompliance as a permit condition. Rule was not changed in August 2022; stringency concern remains.
273.	Other information. Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Director, it shall promptly submit such facts or information.	40 CFR 144.51(l)(8) (See also 145.11(a)(19))	**§5.203(p) Other information.** The applicant must submit any other information requested by the director as necessary to discharge the Commission's duties under Texas Water Code, Chapter 27, subchapter B-1, or deemed necessary by the director to clarify, explain, and support the required attachments.	Differs from the CFR.		Texas does not require reporting of Other information as a permit condition. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
274.	Requirements prior to commencing injection. … a new injection well may not commence injection until construction is complete, and	40 CFR 144.51(m) (See also 145.11(a)(19))	**§5.202(a)(2)** A person may not begin injection until: (A) construction of the well is complete;	Similar intent to the CFR.	Add to Program description	Texas includes many of the provisions of 144.51, but only the provisions in §5.206 are required to be a permit condition. It may be appropriate to describe in the program description how Texas will ensure that all permits would have all of these requirements (i.e., elements of other sections). Rule was not changed in August 2022; stringency concern remains. 5.206(h)(2)(C) was changed in the August 2022 rule based on public comment to require operators to provide training schedules, training dates, and course outlines to Commission personnel annually. There is no analogous provision in the CFR; no concerns for stringency. The public commented on 5.206(h)(4)(i) and 5.206(i), but no changes were made in the August 2022 rule.See row 237.
275.	The permittee has submitted notice of completion of construction to the Director; and	40 CFR 144.51(m)(1) (See also 145.11(a)(19))	**§5.202(a)(2)** A person may not begin injection until: (B) the operator has submitted to the director notice of completion of construction;	Similar intent to the CFR.	Add to Program description	See row 237.
276.	The Director has inspected or otherwise reviewed the new injection well and finds it is in compliance with the conditions of the permit; or	40 CFR 144.51(m)(2)(i) (See also 145.11(a)(19))	**§5.202(a)(2)** A person may not begin injection until: (C) the Commission has inspected or otherwise reviewed the injection well and finds it is in compliance with the conditions of the permit; and (D) the director has issued a permit to operate the injection well.	Similar intent to the CFR.	Add to Program description	See row 237.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
277.	The permittee has not received notice from the Director of his or her intent to inspect or otherwise review the new injection well within 13 days of the date of the notice in paragraph (m)(1) of this section, in which case prior inspection or review is waived and the permittee may commence injection. The Director shall include in his notice a reasonable time period in which he shall inspect the well.	40 CFR 144.51(m)(2)(ii) (See also 145.11(a)(19))	No reference found	Missing.	Texas does not plan to "waive" inspection or review, which is more stringent than federal requirements. Add to Program Description	Texas does not require this as a permit condition.
278.	The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well…..	40 CFR 144.51(n) (See also 145.11(a)(19))	**§5.203(k) Well plugging plan**. The applicant must submit a well plugging plan for all injection wells and monitoring wells that penetrate the base of usable quality water that includes the following: (3) a proposal for giving notice of intent to plug monitoring wells that penetrate the base of usable quality water and all injection wells. The applicant's plan must ensure that: (A) the operator notifies the director at least 60 days before plugging a well. At this time, if any changes have been made to the original well plugging plan, the operator must also provide a revised well plugging plan. At the discretion of the director, an operator may be allowed to proceed with well plugging on a shorter notice period; and (B) the operator will file a notice of intention to plug and abandon (Form W-3A) a well with the appropriate Commission district office and the division in Austin at least five days prior to the beginning of plugging operations; 5.206(j) Well plugging. The operator of a geologic storage facility must maintain and comply with 34 the approved well plugging plan required by §5.203(k) of this title.	Similar intent to the CFR.		Texas requires a plugging plan a permit condition in 5.206(j).

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
279.	A Class VI permit shall include conditions which meet the requirements set forth in §146.92 of this chapter. Where the plan meets the requirements of §146.92 of this chapter, the Director shall incorporate it into the permit as a permit condition. For purposes of this paragraph, temporary or intermittent cessation of injection operations is not abandonment.	40 CFR §144.51(o)	**§5.203(k) Well plugging plan**. **§5.206(j) Well plugging.** The operator of a geologic storage facility must maintain and comply with the approved well plugging plan required by §5.203(k) of this title.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency
280.	*Duty to establish and maintain mechanical integrity.* The owner or operator of a Class I, II, III or VI well permitted under this part shall establish mechanical integrity prior to commencing injection or on a schedule determined by the Director. Thereafter …. the owner or operator of Class VI wells must maintain mechanical integrity as defined in §146.89 of this chapter.	40 CFR §144.51(q)(1)	**§5.203(h)(1)(A)** Other than during periods of well workover in which the sealed tubing casing annulus is of necessity disassembled for maintenance or corrective procedures, the operator must maintain mechanical integrity of the injection well at all times. **§5.206(f) Mechanical integrity.** (1) The operator must maintain and comply with the approved mechanical integrity testing plan submitted in accordance with §5.203(j) of this title. (2) Other than during periods of well workover in which the sealed tubing-casing annulus is of necessity disassembled for maintenance or corrective procedures, the operator must maintain mechanical integrity of the injection well at all times. (3) The operator must either repair and successfully retest or plug a well that fails a mechanical integrity test. (4) The director may require additional or alternative tests if the results presented by the operator do not demonstrate to the director that there is no significant leak in the casing, tubing, or packer or movement of fluid into or between formations containing USDWs resulting from the injection activity.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
281.	When the Director determines that a ….Class VI well lacks mechanical integrity pursuant to §§146.8 or 146.89 of this chapter for Class VI of this chapter, he/she shall give written notice of his/her determination to the owner or operator. Unless the Director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the Director's determination. The Director may allow plugging of the well pursuant to the requirements of §146.10 of this chapter or require the permittee to perform such additional construction, operation, monitoring, reporting and corrective action as is necessary to prevent the movement of fluid into or between USDWs caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the Director that the owner or operator has demonstrated mechanical integrity pursuant to §146.8 of this chapter.	40 CFR 144.51(q)(2) (See also 145.11(a)(19))	**§5.206(h)(3) Action.** If an operator obtains evidence that the injected CO_2 stream and associated pressure front may cause an endangerment to USDWs, the operator must: (A) immediately cease injection; (B) take all steps reasonably necessary to identify and characterize any release; (C) notify the director as soon as practicable but within at least 24 hours; and (D) implement the approved emergency and remedial response plan. (4) Resumption of injection. The director may allow the operator to resume injection prior to remediation if the operator demonstrates that the injection operation will not endanger USDWs. **§5.206(d)(2)(F)(ii)** If an automatic shutdown is triggered or a loss of mechanical integrity is discovered, the operator must immediately investigate and identify as expeditiously as possible the cause. If, upon investigation, the well appears to be lacking mechanical integrity, or if monitoring otherwise indicates that the well may be lacking mechanical integrity, the operator must: (I) immediately cease injection; (II) take all steps reasonably necessary to determine whether there may have been a release of the injected CO2 stream into any unauthorized zone; (III) notify the director as soon as practicable, but within 24 hours; (IV) restore and demonstrate mechanical integrity to the satisfaction of the director prior to resuming injection; and (V) notify the director when injection can be expected to resume.	Similar intent to the CFR.	5.206(h)(4) clearly implies that injection may not resume prior to remediation unless the operator demonstrates that injection will not endanger USDWs. Also, the information noted should be included in the Emergency response and remedial action plan, which must be approved by the director.	While the state rule appears to require ceasing injection if a loss of mechanical integrity is discovered, the provision is less specific relative to the CFR, e.g., related to notification by the director, plugging the well, resuming injection after demonstrating MI. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §144.52 Establishing permit conditions.						
282.	In addition to conditions required in §144.51, the Director shall establish conditions, as required on a case-by-case basis under §144.36 (duration of permits), §144.53(a) (schedules of compliance), §144.54 (monitoring)… Permits for owners or operators of Class VI injection wells shall include conditions meeting the requirements of subpart H of part 146.	40 CFR §144.52(a)	**§5.206(o) Other permit terms and conditions**. (1) Protection of USDWs. In any permit for a geologic storage facility, the director must impose terms and conditions reasonably necessary to protect USDWs. Permits issued under this subchapter continue in effect until revoked, modified, or terminated by the Commission. The operator must comply with each requirement set forth in this subchapter as a condition of the permit unless modified by the terms of the permit.	Similar intent to the CFR.	Add to Program Description.	Texas includes many of the provisions of 144.52, but only the provisions in §5.206 are required to be a permit condition. It may be appropriate to describe in the program description how Texas will ensure that all permits would have all of these requirements (i.e., elements of other sections). Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
283.	Construction requirements as set forth in part 146. Existing wells shall achieve compliance with such requirements according to a compliance schedule established as a permit condition. The owner or operator of a proposed new injection well shall submit plans for testing, drilling, and construction as part of the permit application. No construction may commence until a permit has been issued containing construction requirements (see §144.11). New wells shall be in compliance with these requirements prior to commencing injection operations. Changes in construction plans during construction may be approved by the Administrator as minor modifications (§144.41). No such changes may be physically incorporated into construction of the well prior to approval of the modification by the Director.	40 CFR 144.52(a)(1) (See also 145.11(a)(20))	**§5.202. Permit Required, and Draft Permit and Fact Sheet.** (a) Permit required. (1) A person shall not begin drilling or operating an anthropogenic CO2 injection well for geologic storage regulated under this subchapter or constructing or operating a geologic storage facility regulated under this subchapter without first obtaining the necessary permits from the Commission. Following receipt of a geologic storage facility permit issued under this subchapter, the storage operator shall obtain a permit to drill, deepen, or convert a well for storage purposes in accordance with §3.5 of this title (relating to Application to Drill, Deepen, Reenter, or Plug Back). (2) A person may not begin injection until: (A) construction of the well is complete; (B) the operator has submitted to the director notice of completion of construction; (C) the Commission has inspected or otherwise reviewed the injection well and finds it is in compliance with the conditions of the permit; and (D) the director has issued a permit to operate the injection well. **§5.203(e) Injection well construction.** **§5.203(f) Plan for logging, sampling, and testing of injection wells after permitting but before injection.** **§5.203(g) Compatibility determination.** **§5.203(h) Mechanical integrity testing.**	Similar intent to the CFR.		The state rule does not follow the text of the CFR, but no concerns for stringency. See row 282. Minor August 2022 rule changes do not affect stringency.
284.	Corrective action as set forth in §§144.55, 146.7, and 146.84 of this chapter.	40 CFR §144.52(a)(2)	**§5.203(d) AOR and corrective action.** **§5.206(g) Area of Review and Corrective Action**	Similar intent to the CFR.		5.203(d) and 5.206(g) appear to describe corrective action as stringently as 146.84. See also 146.84.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
285.	Operation requirements as set forth in 40 CFR part 146; the permit shall establish any maximum injection volumes and/or pressures necessary to assure that fractures are not initiated in the confining zone, that injected fluids do not migrate into any underground source of drinking water, that formation fluids are not displaced into any underground source of drinking water, and to assure compliance with the part 146 operating requirements.	40 CFR 144.52(a)(3) (See also 145.11(a)(20))	**5.203(i)(1) Operating plan.** The applicant must submit a plan for operating the injection wells and the geologic storage facility that complies with the criteria set forth in §5.206(d) of this title, and that outlines the steps necessary to conduct injection operations. The applicant must include the following proposed operating data in the plan: (A) the average and maximum daily injection rates, temperature, volumes and/or mass of the CO_2 stream; (B) the average and maximum surface injection pressure; (C) the sources of the CO_2 stream and the volume and/or mass of CO_2 from each source; and (D) an analysis of the chemical and physical characteristics of the CO_2 stream prior to injection. **§5.206(d) Operating a geologic storage facility.**	Similar intent to the CFR.		The operating plan as described in the state requirement appears as stringent as the CFR. August 2022 rule changes do not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
286.	Monitoring and reporting requirements as set forth in 40 CFR part 146. The permittee shall be required to identify types of tests and methods used to generate the monitoring data.	40 CFR 144.52(a)(5) (See also 145.11(a)(20))	**§5.206(e) Monitoring, sampling, and testing requirements.** (1) The operator of an anthropogenic CO_2 injection well must maintain and comply with the approved monitoring, sampling, and testing plan to verify that the geologic storage facility is operating as permitted and that the injected fluids are confined to the injection zone. (2) All permits shall include the following requirements: (A) the proper use, maintenance, and installation of monitoring equipment or methods; (B) monitoring including type, intervals, and frequency sufficient to yield data that are representative of the monitored activity including, when required, continuous monitoring; (C) reporting no less frequently than as specified in §5.207 of this title (relating to Reporting and Record-Keeping). (3) The director may require additional monitoring as necessary to support, upgrade, and improve computational modeling of the AOR evaluation and to determine compliance with the requirement that the injection activity not allow movement of fluid that would endanger USDWs.	Similar intent to the CFR.		The state has similar requirements to prepare a Testing and Monitoring Plan.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
287.	Financial responsibility. (i) The permittee, including the transferor of a permit, is required to demonstrate and maintain financial responsibility and resources to close, plug, and abandon the underground injection operation in a manner prescribed by the Director until:	40 CFR §144.52(a)(6) (See also 145.11(a)(20))	**§5.203(n) Fees, financial responsibility, and financial assurance.** The applicant must pay the fees, demonstrate that it has met the financial responsibility requirements, and provide the Commission with financial assurance as required under §5.205 of this title (relating to Fees, Financial Responsibility, and Financial Assurance). (1) The applicant must demonstrate financial responsibility and resources for corrective action, injection well plugging, post-injection storage facility care and storage facility closure, and emergency and remedial response until the director has provided to the operator a written verification that the director has determined that the facility has reached the end of the post-injection storage facility care period.	Similar intent to the CFR.		The row below is combined into this row. See row 282 and 146.85. Texas also requires a permit application fee, injection fee, and post-injection site care fee. No concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
288.	The well has been plugged and abandoned in accordance with an approved plugging and abandonment plan pursuant to §§144.51(o), 146.10, and 146.92 of this chapter, and submitted a plugging and abandonment report pursuant to §144.51(p); or	40 CFR §144.52(a)(7)(i)(A)	**§5.203(n) Fees, financial responsibility, and financial assurance.**	Similar intent to the CFR.	**5.203(n) Fees, financial responsibility, and financial assurance**. The applicant must pay the fees, demonstrate that it has met the financial responsibility requirements, and provide the Commission with financial assurance as required under §5.205 (Fees, Financial Responsibility, and Financial Assurance). (1) The applicant must demonstrate financial responsibility and resources for corrective action, injection well plugging, PISC and storage facility closure, and emergency and remedial response until the director has provided to the operator a written verification that the director has determined that the facility has reached the end of the post-injection storage facility care period.	The state financial responsibility obligation ends at the end of the post-injection site care period. Submission of a plugging report is not mentioned. See 146.93 and row 282. Rule was not changed in August 2022; stringency concern remains.
289.	The well has been converted in compliance with the requirements of §144.51(n); or	40 CFR 144.52(a)(7)(i)(B) (See also 145.11(a)(20)) 144.51(n) The permittee shall notify the Director at such times as the permit requires before conversion or abandonment of the well or in the case of area permits before closure of the project.	No reference found	Missing.	See above	The state rule does require financial responsibility be maintained until the well is conversion. This is less stringent than the CFR.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
290.	The transferor of a permit has received notice from the Director that the owner or operator receiving transfer of the permit, the new permittee, has demonstrated financial responsibility for the well.	40 CFR 144.52(a)(7)(i)(C) (See also 145.11(a)(20))	**§5.202(c) Permit transfer.** An operator may transfer its geologic storage facility permit to another operator if the requirements of this subsection are met. A new operator shall not assume operation of the geologic storage facility without a valid permit. **(2) Evidence of financial responsibility.** The operator acquiring the permit must provide the director with evidence of financial responsibility satisfactory to the director in accordance with §5.205 of this title (relating to Fees, Financial Responsibility, and Financial Assurance).	Similar intent to the CFR.		A demonstration of financial responsibility as it pertains to a permit transfer is included in the state requirement. No concerns for stringency. See row 282.

291.	The permittee shall show evidence of such financial responsibility to the Director by the submission of a surety bond, or other adequate assurance, such as a financial statement or other materials acceptable to the Director. For Class VI wells, the permittee shall show evidence of such financial responsibility to the Director by the submission of a qualifying instrument (see §146.85(a) of this chapter), such as a financial statement or other materials acceptable to the Director. The owner or operator of a Class VI well must comply with the financial responsibility requirements set forth in §146.85 of this chapter.	40 CFR §144.52(a)(7)(ii) 40 CFR §146.85	**§5.206(b)(11)** the director has determined that the applicant has sufficiently demonstrated financial responsibility as required in §5.205(b) of this title; and **(12)** the applicant submitted to the director financial assurance in accordance with §5.205(c) of this title. **§5.205 (b) Financial responsibility.** (1) A person to whom a permit is issued under this subchapter must provide annually to the director evidence of financial responsibility that is satisfactory to the director. The operator must demonstrate and maintain financial responsibility and resources for corrective action, injection well plugging, post-injection storage facility care and storage facility closure, and emergency and remedial response until the director has provided written verification that the director has determined that the facility has reached the end of the post-injection storage facility care period. (2) In determining whether the person is financially responsible, the director must rely on: (A) the person's most recent audited annual report filed with the U. S. Securities and Exchange Commission under Section 13 or 15(d), Securities Exchange Act of 1934 (15 U.S.C. Section 78m or 78o(d)); and (B) the person's most recent quarterly report filed with the U. S. Securities and Exchange Commission under Section 13 or 15(d), Securities Exchange Act of 1934 (15 U.S.C. Section 78m or 78o(d)); or (C) if the person is not required to file such a report, the person's most recent audited financial statement. The date of the audit must not be more than one year before the date of submission of the application to the director. (3) The applicant's demonstration of financial responsibility must account for the entire AOR, regardless of whether corrective action in the AOR is phased.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency. See 146.85. 5.205(c)(2)(C) was changed in the August 2022 rule based on public comment to include the cost of plugging. No impact on stringency The public commented on 5.205(n)(2), but no change was made in the August 2022 rule.

			(c) Financial assurance. (1) Injection and monitoring wells. The operator must comply with the requirements of §3.78 of this title for all monitoring wells that penetrate the base of usable quality water and all injection wells. (2) Geologic storage facility. (A) The applicant must include in an application for a geologic storage facility permit: (i) a written estimate of the highest likely dollar amount necessary to perform post-injection monitoring and closure of the facility that shows all assumptions and calculations used to develop the estimate; (ii) a copy of the form of the bond or letter of credit that will be filed with the Commission; and (iii) information concerning the issuer of the bond or letter of credit including the issuer's name and address and evidence of authority to issue bonds or letters of credit in Texas. (B) A geologic storage facility shall not receive CO_2 until a bond or letter of credit in an amount approved by the director under this subsection and meeting the requirements of this subsection as to form and issuer has been filed with and approved by the director. (C) The determination of the amount of financial assurance for a geologic storage facility is subject to the following requirements: (i) The director must approve the dollar amount of the financial assurance. The amount of financial assurance required to be filed under this subsection must be equal to or greater than the maximum amount necessary to perform corrective action, emergency response, and remedial action, post-injection monitoring and site care, and closure of the geologic storage facility at any time during the permit term in			

			accordance with all applicable state laws, Commission rules and orders, and the permit; (ii) A qualified professional engineer licensed by the State of Texas, as required under Occupations Code, Chapter 1001, relating to Texas Engineering Practice Act, must prepare or supervise the preparation of a written estimate of the highest likely amount necessary to close the geologic storage facility. The operator must submit to the director the written estimate under seal of a qualified licensed professional engineer, as required under Occupations Code, Chapter 1001, relating to Texas Engineering Practice Act; and (iii) The Commission may use the proceeds of financial assurance filed under this subsection to pay the costs of plugging any well or wells at the facility if the financial assurance for plugging costs filed with the Commission is insufficient to pay for the plugging of such well or wells. (D) Bonds and letters of credit filed in satisfaction of the financial assurance requirements for a geologic storage facility must comply with the following standards as to issuer and form. (i) The issuer of any geologic storage facility bond filed in satisfaction of the requirements of this subsection must be a corporate surety authorized to do business in Texas. The form of bond filed under this subsection must provide that the bond be renewed and continued in effect until the conditions of the bond have been met or its release is authorized by the director. (ii) Any letter of credit filed in satisfaction of the requirements of this subsection must be issued by and drawn on a bank authorized under state or federal law to operate in Texas. The letter of credit must be an irrevocable, standby letter of credit subject to the requirements of Texas Business and Commerce Code, §§5.101 - 5.118. The letter of credit must provide that it will			

			be renewed and continued in effect until the conditions of the letter of credit have been met or its release is authorized by the director. (E) The operator of a geologic storage facility must provide to the director annual written updates of the cost estimate to increase or decrease the cost estimate to account for any changes to the AOR and corrective action plan, the emergency response and remedial action plan, the injection well plugging plan, and the post-injection storage facility care and closure plan. The operator must provide to the director upon request an adjustment of the cost estimate if the director has reason to believe that the original demonstration is no longer adequate to cover the cost of injection well plugging and post-injection storage facility care and closure. (3) The director may consider allowing the phasing in of financial assurance for only corrective action based on project-specific factors. (4) The director may approve a reduction in the amount of financial assurance required for post-injection monitoring and/or corrective action based on project-specific monitoring results. **(d) Notice of adverse financial conditions.** (1) The operator must notify the Commission of adverse financial conditions that may affect the operator's ability to carry out injection well plugging and post-injection storage facility care and closure. An operator must file any notice of bankruptcy in accordance with §3.1(f) of this title (relating to Organization Report; Retention of Records; Notice Requirements). The operator must give such notice by certified mail. (2) The operator filing a bond must ensure that the bond provides a mechanism for the bond or surety company to give prompt notice to the Commission and the operator of any action filed alleging insolvency or bankruptcy of the surety company or the bank or alleging any violation that			

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			would result in suspension or revocation of the surety or bank's charter or license to do business. (3) Upon the incapacity of a bank or surety company by reason of bankruptcy, insolvency or suspension, or revocation of its charter or license, the Commission must deem the operator to be without bond coverage. The Commission must issue a notice to any operator who is without bond coverage and must specify a reasonable period to replace bond coverage, not to exceed 60 days.			

292.	*Mechanical integrity*. A permit for any Class VI well which lacks mechanical integrity shall include a condition prohibiting injection operations until the permittee shows to the satisfaction of the Director under §§146.8, or 146.89 for Class VI, that the well has mechanical integrity.	40 CFR §144.52(a)(8) 40 CFR §146.89	**§5.206(d)(2)(F)(ii)** If an automatic shutdown is triggered or a loss of mechanical integrity is discovered, the operator must immediately investigate and identify as expeditiously as possible the cause. If, upon investigation, the well appears to be lacking mechanical integrity, or if monitoring otherwise indicates that the well may be lacking mechanical integrity, the operator must: (I) immediately cease injection; (II) take all steps reasonably necessary to determine whether there may have been a release of the injected CO2 stream into any unauthorized zone; (III) notify the director as soon as practicable, but within 24 hours; (IV) restore and demonstrate mechanical integrity to the satisfaction of the director prior to resuming injection; and (V) notify the director when injection can be expected to resume. **(f) Mechanical integrity.** (1) The operator must maintain and comply with the approved mechanical integrity testing plan submitted in accordance with §5.203(j) of this title. (2) Other than during periods of well workover in which the sealed tubing-casing annulus is of necessity disassembled for maintenance or corrective procedures, the operator must maintain mechanical integrity of the injection well at all times. (3) The operator must either repair and successfully retest or plug a well that fails a mechanical integrity test. (4) The director may require additional or alternative tests if the results presented by the operator do not demonstrate to the director that there is no significant leak in the casing, tubing, or packer or movement of fluid into or between formations containing USDWs resulting from the injection activity.	Differs from the CFR.		The state requirement does not explicitly prohibit injection in a well that lacks MI, but mechanical integrity is required in the state rule, so no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
293.	*Additional conditions*. The Director shall impose on a case-by-case basis such additional conditions as are necessary to prevent the migration of fluids into underground sources of drinking water.	40 CFR 144.52(a)(9) (See also 145.11(a)(20))	**§5.206(o) Other permit terms and conditions**. (1) Protection of USDWs. In any permit for a geologic storage facility, the director must impose terms and conditions reasonably necessary to protect USDWs. Permits issued under this subchapter continue in effect until revoked, modified, or terminated by the Commission. The operator must comply with each requirement set forth in this subchapter as a condition of the permit unless modified by the terms of the permit.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
294.	144.52(b)(1) In addition to conditions required in all permits the Director shall establish conditions in permits as required on a case-by-case basis, to provide for and assure compliance with all applicable requirements of the SDWA and parts 144, 145, 146 and 124.	40 CFR 144.52(b)(1) (See also 145.11(a)(20))	**§5.206(o) Other permit terms and conditions**.	Differs from the CFR.	5.206(e)(3) The director may require additional monitoring as necessary to support, upgrade, and improve computational modeling of the AOR evaluation and to determine compliance with the requirement that the injection activity not allow movement of fluid that would endanger USDWs. 5.206(f) (4) The director may require additional or alternative tests if the results presented by the operator do not demonstrate to the director that there is no significant leak in the casing, tubing, or packer or movement of fluid into or between formations containing USDWs resulting from the injection activity.	The state rule does not specifically require that the director establish conditions on case by case basis. The permit conditions are all combined into 5.206 in the state rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
295.	144.52(b)(2) For a State issued permit, an applicable requirement is a State statutory or regulatory requirement which takes effect prior to final administrative disposition of the permit. For State and EPA administered programs, an applicable requirement is also any requirement which takes effect prior to the modification or revocation and reissuance of a permit, to the extent allowed in §144.39.	40 CFR 144.52(b)(2) (See also 145.11(a)(20))	No reference found.	Missing.	Add to Program description	This provision is missing from the state rule. Rule was not changed in August 2022; stringency concern remains.
296.	New or reissued permits, and to the extent allowed under §144.39 modified or revoked and reissued permits, shall incorporate each of the applicable requirements referenced in §144.52.	40 CFR 144.52(b)(3) (See also 145.11(a)(20))	No reference found.	Missing.	The rules require that the conditions be included in all permits, which include any new, reissued, or modified permit. Add to Program description	This provision is missing from the state rule. Rule was not changed in August 2022; stringency concern remains.
297.	Incorporation. All permit conditions shall be incorporated either expressly or by reference. If incorporated by reference, a specific citation to the applicable regulations or requirements must be given in the permit.	40 CFR 144.52 (See also 145.11(a)(20))	**§5.206. Permit Standards.** (a) Each condition applicable to a permit shall be incorporated into the permit either expressly or by reference. If incorporated by reference, a specific citation to the rules in this chapter shall be given in the permit. The requirements listed in this section are directly enforceable regardless of whether the requirement is a condition of the permit.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
40 CFR 144.53 Schedule of compliance.						

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
298.	General. The permit may, when appropriate, specify a schedule of compliance leading to compliance with the SDWA and parts 144, 145, 146, and 124.	40 CFR 144.53(a) (See also 145.11(a)(21))	**§5.206(o)(2)(J) Schedule of compliance:** The permit may, when appropriate, specify a schedule of compliance leading to compliance with all provisions of this subchapter and Chapter 3 of this title. (i) Any schedule of compliance shall require compliance as soon as possible, and in no case later than three years after the effective date of the permit. (ii) If the schedule of compliance is for a duration of more than one year from the date of permit issuance, then interim requirements and completion dates (not to exceed one year) must be incorporated into the compliance schedule and permit. (iii) Progress reports must be submitted no later than 30 days following each interim date and the final date of compliance.	Same as the CFR.		
299.	Time for compliance. Any schedules of compliance shall require compliance as soon as possible, and in no case later than 3 years after the effective date of the permit.	40 CFR 144.53(a)(1) (See also 145.11(a)(21))	**§5.206(o)(2)(J)(i)** Any schedule of compliance shall require compliance as soon as possible, and in no case later than three years after the effective date of the permit.	Same as the CFR.		
300.	Interim dates. Except as provided in paragraph (b)(1)(ii) of this section, if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement.	40 CFR 144.53(a)(2) (See also 145.11(a)(21))	**§5.206(o)(2)(J)(ii)** If the schedule of compliance is for a duration of more than one year from the date of permit issuance, then interim requirements and completion dates (not to exceed one year) must be incorporated into the compliance schedule and permit.	Similar to the CFR.		Similar to CFR; no concerns for stringency.
301.	The time between interim dates shall not exceed 1 year.	40 CFR 144.53(a)(2)(i) (See also 145.11(a)(21))	**§5.206(o)(2)(J)(ii)**	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
302.	If the time necessary for completion of any interim requirement is more than 1 year and is not readily divisible into stages for completion, the permit shall specify interim dates for the submission of reports of progress toward completion of the interim requirements and indicate a projected completion date.	40 CFR 144.53(a)(2)(ii) (See also 145.11(a)(21))	**§5.206(o)(2)(J)(ii)**	Similar intent to the CFR.	Do not agree: 5.206(o)(2) (J) Schedule of compliance: The permit may, when appropriate, specify a schedule of compliance leading to compliance with all provisions of this subchapter and Chapter 3 of this title. .... (iii) Progress reports must be submitted no later than 30 days following each interim date and the final date of compliance.	The state does not require reporting of progress toward completion of a compliance schedule. Rule was not changed in August 2022; stringency concern remains.
303.	Reporting. The permit shall be written to require that if paragraph (a)(1) of this section is applicable, progress reports be submitted no later than 30 days following each interim date and the final date of compliance.	40 CFR 144.53(a)(3) (See also 145.11(a)(21))	**§5.206(o)(2)(I)(iii)** Progress reports must be submitted no later than 30 days following each interim date and the final date of compliance.	Similar to the CFR.		Similar to CFR; no concerns for stringency.
40 CFR 144.54 Requirements for recording and reporting of monitoring results.						
304.	All permits shall specify: Requirements concerning the proper use, maintenance, and installation, when appropriate, of monitoring equipment or methods (including biological monitoring methods when appropriate);	40 CFR 144.54(a) (See also 145.11(a)(22))	**§5.206(e) Monitoring, sampling, and testing requirements.** (1) The operator of an anthropogenic CO_2 injection well must maintain and comply with the approved monitoring, sampling, and testing plan to verify that the geologic storage facility is operating as permitted and that the injected fluids are confined to the injection zone. (2) All permits shall include the following requirements: (A) the proper use, maintenance, and installation of monitoring equipment or methods;	Similar intent to the CFR.		The state requirement does not reference biological monitoring methods; this is not applicable to CO2 injection. No concerns for stringency

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
305.	Required monitoring including type, intervals, and frequency sufficient to yield data which are representative of the monitored activity including when appropriate, continuous monitoring;	40 CFR 144.54(b) (See also 145.11(a)(22))	**§5.206(e)(2)(B**) monitoring including type, intervals, and frequency sufficient to yield data that are representative of the monitored activity including, when required, continuous monitoring;	Same as the CFR.		
306.	Applicable reporting requirements based upon the impact of the regulated activity and as specified in part 146. Reporting shall be no less frequent than specified in the above regulations.	40 CFR 144.54(c) (See also 145.11(a)(22))	**§5.206(e)(2)(C)** reporting no less frequently than as specified in §5.207 of this title (relating to Reporting and Record-Keeping).	Similar to the CFR.		Similar to CFR; no concerns for stringency.
SUBPART G--REQUIREMENTS FOR OWNERS AND OPERATORS OF CLASS V INJECTION WELLS						
40 CFR §144.80 What is a Class V injection well? Note: This part is not in the Class VI primacy manual crosswalk. These rows could be deleted from this table.						
PART 146--UNDERGROUND INJECTION CONTROL PROGRAM: CRITERIA AND STANDARDS						
SUBPART A--GENERAL PROVISIONS						
40 CFR 146.1 Applicability and scope.						
307.	(a) This part sets forth technical criteria and standards for the UIC Program. This part should be read in conjunction with 40 CFR parts 124, 144, and 145, which also apply to UIC programs. 40 CFR part 144 defines the regulatory framework of EPA administered permit programs. 40 CFR part 145 describes the elements of an approvable State program and procedures for EPA approval of State participation in the permit programs. 40 CFR part 124 describes the procedures the Agency will use for issuing permits under the covered programs. Certain of these procedures will also apply to State-administered programs as specified in 40 CFR 5.	40 CFR 146.1(a)	No reference found.		Note that states are not expected to have language equivalent to this section. This provision is included here to provide background on the UIC program.	See Texas Notes. No concerns for stringency.
308.	Upon the approval, partial approval or promulgation of a State UIC program by the Administrator, any underground injection which is not authorized by the Director by rule or by permit is unlawful.	40 CFR 146.1(b)	No reference found.		Not needed in the state regulation.	See Texas Notes. No concerns for stringency.
40 CFR 146.3 Definitions						

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
309.	*Abandoned well* means a well whose use has been permanently discontinued or which is in a state of disrepair such that it cannot be used for its intended purpose or for observation purposes.		**16 TAC 3.15(a)(6)** Inactive well—An unplugged well that has been spudded or has been equipped with cemented casing and that has had not reported production, disposal, injection, or other permitted activity for a period of greater than 12 months.	Missing.		The definition of inactive well is similar to that of the abandoned well (which is not defined in the UIC regulations); the term "abandoned well" is only used in reference to corrective action.
310.	*Casing* means a pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole.		**§5.102(8)** Casing--A pipe or tubing of appropriate material, of varying diameter and weight, lowered into a borehole during or after drilling in order to support the sides of the hole and thus prevent the walls from caving, to prevent loss of drilling mud into porous ground, or to prevent water, gas, or other fluid from entering or leaving the hole.	Same as the CFR.		
311.	*Cementing* means the operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.		**§5.102(9)** Cementing--The operation whereby a cement slurry is pumped into a drilled hole and/or forced behind the casing.	Same as the CFR.		
312.	*Effective date* of a UIC program means the date that a State UIC program is approved or established by the Administrator.		No reference found.	Missing		Not required of state regulations. No concerns for stringency.
313.	*Experimental technology* means a technology which has not been proven feasible under the conditions in which it is being tested.		No reference found.	Missing.		This term is not used in the state rule. No concerns for stringency.
314.	*Fault* means a surface or zone of rock fracture along which there has been displacement.			Missing.		"Fault" is not defined in the state rule, but transmissive faults are defined. No concerns for stringency
315.	*Flow rate* means the volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine or passes along a conduit or channel.		**§5.102(22)** Flow rate--The volume per time unit given to the flow of gases or other fluid substance which emerges from an orifice, pump, turbine or passes along a conduit or channel.	Same as the CFR.		
316.	*Lithology* means the description of rocks on the basis of their physical and chemical characteristics.		**§5.102(34)** Lithology--The description of rocks on the basis of their physical and chemical characteristics.			

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
317.	*Owner or operator* means the owner or operator of any facility or activity subject to regulation under the RCRA, UIC, NPDES, or 404 programs.		**§5.102(38)** Operator--A person, acting for itself or as an agent for others, designated to the Railroad Commission of Texas as the person with responsibility for complying with the rules and regulations regarding the permitting, physical operation, closure, and post-closure care of a geologic storage facility, or such person's authorized representative.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
318.	*Packer* means a device lowered into a well to produce a fluid-tight seal.		**§5.102(39)** Packer--A device lowered into a well to produce a fluid-tight seal.	Same as the CFR.		
319.	*Permit* means an authorization, license, or equivalent control document issued by EPA or an "approved State" to implement the requirements of this part and parts 124, 144, and 145. Permit does not include RCRA interim status (§122.23), UIC authorization by rule (§§144.21 to 144.26 and 144.15), or any permit which has not yet been the subject of final agency action, such as a "draft permit" or a "proposed permit."		**§5.102(40)** Permit--An authorization, license, or equivalent control document issued by the Commission to implement the requirements of this chapter.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency. Minor August 2022 rule changes do not affect stringency.
320.	*Plugging* means the act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.		**§5.102(42)** Plugging--The act or process of stopping the flow of water, oil or gas into or out of a formation through a borehole or well penetrating that formation.	Same as the CFR.		The public commented on 5.102(42), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
321.	*Plugging record* means a systematic listing of permanent or temporary abandonment of water, oil, gas, test, exploration and waste injection wells, and may contain a well log, description of amounts and types of plugging material used, the method employed for plugging, a description of formations which are sealed and a graphic log of the well showing formation location, formation thickness, and location of plugging structures.		No reference found	Missing.	Self-explanatory See 16 TAC 3.14**(b)**(1) The operator shall complete and file in the district office a duly verified plugging record, in duplicate, on the appropriate form within 30 days after plugging operations are completed. A cementing report made by the party cementing the well shall be attached to, or made a part of, the plugging report. If the well the operator is plugging is a dry hole, an electric log status report shall be filed with the plugging record. Form W-3 https://www.rrc.texas.gov/media/lw0bmny4/w-3p.pdf	See Texas Notes. This term is not specific to Class VI wells, but it is recommended that Texas describe in the program description how they would evaluate plugging records such as in a review of the status of corrective action on wells in the AoR Rule was not changed in August 2022; stringency concern remains.
322.	*Pressure* means the total load or force per unit area acting on a surface.		No reference found	Missing.	Self-explanatory Add to Program Description.	See Texas Notes. It is recommended that Texas add this to their program description. Rule was not changed in August 2022; stringency concern remains.
323.	*Sole or principal source aquifer* means an aquifer which has been designated by the Administrator pursuant to section 1424 (a) or (e) of the SDWA.		No reference found.	Missing.		This term is not used in the state rule. No concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
324.	*Surface casing* means the first string of well casing to be installed in the well.		**§5.102(47)** Surface casing--The first string of well casing to be installed in the well.	Same as the CFR.		
325.	*Well plug* means a watertight and gastight seal installed in a borehole or well to prevent movement of fluids.		No reference found.	Missing.	See 16 TAC 3.14	The state rule defines plugging but not well plug.
326.	*Well stimulation* means several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for wastewater to move more readily into the formation, and includes (1) surging, (2) jetting, (3) blasting, (4) acidizing, (5) hydraulic fracturing.		**§5.202(51) Well stimulation**--Any of several processes used to clean the well bore, enlarge channels, and increase pore space in the interval to be injected thus making it possible for fluid to move more readily into the formation including, but not limited to, surging, jetting, blasting, acidizing, and hydraulic fracturing.	Same as the CFR.		
327.	*Well monitoring* means the measurement by on-site instruments or laboratory methods, of the quality of water in a well		**§5.102(36) Monitoring well**—A well either completed or re-completed to observe subsurface phenomena, including the presence of anthropogenic CO_2, pressure fluctuations, fluid levels and flow, temperature, and/or in situ water chemistry.	Differs from the CFR.		The Texas rule does not define the act of monitoring, but it does define wells used for monitoring. See 146.90. No concerns for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.4 Criteria for exempted aquifers.						
328.	An aquifer or a portion thereof which meets the criteria for an "underground source of drinking water" in §146.3 may be determined under §144.7 of this chapter to be an "exempted aquifer" for Class I-V wells if it meets the criteria in paragraphs (a) through (c) of this section. Class VI wells must meet the criteria under paragraph (d) of this section:	40 CFR §146.4		Missing.	Other than EPA approved aquifer exemption expansions, new aquifer exemptions shall not be issued for Class VI injection wells. Even if an aquifer has not been specifically identified by the administrator, it is an underground source of drinking water if it meets the definition in §5.102(45) of this chapter.	Texas has similar requirements to the CFR and adopts 146.4 and 144.7 by reference. See row 112. [ROW 112 - The state text is less specific than the CFR in that it does not limit expansions to previously approved Class II exemptions. However the state adopts 144.7 and 146.4 by reference and all aquifer exemptions must be approved by EPA. There is no concern for stringency.]
329.	It does not currently serve as a source of drinking water; and	40 CFR 146.4(a)	**§5.201(e) Expansion of aquifer exemption.** The areal extent of an aquifer exemption for a Class II enhanced recovery well may be expanded for the exclusive purpose of Class VI injection for geologic storage if the aquifer does not currently serve as a source of drinking water; and the total dissolved solids content is more than 3,000 milligrams per liter (mg/l) and less than 10,000 mg/l; and it is not reasonably expected to supply a public water system in accordance with 40 CFR §146.4. An operator seeking such an expansion shall submit, concurrent with the permit application, a supplemental report that complies with 40 CFR §144.7(d). The Commission adopts 40 CFR §144.7 and §146.4 by reference, effective September 20, 2022.			See row 328. Minor August 2022 rule changes do not affect stringency.
330.	It cannot now and will not in the future serve as a source of drinking water because:	40 CFR 146.4(b)	**§5.201(e) Expansion of aquifer exemption.**	Missing		See row 328.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
331.	It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible.	40 CFR 146.4(b)(1)	**§5.201(e) Expansion of aquifer exemption.**	Missing		See row 328.
332.	It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;	40 CFR 146.4(b)(2)	**§5.201(e) Expansion of aquifer exemption.**	Missing		See row 328.
333.	It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or	40 CFR 146.4(b)(3)	**§5.201(e) Expansion of aquifer exemption.**	Missing		See row 328.
334.	It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or	40 CFR 146.4(b)(4)	**§5.201(e) Expansion of aquifer exemption.**	Missing		See row 328.
335.	The total dissolved solids content of the ground water is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.	40 CFR 146.4(c)	**§5.201(e) Expansion of aquifer exemption.** The areal extent of an aquifer exemption for a Class II enhanced recovery well may be expanded for the exclusive purpose of Class VI injection for geologic storage if the aquifer does not currently serve as a source of drinking water; and the total dissolved solids content is more than 3,000 milligrams per liter (mg/l) and less than 10,000 mg/l; and it is not reasonably expected to supply a public water system in accordance with 40 CFR §146.4. An operator seeking such an expansion shall submit, concurrent with the permit application, a supplemental report that complies with 40 CFR §144.7(d). The Commission adopts 40 CFR §144.7 and §146.4 by reference, effective September 20, 2022.			See row 328. Minor August 2022 rule changes do not affect stringency.
336.	The areal extent of an aquifer exemption for a Class II enhanced oil recovery or enhanced gas recovery well may be expanded for the exclusive purpose of Class VI injection for geologic sequestration under §144.7(d) of this chapter if it meets the following criteria:	40 CFR §146.4(d)	**§5.201 (e) Expansion of aquifer exemption**.	Same as the CFR.		See row 328.
337.	It does not currently serve as a source of drinking water; and	40 CFR §146.4(d)(1)	**§5.201 (e) Expansion of aquifer exemption.**	Same as the CFR.		See row 328.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
338.	The total dissolved solids content of the ground water is more than 3,000 mg/l and less than 10,000 mg/l; and	40 CFR §146.4(d)(2)	**§5.201 (e) Expansion of aquifer exemption.**	Same as the CFR.		See row 328.
339.	It is not reasonably expected to supply a public water system.	40 CFR §146.4(d)(3)	**§5.201 (e) Expansion of aquifer exemption.**	Same as the CFR.		See row 328.
40 CFR §146.5 Classification of injection wells.						
340.	*Class V.* Injection wells not included in Class I, II, III, IV or VI. ***	40 CFR §146.5(e)	No reference found.	Missing.	The definition of Class V wells is not included in Texas' Class VI regulations.	See Texas Notes. No concerns for stringency.
341.	*Class VI.* Wells that are not experimental in nature that are used for geologic sequestration of carbon dioxide beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at §146.95; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to §§146.4 of this chapter and 144.7(d).	40 CFR §146.5(f)	**§5.102(10)** Class VI well--Any well used to inject anthropogenic CO_2 specifically for the purpose of the long-term containment of a gaseous, liquid, or supercritical CO_2 in subsurface geologic formations	Differs from the CFR.	The definition of a Class VI well in the state regulation does not specify that Class VI wells are not experimental in nature; however, a Class VI permit is required for any well injecting CO_2 for the purpose of geologic sequestration.	The state definition of a Class VI well is less specific than the CFR in that it does not refer to injection of the CO2 below the lowermost USDW or reference waivers or aquifer exemption expansions. However, these are addressed elsewhere in the regulations. While inclusion of similar information in the regulation or program description would improve clarity, there is no concern for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
SUBPART H--CRITERIA AND STANDARDS APPLICABLE TO CLASS VI WELLS						
40 CFR §146.81 Applicability.						
342.	This subpart establishes criteria and standards for UIC programs to regulate any Class VI carbon dioxide geologic sequestration injection wells.	40 CFR §146.81(a)	**§5.101 Purpose.** The purpose of this chapter is to implement the state program for geologic storage of anthropogenic CO_2 consistent with state and federal law related to protection of underground sources of drinking water.	Similar intent to the CFR.		Similar intent to the CFR; no concerns for stringency. The public commented on 5.101, but no change was made in the August 2022 rule.
343.	This subpart applies to any wells used to inject carbon dioxide specifically for the purpose of geologic sequestration, i.e., the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations.	40 CFR §146.81(b)	**§5.201 Applicability and Compliance.** (a) Scope of jurisdiction. This subchapter applies to the geologic storage and associated injection of anthropogenic CO_2 in this state, both onshore and offshore (d) This subchapter applies to a well that is authorized as or converted to an anthropogenic CO_2 injection well for geologic storage (a Class VI injection well). This subchapter applies regardless of whether the well was initially completed for the purpose of injection and geologic storage of anthropogenic CO2 or was initially completed for another purpose and is converted to the purpose of injection and geologic storage of anthropogenic CO2, except that the Commission may not issue a permit under this subchapter for the conversion of a previously plugged and abandoned Class I injection well, including any associated waste plume, to a Class VI injection well. (i) The operator of a geologic storage facility must comply with the requirements of this subchapter as well as with all other applicable Commission rules and orders, including the requirements of Chapter 8 of this title (relating to Pipeline Safety Regulations) for pipelines and associated facilities.	Similar intent to the CFR.		Similar intent to the CFR; no concerns for stringency.

344.	This subpart also applies to owners or operators of permit- or rule-authorized Class I, Class II, or Class V experimental carbon dioxide injection projects who seek to apply for a Class VI geologic sequestration permit for their well or wells. Owners or operators seeking to convert existing Class I, Class II, or Class V experimental wells to Class VI geologic sequestration wells must demonstrate to the Director that the wells were engineered and constructed to meet the requirements at §146.86(a) and ensure protection of USDWs, in lieu of requirements at §§146.86(b) and 146.87(a). By December 10, 2011, owners or operators of either Class I wells previously permitted for the purpose of geologic sequestration or Class V experimental technology wells no longer being used for experimental purposes that will continue injection of carbon dioxide for the purpose of GS must apply for a Class VI permit. A converted well must still meet all other requirements under part 146.	40 CFR §146.81(c)	**§5.201 Applicability and Compliance** (b) Injection of CO2 for enhanced recovery (1)This subchapter does not apply to the injection of fluid through the use of an injection well regulated under §3.46 of this title (relating to Fluid Injection into Productive Reservoirs) for the primary purpose of enhanced recovery operations from which there is reasonable expectation of more than insignificant future production volumes of oil, gas, or geothermal energy and operating pressures are no higher than reasonably necessary to produce such volumes or rates. However, the operator of an enhanced recovery project may propose to also permit the enhanced recovery project as a CO_2 geologic storage facility simultaneously. (2) If the director determines that an injection well that is permitted for the injection of CO_2 for the purpose of enhanced recovery regulated under §3.46 of this title should be regulated under this subchapter because the injection well is no longer being used for the primary purpose of enhanced recovery operations or there is an increased risk to USDWs, the director must notify the operator of such determination and allow the operator at least 30 days to respond to the determination and to file an application under this subchapter or cease operation of the well. In determining if there is an increased risk to USDWs, the director shall consider the following factors: (A) increase in reservoir pressure within the injection zone; (B) increase in CO2 injection rates; (C) decrease in reservoir production rates; (D) distance between the injection zone and USDWs; (E) suitability of the enhanced oil or gas recovery AOR delineation; (F) quality of abandoned well plugs within the AOR; (G) the storage operator's plan for recovery of CO2 at the cessation of injection; (H) the source and properties of injected CO2; and (I) any additional site-specific factors as determined by the director (3) This subchapter does not preclude an enhanced oil recovery project operator from opting into a regulatory program that provides carbon	The Texas provision is similar to the first paragraph of the CFR; the second CFR paragraph is not represented.	Any Class V well permitted for injection of CO2 should have a Class VI permit by the time Texas receives primacy. Add to Program Description	Texas should describe in its program description whether any Class V wells permitted for injection of CO2 exist and confirm that they have obtained a Class VI permit. August 2022 rule changes do not address stringency concerns. Texas specifically excludes acid gas injection from the Class VI requirements; see 5.201(c). However, 5.201(c) discusses transition from Class II to Class VI for acid gas injection based on a determination of increased risk to USDWs, which was expanded based on public comment.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			credit for anthropogenic CO_2 sequestered through the enhanced recovery project.			
345.	*Definitions*. The following definitions apply to this subpart. To the extent that these definitions conflict with those in §§144.3 or 146.3 of this chapter these definitions govern for Class VI wells:	40 CFR §146.81(d)	**§5.102. Definitions.**	Similar intent to the CFR.		See below.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
346.	*Area of review* means the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The area of review is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected carbon dioxide stream and displaced fluids, and is based on available site characterization, monitoring, and operational data as set forth in §146.84.	40 CFR §146.81(d)	**§5.102(5)** Area of review (AOR)--The subsurface three-dimensional extent of the CO_2 stream plume and the associated pressure front, as well as the overlying formations, any underground sources of drinking water overlying an injection zone along with any intervening formations, and the surface area above that delineated region.	Similar intent to the CFR.	The term is not included in the definitions but is included in the body of the rule. 5.203**(d)(1)** (A) Delineation of AOR. (i) Using computational modeling that considers the volumes and/or mass and the physical and chemical properties of the injected CO_2 stream, the physical properties of the formation into which the CO_2 stream is to be injected, and available data including data available from logging, testing, or operation of wells, the applicant must predict the lateral and vertical extent of migration for the CO_2 plume and formation fluids and the pressure differentials required to cause movement of injected fluids or formation fluids into a USDW in the subsurface for the following time periods:	The state definition does not explicitly describe that the AoR represents the area where USDWs may be endangered by the injection activity or that it is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the CO2 stream and displaced fluids, and is based on available site characterization, monitoring, and operational data. Therefore, it is less stringent. Rule was not changed in August 2022; stringency concern remains.
347.	*Carbon dioxide plume* means the extent underground, in three dimensions, of an injected carbon dioxide stream.	40 CFR §146.81(d)	**§5.102(6)** Carbon dioxide (CO_2) plume--The underground extent, in three dimensions, of an injected CO_2 stream.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
348.	*Carbon dioxide stream* means carbon dioxide that has been captured from an emission source (e.g., a power plant), plus incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. This subpart does not apply to any carbon dioxide stream that meets the definition of a hazardous waste under 40 CFR part 261.	40 CFR §146.81(d)	**§5.102(7)** Carbon dioxide (CO_2) stream--CO_2 that has been captured from an emission source, incidental associated substances derived from the source materials and the capture process, and any substances added to the stream to enable or improve the injection process. The term does not include any CO_2 stream that meets the definition of a hazardous waste under 40 CFR Part 261.	Same as the CFR.		
349.	*Confining zone* means a geologic formation, group of formations, or part of a formation stratigraphically overlying the injection zone(s) that acts as barrier to fluid movement. For Class VI wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone(s).	40 CFR §146.81(d)	**§5.102(13)** Confining zone--A geologic formation, group of formations, or part of a formation stratigraphically overlying the injection zone or zones that acts as barrier to fluid movement. For Class VI wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone or zones that acts as a barrier to fluid movement.	Similar intent to the CFR.		The state definition is less descriptive and does not address wells operating under injection depth waivers. This may cause issues for compliance for operators who receive injection depth waivers. 5.102(13) was changed in the August 2022 rule based on public comment. August 2022 rule changes addressed stringency concerns. 5.102(13) now fully describes the CFR definition of "confining zone."
350.	*Corrective action* means the use of Director-approved methods to ensure that wells within the area of review do not serve as conduits for the movement of fluids into underground sources of drinking water (USDW).	40 CFR §146.81(d)	**§5.102(14)** Corrective action--Methods to assure that wells within the area of review do not serve as conduits for the movement of fluids into or between underground sources of drinking water, including the use of corrosion resistant materials, where appropriate.	Similar to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
351.	*Geologic sequestration* means the long-term containment of a gaseous, liquid, or supercritical carbon dioxide stream in subsurface geologic formations. This term does not apply to carbon dioxide capture or transport.	40 CFR §146.81(d)	**§5.102(27)** Geologic storage--The long-term containment of anthropogenic CO_2 in subsurface geologic formations.	Similar intent to the CFR.	Add to Program Description.	The term is referred to differently in the state requirement and the CFR. It is recommended that Texas clarify in its program description that the rules apply to all injected CO2, regardless of whether it is anthropogenic or naturally produced. August 2022 rule changes do not address stringency concerns.
352.	*Geologic sequestration project* means an injection well or wells used to emplace a carbon dioxide stream beneath the lowermost formation containing a USDW; or, wells used for geologic sequestration of carbon dioxide that have been granted a waiver of the injection depth requirements pursuant to requirements at §146.95; or, wells used for geologic sequestration of carbon dioxide that have received an expansion to the areal extent of an existing Class II enhanced oil recovery or enhanced gas recovery aquifer exemption pursuant to §§146.4 of this chapter and 144.7(d). It includes the subsurface three-dimensional extent of the carbon dioxide plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region.	40 CFR §146.81(d)	**§5.102(28)** Geologic storage facility or storage facility--The underground geologic formation, underground equipment, injection wells, and surface buildings and equipment used or to be used for the geologic storage of anthropogenic CO_2 and all surface and subsurface rights and appurtenances necessary to the operation of a facility for the geologic storage of anthropogenic CO_2. The term includes the subsurface three-dimensional extent of the CO_2 plume, associated area of elevated pressure, and displaced fluids, as well as the surface area above that delineated region, and any reasonable and necessary areal buffer and subsurface monitoring zones. The term does not include a pipeline used to transport CO_2 from the facility at which the CO_2 is captured to the geologic storage facility. The storage of CO_2 incidental to or as part of enhanced recovery operations does not in itself automatically render a facility a geologic storage facility.	Similar intent to the CFR.	Add to Program Description	The state does not address the definition as it relates to projects operating under a waivers or aquifer exemption expansions. Texas should clarify in the program description how "CO2 incidental to or as part of enhanced recovery operations" does not in itself automatically render a facility a geologic storage facility, i.e., in the context of transitioning wells. August 2022 rule changes do not address stringency concerns.
353.	*Injection zone* means a geologic formation, group of formations, or part of a formation that is of sufficient areal extent, thickness, porosity, and permeability to receive carbon dioxide through a well or wells associated with a geologic sequestration project.	40 CFR §146.81(d)	**§5.102(30)** Injection zone--A geologic formation, group of formations, or part of a formation that is of sufficient areal extent, thickness, porosity, and permeability to receive CO_2 through a well or wells associated with a geologic storage facility.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
354.	*Post-injection site care* means appropriate monitoring and other actions (including corrective action) needed following cessation of injection to ensure that USDWs are not endangered, as required under §146.93.	40 CFR §146.81(d)	**§5.102(43)** Post-injection facility care--Monitoring and other actions (including corrective action) needed following cessation of injection to assure that underground sources of drinking water are not endangered and that the anthropogenic CO_2 remains confined to the permitted injection interval.	Similar intent to the CFR.		The term is different in the state requirement and the CFR, but the definition is the same.
355.	*Pressure front* means the zone of elevated pressure that is created by the injection of carbon dioxide into the subsurface. For the purposes of this subpart, the pressure front of a carbon dioxide plume refers to a zone where there is a pressure differential sufficient to cause the movement of injected fluids or formation fluids into a USDW.	40 CFR §146.81(d)	**§5.102(44)** Pressure front--The zone of elevated pressure that is created by the injection of the CO_2 stream into the subsurface where there is a pressure differential sufficient to cause movement of the CO_2 stream or formation fluids from the injection zone into an underground source of drinking water.	Similar to the CFR.		Similar to CFR; no concerns for stringency.
356.	*Site closure* means the point/time, as determined by the Director following the requirements under §146.93, at which the owner or operator of a geologic sequestration site is released from post-injection site care responsibilities.	40 CFR §146.81(d)	**§5.102(b)(21)** Facility closure--The point at which the operator of a geologic storage facility is released from post-injection storage facility care responsibilities.	Similar intent to the CFR.	Only the director can release the operator from post injection site care requirements. 5.206(j)(7) Certificate of closure. Upon completion of the requirements in paragraphs (3) - (6) of this subsection, the director will issue a certificate of closure. At that time, the operator is released from the requirement in §5.205(c) to maintain financial assurance.	The term is different in the state requirement and the CFR, and is not directly tied to approval of site closure by the Director.
357.	*Transmissive fault or fracture* means a fault or fracture that has sufficient permeability and vertical extent to allow fluids to move between formations.	40 CFR §146.81(d)	**§5.102(48)** Transmissive fault or fracture--A fault or fracture that has sufficient permeability and vertical extent to allow fluids to move beyond the confining zone.	Same as the CFR.		

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.82 Required Class VI permit information.						
358.	This section sets forth the information which must be considered by the Director in authorizing Class VI wells. For converted Class I, Class II, or Class V experimental wells, certain maps, cross-sections, tabulations of wells within the area of review and other data may be included in the application by reference provided they are current, readily available to the Director, and sufficiently identified to be retrieved.	40 CFR §146.82	**§5.203** Application Requirements	Missing.		The state rule does not include this introductory text; no concerns for stringency. The public commented on 5.203(o), but no change was made in the August 2022 rule.
359.	Prior to the issuance of a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V well to a Class VI well, the owner or operator shall submit, pursuant to §146.91(e), and the Director shall consider the following:	40 CFR §146.82(a)		Missing.	The state regulation does not explicitly separate the permit application information into two phases (pre-construction and post-construction/pre-operation) like the federal rule does. Add to Program Description	Texas appears to issue storage facility permits, followed by individual injection well permits. The overall flow of the permitting process is different from that described in the CFR. While Texas does not have specific requirements for what the director must consider prior to authorizing injection (similar to 146.82(c)), it appears that any change to a project plan that was part of the initial storage facility permit would be subject to public notice, although it is not clear whether the entire permit would be. It is also unclear whether permits to drill or convert a well are subject to public notice. The Program Description should describe how the process is equally protective and allows adequate PN of significant changes bases on the results of pre-operational testing. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
360.	Information required in §144.31 (e)(1) through (6) of this chapter; **(e)** ***Information requirements.*** All applicants for Class I, II, III, and V permits shall provide the following information to the Director, using the application form provided by the Director. Applicants for Class VI permits shall follow the criteria provided in §146.82 of this chapter. **(1)** The activities conducted by the applicant which require it to obtain permits under RCRA, UIC, the NPDES program under the Clean Water Act, or the Prevention of Significant Deterioration (PSD) program under the Clean Air Act. **(2)** Name, mailing address, and location of the facility for which the application is submitted. **(3)** Up to four SIC codes which best reflect the principal products or services provided by the facility. **(4)** The operator's name, address, telephone number, ownership status, and status as Federal, State, private, public, or other entity. **(5)** Whether the facility is located on Indian lands. **(6)** A listing of all permits or construction approvals received or applied for under any of the following programs: **(i)** Hazardous Waste Management program under RCRA. **(ii)** UIC program under SDWA. **(iii)** NPDES program under CWA. **(iv)** Prevention of Significant Deterioration (PSD) program under the Clean Air Act. **(v)** Nonattainment program under the Clean Air Act. **(vi)** NESHAPS preconstruction approval under the Clean Air Act. **(vii)** Ocean dumping permits under the Marine Protection Research and Sanctuaries Act. **(viii)** Dredge and fill permits under section 404 of CWA. **(ix)** Other relevant environmental permits, including State permits.	40 CFR §146.82(a)(1) **§146.82 Required Class VI permit information.** This section sets forth the information which must be considered by the Director in authorizing Class VI wells. For converted Class I, Class II, or Class V experimental wells, certain maps, cross-sections, tabulations of wells within the AOR and other data may be included in the application by reference provided they are current, readily available to the Director, and sufficiently identified to be retrieved. **(a)** Prior to the issuance of a permit for the construction of a new Class VI well or the conversion of an existing Class I, Class II, or Class V well to a Class VI well, the owner or operator shall submit, pursuant to § 146.91(e), and the Director shall consider the following: **(1)** Information required in 144.31(e)(1)-(6) of this chapter;	**§5.203(a)(2) General information.** (A) On the application, the applicant must include the name, mailing address, and location of the facility for which the application is being submitted and the operator's name, address, telephone number, Commission Organization Report number, and ownership of the facility. (B) When a geologic storage facility is owned by one person but is operated by another person, it is the operator's duty to file an application for a permit. (C) The application must include a listing of all relevant permits or construction approvals for the facility received or applied for under federal or state environmental programs; (D) A person making an application to the director for a permit under this subchapter must submit a copy of the application to the Texas Commission on Environmental Quality (TCEQ) and must submit to the director a letter of determination from TCEQ concluding that drilling and operating an anthropogenic CO_2 injection well for geologic storage or constructing or operating a geologic storage facility will not impact or interfere with any previous or existing Class I injection well, including any associated waste plume, or any other injection well authorized or permitted by TCEQ. The letter must be submitted to the director before any permit under this subchapter may be issued.	Similar intent to the CFR.	Although less specific, the State rules requires a listing of "all relevant permits or construction approvals for the facility received or applied for under federal or state environmental programs;"	The state requirement is less specific than the CFR as to the information required. See 40 CFR §144.31(e)/row 168. The public commented on 5.203(a)(2)(D), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
361.	A map showing the injection well for which a permit is sought and the applicable area of review consistent with §146.84. Within the area of review, the map must show the number or name, and location of all injection wells, producing wells, abandoned wells, plugged wells or dry holes, deep stratigraphic boreholes, State- or EPA-approved subsurface cleanup sites, surface bodies of water, springs, mines (surface and subsurface), quarries, water wells, other pertinent surface features including structures intended for human occupancy, State, Tribal, and Territory boundaries, and roads. The map should also show faults, if known or suspected. Only information of public record is required to be included on this map;	40 CFR §146.82(a)(2)	**§5.203(b) Surface map and information**. Only information of public record is required to be included on this map. (1) The applicant must file with the director a surface map delineating the proposed location of any injection wells and the boundary of the geologic storage facility for which a permit is sought and the applicable AOR. (2) The applicant must show within the AOR on the map the number or name and the location of: (A) all known artificial penetrations through the confining zone, including injection wells, producing wells, inactive wells, plugged wells, or dry holes; (B) the locations of cathodic protection holes, subsurface cleanup sites, bodies of surface water, springs, surface and subsurface mines, quarries, and water wells; and (C) other pertinent surface features, including pipelines, roads, and structures intended for human occupancy. (3) The applicant must identify on the map any known or suspected faults expressed at the surface.	Similar intent to the CFR.	The map must show all artificial penetrations, which would include deep stratigraphic boreholes.	Texas does not require that the map show deep stratigraphic boreholes, and only requires it show the location of suspected faults expressed at the surface (however, information about all faults must be provided, per §5.203(c)(2)(C)).
362.	Information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, including:	40 CFR §146.82(a)(3)	**§5.203(c) Geologic, geochemical, and hydrologic information.** (1) The applicant must submit a descriptive report prepared by a knowledgeable person that includes an interpretation of the results of appropriate logs, surveys, sampling, and testing sufficient to determine the depth, thickness, porosity, permeability, and lithology of, and the geochemistry of any formation fluids in, all relevant geologic formations. (2) The applicant must submit information on the geologic structure and reservoir properties of the proposed storage reservoir and overlying formations, including the following information:	Same as the CFR.		5.203(c)(2) matches the CFR.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
363.	Maps and cross sections of the area of review;	40 CFR §146.82(a)(3)(i)	**§5.203(c)(2)(A)** geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the area from the ground surface to the base of the injection zone within the AOR that indicate the general vertical and lateral limits of all USDWs within the AOR, their positions relative to the storage reservoir and the direction of water movement, where known;	Similar intent to the CFR.		The state requirement combines the intent of 146.82(a)(3)(i), (vi), and 146.82(a)(5). No concern for stringency.
364.	The location, orientation, and properties of known or suspected faults and fractures that may transect the confining zone(s) in the area of review and a determination that they would not interfere with containment;	40 CFR §146.82(a)(3)(ii)	**§5.203(c)(2)(C)** the location, orientation, and properties of known or suspected transmissive faults or fractures that may transect the confining zone within the AOR and a determination that such faults or fractures would not compromise containment;	Same as the CFR.		
365.	Data on the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of the injection and confining zone(s); including geology/facies changes based on field data which may include geologic cores, outcrop data, seismic surveys, well logs, and names and lithologic descriptions;	40 CFR §146.82(a)(3)(iii)	**§5.203(c)(2)(B)** the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of, and the geochemistry of any formation fluids in, the storage reservoir and confining zone and any other relevant geologic formations, including geology/facies changes based on field data, which may include geologic cores, outcrop data, seismic surveys, well logs, and lithologic descriptions, and the analyses of logging, sampling, and testing results used to make such determinations;	Same as the CFR.		The state requirement is more detailed than the CFR. No concern for stringency.
366.	Geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone(s);	40 CFR §146.82(a)(3)(iv)	**§5.203(c)(2)(E)** geomechanical information on fractures, stress, ductility, rock strength, and in situ fluid pressures within the confining zone;	Same as the CFR.		
367.	Information on the seismic history including the presence and depth of seismic sources and a determination that the seismicity would not interfere with containment; and	40 CFR §146.82(a)(3)(v)	**§5.203(c)(2)(D)** the seismic history, including the presence and depth of seismic sources, and a determination that the seismicity would not compromise containment;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
368.	Geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the local area.	40 CFR §146.82(a)(3)(vi)	**§5.203(c)(2)(A)** geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the area from the ground surface to the base of the injection zone within the AOR that indicate the general vertical and lateral limits of all USDWs within the AOR, their positions relative to the storage reservoir and the direction of water movement, where known;	Same as the CFR.		The state requirement combines the intent of 146.82(a)(3)(i), (vi), and 146.82(a)(5). No concern for stringency.
369.	A tabulation of all wells within the area of review which penetrate the injection or confining zone(s). Such data must include a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require;	40 CFR §146.82(a)(4)	**§5.203(d)(1)(B)** Identification and table of penetrations. The applicant must identify, compile, and submit a table listing all penetrations, including active, inactive, plugged, and unplugged wells and underground mines in the AOR that may penetrate the confining zone, that are known or reasonably discoverable through specialized knowledge or experience. The applicant must provide a description of each penetration's type, construction, date drilled or excavated, location, depth, and record of plugging and/or completion or closure. Examples of specialized knowledge or experience may include reviews of federal, state, and local government records, interviews with past and present owners, operators, and occupants, reviews of historical information (including aerial photographs, chain of title documents, and land use records), and visual inspections of the facility and adjoining properties.	Same as the CFR.		The state requirement is more detailed than the CFR; it doesn't explicitly refer to any additional information the Director may require. No concern for stringency.
370.	Maps and stratigraphic cross sections indicating the general vertical and lateral limits of all USDWs, water wells and springs within the area of review, their positions relative to the injection zone(s), and the direction of water movement, where known;	40 CFR §146.82(a)(5)	**§5.203(c)(2)(A)** geologic and topographic maps and cross sections illustrating regional geology, hydrogeology, and the geologic structure of the area from the ground surface to the base of the injection zone within the AOR that indicate the general vertical and lateral limits of all USDWs within the AOR, their positions relative to the storage reservoir and the direction of water movement, where known;	Same as the CFR.		The state requirement combines the intent of 146.82(a)(3)(i), (vi), and 146.82(a)(5). No concern for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
371.	Baseline geochemical data on subsurface formations, including all USDWs in the area of review;	40 CFR §146.82(a)(6)	**§5.203(c)(2)(G)** baseline geochemical data for subsurface formations that will be used for monitoring purposes, including all formations containing USDWs within the AOR.	Same as the CFR.		No concerns for stringency The public commented on 5.203(c)(2)(G), but no change was made in the August 2022 rule.
372.	Proposed operating data for the proposed geologic sequestration site:	40 CFR §146.82(a)(7)	**§5.203(i) Operating information.** (1) Operating plan. The applicant must submit a plan for operating the injection wells and the geologic storage facility that complies with the criteria set forth in §5.206(d) of this title, and that outlines the steps necessary to conduct injection operations. The applicant must include the following proposed operating data in the plan:	Similar intent to the CFR.		The state rule requires operating data to be submitted. No concerns for stringency.
373.	Average and maximum daily rate and volume and/or mass and total anticipated volume and/or mass of the carbon dioxide stream;	40 CFR §146.82(a)(7)(i)	**§5.203(i)(1)(A)** the average and maximum daily injection rates, temperature, and volumes of the CO_2 stream;	Similar intent to the CFR.		The state requirement does not refer to the mass of CO2. August 2022 rule changes addressed stringency concerns. 5.203(i)(1)(C) (see Row 375) now includes mass of CO_2.
374.	Average and maximum injection pressure;	40 CFR §146.82(a)(7)(ii)	**§5.203(i)(1)(B)** the average and maximum surface injection pressure;	Similar to the CFR.		Texas references surface injection pressure; no concerns for stringency.
375.	The source(s) of the carbon dioxide stream; and	40 CFR §146.82(a)(7)(iii)	**§5.203(i)(1)(C)** the sources of the CO2 stream and the volume and/or mass of CO_2 from each source; and	Same as the CFR.		The state also requires the volume of CO_2 from each CO_2 source.
376.	An analysis of the chemical and physical characteristics of the carbon dioxide stream.	40 CFR §146.82(a)(7)(iv)	**§5.203(i)(1)(D)** an analysis of the chemical and physical characteristics of the CO_2 stream prior to injection.	Same as the CFR.		

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
377.	Proposed pre-operational formation testing program to obtain an analysis of the chemical and physical characteristics of the injection zone(s) and confining zone(s) and that meets the requirements at §146.87;	40 CFR §146.82(a)(8)	**§5.203(c)(2)(F)** a description of the formation testing program used and the analytical results used to determine the chemical and physical characteristics of the injection zone and the confining zone; and	Similar intent to the CFR.		The state does not specify that the formation testing program takes place during the pre-operational phase. Although §5.203(f) (2) (A) requires that, prior to operation, the operator conduct tests to verify hydrogeologic characteristics of the injection zone. No concerns for stringency.
378.	Proposed stimulation program, a description of stimulation fluids to be used and a determination that stimulation will not interfere with containment;	40 CFR §146.82(a)(9)	**§5.203(e)(4)** Well stimulation plan. The applicant must submit, as applicable, a description of the proposed well stimulation program and a determination that well stimulation will not compromise containment.	Similar intent to the CFR.	The requirement is "applicable" if stimulation is proposed. The Texas rule assumes that a description of the proposed stimulation program would include a description of stimulation fluids.	The state requires a stimulation program "as applicable;" this may mean that some applicants would not submit a stimulation plan, which is less stringent than the CFR and would not provide for a stimulation plan in the permit. The state requirement does not require a description of stimulation fluids. Rule was not changed in August 2022; stringency concern remains.
379.	Proposed procedure to outline steps necessary to conduct injection operation;	40 CFR §146.82(a)(10)	**§5.203(i) Operating information.** (1) Operating plan. The applicant must submit a plan for operating the injection wells and the geologic storage facility that complies with the criteria set forth in §5.206(d) of this title, and that outlines the steps necessary to conduct injection operations.	Similar intent to the CFR.		The state rule refers to the proposed procedure as its operating plan. No concerns for stringency.
380.	Schematics or other appropriate drawings of the surface and subsurface construction details of the well;	40 CFR §146.82(a)(11)	**§5.203(e)(2)** Construction information. The applicant must provide the following information for each well to allow the director to determine whether the proposed well construction and completion design will meet the general performance criteria in paragraph (1) of this subsection: (K) schematic drawings of the surface and subsurface construction details.	Similar to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
381.	Injection well construction procedures that meet the requirements of §146.86. Injection well construction requirements.	40 CFR §146.82(a)(12)	**§5.203(e) Injection well construction.** (1) Criteria for construction of anthropogenic CO_2 injection wells. This paragraph establishes the criteria for the information about the construction and casing and cementing of, and special equipment for, anthropogenic CO_2 injection wells that an applicant must include in an application.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency. 5.203(e)(1)(B)(vii) was changed in the August 2022 rule based on public comment. There is no analogous provision in the CFR; no concerns for stringency.
382.	Proposed area of review and corrective action plan that meets the requirements under §146.84 Area of Review and corrective action.	40 CFR §146.82(a)(13)	**§5.203(d)(2) AOR and corrective action plan.** As part of an application, the applicant must submit an AOR and corrective action plan that includes the following information:	Similar to the CFR.		Similar to CFR; no concerns for stringency.
383.	A demonstration, satisfactory to the Director, that the applicant has met the financial responsibility requirements under §146.85;	40 CFR §146.82(a)(14)	**§5.203(n) Fees, financial responsibility, and financial assurance**. The applicant must pay the fees, demonstrate that it has met the financial responsibility requirements, and provide the Commission with financial assurance as required under §5.205 of this title (relating to Fees, Financial Responsibility, and Financial Assurance).	Similar to the CFR.		Similar to CFR; no concerns for stringency.
384.	Proposed testing and monitoring plan required by §146.90;	40 CFR §146.82(a)(15)	**§5.203(j) Plan for monitoring, sampling, and testing after initiation of operation.** (1) The applicant must submit a monitoring, sampling, and testing plan for verifying that the geologic storage facility is operating as permitted and that the injected fluids are confined to the injection zone.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency. The public commented on 5.203(j), but no change was made in the August 2022 rule.
385.	Proposed injection well plugging plan required by §146.92(b)	40 CFR §146.82(a)(16)	**§5.203(k) Well plugging plan**. The applicant must submit a well plugging plan for all injection wells and monitoring wells that penetrate the base of usable quality water that includes the following:	Similar to the CFR.		The state rule is more stringent than the CFR in that it requires plugging plans for monitoring wells.
386.	Proposed post-injection site care and site closure plan required by §146.93(a);	40 CFR §146.82(a)(17)	**§5.203(m) Post-injection storage facility care and closure plan.** The applicant must submit a post-injection storage facility care and closure plan. The plan must include:	Similar to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
387.	At the Director's discretion, a demonstration of an alternative post-injection site care timeframe required by §146.93(c);	40 CFR §146.82(a)(18)	**§5.203(m) Post-injection storage facility care and closure plan.** The applicant must submit a post-injection storage facility care and closure plan. The plan must include: (8) information submitted to support the demonstration in paragraph (1) of this subsection, which shall meet the following criteria: (vi) an analysis must be performed to identify and assess aspects of the alternative PISC timeframe demonstration that contribute significantly to uncertainty. The operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration;		State regulations do not include a 50-year default period. All applicants are required to make the demonstration of alternative PISC.	While Texas does not provide a default 50 year post-injection site care timeframe, the demonstration of the approvable timeframe in the state rule is nearly identical to the requirements of 146.93(c). See below.
388.	Proposed emergency and remedial response plan required by §146.94(a);	40 CFR §146.82(a)(19)	**§5.203(l) Emergency and remedial response plan.** The applicant must submit an emergency and remedial response plan that:	Similar to the CFR.		Similar to CFR; no concerns for stringency.
389.	A list of contacts, submitted to the Director, for those States, Tribes, and Territories identified to be within the AOR of the Class VI project based on information provided in paragraph (a)(2) of this section; and	40 CFR §146.82(a)(20)	No reference found	Missing.	Add to Program Description	Texas does not require a list of these contacts. The program description should describe how other States or Tribes would be informed of a project if the AoR crossed into their jurisdiction. Rule was not changed in August 2022; stringency concern remains.
390.	Any other information requested by the Director.	40 CFR §146.82(a)(21)	**§5.203(p) Other information.** The applicant must submit any other information requested by the director as necessary to discharge the Commission's duties under Texas Water Code, Chapter 27, Subchapter B-1, or deemed necessary by the director to clarify, explain, and support the required attachments.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
391.	The Director shall notify, in writing, any States, Tribes, or Territories within the area of review of the Class VI project based on information provided in paragraphs (a)(2) and (a)(20) of this section of the permit application and pursuant to the requirements at §14 §5.23(f)(13) of this chapter.	40 CFR §146.82(b)	No reference found	Missing.	Add to Program Description	Texas does not require this notification. The program description should describe how other States or Tribes would be informed of a project if the AoR crossed into their jurisdiction. Rule was not changed in August 2022; stringency concern remains.
392.	Prior to granting approval for the operation of a Class VI well, the Director shall consider the following information:	40 CFR §146.82(c)	**§5.203**	Differs from the CFR.	Add to Program description	The state's rule does not appear to require updates to any permit application/permit elements prior to granting approval to inject. While the state does require pre-operational testing at 5.203(f), it is not clear how the results of the testing would be evaluated and the AoR, permit limits, or project plans updated prior to authorizing injection. This may affect stringency. The state should describe in the rule or program description how this would be ensured. August 2022 rule changes do not address stringency concerns.
393.	The final area of review based on modeling, using data obtained during logging and testing of the well and the formation as required by paragraphs (c)(2), (3), (4), (6), (7), and (10) of this section;	40 CFR §146.82(c)(1)	**§5.203(d) AOR and corrective action**. This subsection describes the standards for the information regarding the delineation of the AOR, the identification of penetrations, and corrective action that an applicant must include in an application.	This is the same provision as for the initial permit application.	Add to Program desciption	See 40 CFR §146.82(c)/Row 392.

394.	Any relevant updates, based on data obtained during logging and testing of the well and the formation as required by paragraphs (c)(3), (4), (6), (7), and (10) of this section, to the information on the geologic structure and hydrogeologic properties of the proposed storage site and overlying formations, submitted to satisfy the requirements of paragraph (a)(3) of this section;	40 CFR §146.82(c)(2)	**§5.203(f) Plan for logging, sampling, and testing of injection wells after permitting but before injection**. The applicant must submit a plan for logging, sampling, and testing of each injection well after permitting but prior to injection well operation. The plan need not include identical logging, sampling, and testing procedures for all wells provided there is a reasonable basis for different procedures. Such plan is not necessary for existing wells being converted to anthropogenic CO_2 injection wells in accordance with this subchapter, to the extent such activities already have taken place. The plan must describe the logs, surveys, and tests to be conducted to verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in, the formations that are to be used for monitoring, storage, and confinement to assure conformance with the injection well construction requirements set forth in subsection (e) of this section, and to establish accurate baseline data against which future measurements may be compared. The plan must meet the following criteria and must include the following information. (2) Testing and determination of hydrogeologic characteristics of injection and confining zone. (A) Prior to operation, the operator must conduct tests to verify hydrogeologic characteristics of the injection zone. (B) The operator must perform an initial pressure fall-off or other test and submit to the director a written report of the results of the test, including details of the methods used to perform the test and to interpret the results, all necessary graphs, and the testing log, to verify permeability, injectivity, and initial pressure using water or CO2. (C) The operator must determine or calculate the fracture pressures for the injection and confining zone. The Commission will include in any permit it might issue a limit of 90% of the fracture pressure to ensure that the injection pressure does	This is the same provision as for the initial permit application.	Add to Program description	See 40 CFR §146.82(c)/Row 392.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			not exceed the fracture pressure of the injection zone. (3) Sampling. (A) The operator must record and submit the formation fluid temperature, pH, and conductivity, the reservoir pressure, and the static fluid level of the injection zone. (B) The operator must submit analyses of whole cores or sidewall cores representative of the injection zone and confining zone and formation fluid samples from the injection zone. The director may accept data from cores and formation fluid samples from nearby wells or other data if the operator can demonstrate to the director that such data are representative of conditions at the proposed injection well.			
395.	Information on the compatibility of the CO_2 stream with fluids in the injection zone(s) and minerals in both the injection and the confining zone(s), based on the results of the formation testing program, and with the materials used to construct the well;	40 CFR §146.82(c)(3)	**§5.203(g) Compatibility determination**. Based on the results of the formation testing program required by subsection (f) of this section, the applicant must submit a determination of the compatibility of the CO_2 stream with: (1) the materials to be used to construct the well; (2) fluids in the injection zone; and (3) minerals in both the injection and the confining zone.	Same as the CFR.		
396.	The results of the formation testing program required at paragraph (a)(8) of this section;	40 CFR §146.82(c)(4)	**§5.203(c)(2)(F)** a description of the formation testing program used and the analytical results used to determine the chemical and physical characteristics of the injection zone and the confining zone;	This is the same provision as for the initial permit application.	Add to Program description	See 40 CFR §146.82(c)/Row 392.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
397.	Final injection well construction procedures that meet the requirements of §146.86;	40 CFR §146.82(c)(5)	**§5.206(c) Injection well construction.** (1) Construction of anthropogenic CO2 injection wells must meet the criteria in §5.203(e) of this title. (2) Within 30 days after the completion or conversion of an injection well subject to this subchapter, the operator must file with the division a complete record of the well on the appropriate form showing the current completion.	Similar to the CFR.	See Form W-2, Oil Well Potential Test, Completion or Recompletion Report, and Log https://www.rrc.texas.gov/media/sdbph42m/w-2-0114.pdf	It is unclear in the rule what is included on a "record of the well on the appropriate form showing the current completion." This could be described in the program description and how it is equivalent to final injection well construction that meets the requirements of §146.86. Rule was not changed in August 2022; stringency concern remains. The public commented on the 30-day notice period for workovers of Class VI wells in 5.206(c)(3), but no change was made in the August 2022 rule. 5.206(c)(3) was changed in the August 2022 rule based on public comment about emergency repairs.
398.	The status of corrective action on wells in the area of review;	40 CFR §146.82(c)(6)	**§5.203(C) Corrective action.** The applicant must demonstrate whether each of the wells on the table of penetrations has or has not been plugged and whether each of the underground mines (if any) on the table of penetrations has or has not been closed in a manner that prevents the movement of injected fluids or displaced formation fluids that may endanger USDWs or allow the injected fluids or formation fluids to escape the permitted injection zone. The applicant must perform corrective action on all wells and underground mines in the AOR that are determined to need corrective action. The operator must perform corrective action using materials suitable for use with the CO_2 stream. Corrective action may be phased.	This is the same provision as for the initial permit application.	Add to Program description	See 40 CFR §146.82(c)/Row 392.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
399.	All available logging and testing program data on the well required by §146.87;	40 CFR §146.82(c)(7)	**§5.203(a)(4)** Reports. An applicant must ensure that all descriptive reports are prepared by a qualified and knowledgeable person and include an interpretation of the results of all logs, surveys, sampling, and tests required in this subchapter. The applicant must include in the application a quality assurance and surveillance plan for all testing and monitoring, which includes, at a minimum, validation of the analytical laboratory data, calibration of field instruments, and an explanation of the sampling and data acquisition techniques.	This is the same provision as for the initial permit application.	Add to Program description	See 40 CFR 146.82(c)/Row 392.
400.	A demonstration of mechanical integrity pursuant to §146.89;	40 CFR §146.82(c)(8)	**§5.203(h)(B)** Before beginning injection operations and at least once every five years thereafter, the operator must demonstrate internal mechanical integrity for each injection well by pressure testing the tubing-casing annulus.	Similar intent to the CFR.		No concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
401.	Any updates to the proposed AOR and corrective action plan, testing and monitoring plan, injection well plugging plan, post-injection site care and site closure plan, or the emergency and remedial response plan submitted under paragraph (a) of this section, which are necessary to address new information collected during logging and testing of the well and the formation as required by all paragraphs of this section, and any updates to the alternative post-injection site care timeframe demonstration submitted under paragraph (a) of this section, which are necessary to address new information collected during the logging and testing of the well and the formation as required by all paragraphs of this section; and	40 CFR §146.82(c)(9)	**§5.203(f)** Plan for logging, sampling, and testing of injection wells after permitting but before injection. The applicant must submit a plan for logging, sampling, and testing of each injection well after permitting but prior to injection well operation. The plan need not include identical logging, sampling, and testing procedures for all wells provided there is a reasonable basis for different procedures. Such plan is not necessary for existing wells being converted to anthropogenic CO_2 injection wells in accordance with this subchapter, to the extent such activities already have taken place. The plan must describe the logs, surveys, and tests to be conducted to verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in, the formations that are to be used for monitoring, storage, and confinement to assure conformance with the injection well construction requirements set forth in subsection (e) of this section, and to establish accurate baseline data against which future measurements may be compared. The plan must meet the following criteria and must include the following information. (1) Logs and surveys of newly drilled and completed injection wells. (2) Testing and determination of hydrogeologic characteristics of injection and confining zone. (3) Sampling.	Differs from the CFR.	5.203(d)(2) AOR and corrective action plan. As part of an application, the applicant must submit an AOR and corrective action plan that includes the following information: (A) the method for delineating the AOR, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based; (B) for the AOR, a description of: …. (ii) how monitoring and operational data will be used to re-evaluate the AOR; and … This information should be included in the plan, which must be approved by the director.	While the state requires updated plugging plans be submitted prior to injection, it does not specify that the results of the testing be submitted and evaluated to determine if the AoR modeling and plans submitted with the initial permit application are adequate. Rule was not changed in August 2022; stringency concern remains.
402.	Any other information requested by the Director.	40 CFR §146.82(c)(10)	**§5.203(p) Other information.** The applicant must submit any other information requested by the director as necessary to discharge the Commission's duties under Texas Water Code, Chapter 27, Subchapter B-1, or deemed necessary by the director to clarify, explain, and support the required attachments.	This is the same provision as for the initial permit application.	Add to Program description	See 146.82(c)/Row 392.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
403.	Owners or operators seeking a waiver of the requirement to inject below the lowermost USDW must also refer to §146.95 and submit a supplemental report, as required at §146.95(a). The supplemental report is not part of the permit application.	40 CFR §146.82(d)	**§5.201(f) Injection depth waiver.** An operator may seek a waiver from the Class VI injection depth requirements for geologic storage to allow injection into non-USDW formations while ensuring that USDWs above and below the injection zone are protected from endangerment. An operator seeking a waiver of the requirement to inject below the lowermost USDW shall submit, concurrent with the permit application or a permit amendment application, a supplemental report that complies with 40 CFR §146.95. The Commission adopts 40 CFR §146.95 by reference, effective September 20, 2022.	Similar to the CFR.		Similar to CFR; no concerns for stringency. Minor August 2022 rule changes do not affect stringency.
40 CFR §146.83 Minimum criteria for siting.						
404.	Owners or operators of Class VI wells must demonstrate to the satisfaction of the Director that the wells will be sited in areas with a suitable geologic system. The owners or operators must demonstrate that the geologic system comprises:	40 CFR §146.83(a)	**§5.206(b) General criteria**. The director may issue a permit under this subchapter if the applicant demonstrates and the director finds that: (5) the geologic storage facility will be sited in an area with suitable geology, which at a minimum must include: (A) an injection zone of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the CO_2 stream; and	Same as the CFR.		No concerns for stringency. The public commented on 5.206(b)(1) and (9), but no change was made in the August 2022 rule.
405.	An injection zone(s) of sufficient areal extent, thickness, porosity, and permeability to receive the total anticipated volume of the carbon dioxide stream;	40 CFR §146.83(a)(1)		Same as the CFR.		No concerns for stringency.
406.	Confining zone(s) free of transmissive faults or fractures and of sufficient areal extent and integrity to contain the injected carbon dioxide stream and displaced formation fluids and allow injection at proposed maximum pressures and volumes without initiating or propagating fractures in the confining zone(s).	40 CFR §146.83(a)(2)	**§5.206(b)(5)(B)** a confining zone that is laterally continuous and free of known transecting transmissive faults or fractures over an area sufficient to contain the injected CO_2 stream and displaced formation fluids and allow injection at proposed maximum pressures and volumes without compromising the confining zone or causing the movement of fluids that endangers USDWs;	Same as the CFR.		No concerns for stringency.

407.	The Director may require owners or operators of Class VI wells to identify and characterize additional zones that will impede vertical fluid movement, are free of faults and fractures that may interfere with containment, allow for pressure dissipation, and provide additional opportunities for monitoring, mitigation, and remediation.	40 CFR §146.83(b)		Missing.	5.201(13) defines "confining zone" as a geologic formation, group of formations, or part of a formation stratigraphically overlying the injection zone or zones that acts as barrier to fluid movement. For Class VI wells operating under an injection depth waiver, confining zone means a geologic formation, group of formations, or part of a formation stratigraphically overlying and underlying the injection zone or zones that acts as a barrier to fluid movement. Therefore, in order to be effective in certain areas, the confining zone may include several formations or groups of formations. Also see 5.203(m)(7)(G) a characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., CO_2, formation fluids) movement;	The state rule does not describe situations where additional confining zones may be needed. This could pose stringency concerns in some geologic scenarios. Rule was not changed in August 2022; stringency concern remains.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.84 Area of review and corrective action.						
408.	The AOR is the region surrounding the geologic sequestration project where USDWs may be endangered by the injection activity. The AOR is delineated using computational modeling that accounts for the physical and chemical properties of all phases of the injected CO2 stream and is based on available site characterization, monitoring, and operational data.	40 CFR §146.84(a)	**§5.102(5) Area of review (AOR)**--The subsurface three-dimensional extent of the CO_2 stream plume and the associated pressure front, as well as the overlying formations, any underground sources of drinking water overlying an injection zone along with any intervening formations, and the surface area above that delineated region.	Similar intent to the CFR.		

409.	The owner or operator of a Class VI well must prepare, maintain, and comply with a plan to delineate the area of review for a proposed geologic sequestration project, periodically reevaluate the delineation, and perform corrective action that meets the requirements of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. As a part of the permit application for approval by the Director, the owner or operator must submit an area of review and corrective action plan that includes the following information:	40 CFR §146.84(b)	**§5.203(d) AOR and corrective action**. This subsection describes the standards for the information regarding the delineation of the AOR, the identification of penetrations, and corrective action that an applicant must include in an application. (1) Initial delineation of the AOR and initial corrective action. The applicant must delineate the AOR, identify all wells that require corrective action, and perform corrective action on those wells. Corrective action may be phased. (A) Delineation of AOR. (i) Using computational modeling that considers the volumes and/or mass and the physical and chemical properties of the injected CO2 stream, the physical properties of the formation into which the CO2 stream is to be injected, and available data including data available from logging, testing, or operation of wells, the applicant must predict the lateral and vertical extent of migration for the CO2 plume and formation fluids and the pressure differentials required to cause movement of injected fluids or formation fluids into a USDW in the subsurface for the following time periods: (I) five years after initiation of injection; (II) from initiation of injection to the end of the injection period proposed by the applicant; and (III) from initiation of injection until the movement of the CO_2 plume and associated pressure front stabilizes. (ii) The applicant must use a computational model that: (I) is based on geologic and reservoir engineering information collected to characterize the injection zone and the confining zone; (II) is based on anticipated operating data, including injection pressures, rates, temperatures, and total volumes	Missing	5.206**(g) AOR and corrective action**. Notwithstanding the requirement in §5.203(d)(2)(B)(i) of this title to perform a re-evaluationof the AOR, at the frequency specified in the AOR and corrective action plan or permit, the operator of a GS facility also must conduct the following whenever warranted by a material change in the monitoring and/or operational data or in the evaluation of the monitoring and operational data by the operator: (1) a re-evaluation of the AOR by performing all of the actions specified in §5.203(d)(1)(A) - (C) to delineate the AOR and identify all wells that require corrective action; (2) identify all wells in the re-evaluated AOR that require corrective action; (3) perform corrective action on wells requiring corrective action in the re-evaluated AOR in the same manner specified in §5.203(d)(1)(C); and (4) submit an amended AOR and corrective action plan or demonstrate to the director through	The state rule is not specific about the requirement to maintain and comply with the AoR and Corrective Action Plan, nor does it say that an approved plan is directly enforceable regardless of whether it is a condition of the permit (although AoR and Corrective Action Plans must be included in permits, per 5.206(g)). 5.203(d)(1)(A)(i)(III), (m)(5), and (m)(7)(iii) were changed in the August 2022 rule based on public comment, but the rule changes do not address stringency concerns. The August 2022 revisions deleted reference to a 10 year post-injection site care timeframe; however other concerns about the PISC timeframe remain; see 146.93.

			and/or mass over the proposed duration of injection; (III) takes into account relevant geologic heterogeneities and data quality, and their possible impact on model predictions; (IV) considers the physical and chemical properties of injected and formation fluids; and (V) considers potential migration through known faults, fractures, and artificial penetrations and beyond lateral spill points. (iii) The applicant must provide the name and a description of the model, software, the assumptions used to determine the AOR, and the equations solved.		monitoring data and modeling results that no change to the AOR and corrective action plan is needed. 5.207(a)(2)(D) Annual 6reports. The operator must submit an annual report detailing: (i) corrective action performed; (ii) new wells installed and the type, location, number, and information required in §5.203(e) (Application Requirements); (iii) re-calculated AOR unless the operator submits a statement signed by an appropriate company official confirming that monitoring and operational data supports the current delineation of the AOR on file with RRC; (iv) the updated area for which the operator has a good faith claim to the necessary and sufficient property rights to operate the GS facility; (v) tons of CO_2 injected; and (vi) The operator must maintain and update required plans in accordance with	

					the provisions of this subchapter. (I) Operators must submit an annual statement, signed by an appropriate company official, confirming that the operator has: (-a-) reviewed the monitoring and operational data that are relevant to a decision on whether to reevaluate the AOR and the monitoring and operational data that are relevant to a decision on whether to update an approved plan required by §5.203 or §5.206; and (-b-) determined whether any updates were warranted by material change in the monitoring and operational data or in the evaluation of the monitoring and operational data by the operator. (II) Operators must submit either the updated plan or a summary of the modifications for each plan for which an update the operator determined to be warranted pursuant to subclause (I) of this clause. The director may require	

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
					submission of copies of any updated plans and/or additional information regarding whether or not updates of any particular plans are warranted. (vii) other information as required by the permit. (3) The director may require the revision of any required plan following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the director or whenever the director determines that such a revision is necessary to comply with the requirements of this subchapter.	
410.	The method for delineating the area of review that meets the requirements of paragraph (c) of this section, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based;	40 CFR §146.84(b)(1)	**§5.203(d)(2) AOR and corrective action plan.** As part of an application, the applicant must submit an AOR and corrective action plan that includes the following information: (A) the method for delineating the AOR, including the model to be used, assumptions that will be made, and the site characterization data on which the model will be based;	Same as the CFR.		
411.	A description of:	40 CFR §146.84(b)(2)	**§5.203(d)(2)(B)** for the AOR, a description of:	Same as the CFR.		

412.	The minimum fixed frequency, not to exceed five years, at which the owner or operator proposes to reevaluate the area of review;	40 CFR §146.84(b)(2)(i)	**§5.203(d)(2)(B)(i)** the minimum frequency subject to the annual certification pursuant to §5.206(f) (Permit Standards) at which the applicant proposes to re-evaluate the AOR during the life of the geologic storage facility;	Similar intent to the CFR, but with minor stringency concerns.	Operator must annually determine whether re-evaluation of the AOR is necessary and as required by the permit. Permit will include minimum re-evaluation every 5 years. 5.206**(g) AOR and corrective action**. Notwithstanding the requirement in §5.203(d)(2)(B)(i) of this title to perform a re-evaluation of the AOR, at the frequency specified in the AOR and corrective action plan or permit, the operator of a GS facility also must conduct the following whenever warranted by a material change in the monitoring and/or operational data or in the evaluation of the monitoring and operational data by the operator: (1) a re-evaluation of the AOR by performing all of the actions specified in §5.203(d)(1)(A) - (C) to delineate the AOR and identify all wells that require corrective action; … (4) submit an amended AOR and corrective action plan or demonstrate to the director through	The state requirement should refer to 5.206(g), not to 5.206(f). The state requirement does not mention a five-year frequency for AoR reevaluations. This is less stringent than the CFR. Rule was not changed in August 2022; stringency concern remains.

					monitoring data and modeling results that no change to the AOR and corrective action plan is needed. 5.207(a)(2)(D) Annual 6reports. The operator must submit an annual report detailing: …. (iii) re-calculated AOR unless the operator submits a statement signed by an appropriate company official confirming that monitoring and operational data supports the current delineation of the AOR on file with RRC; …. (vi) The operator must maintain and update required plans in accordance with the provisions of this subchapter. (I) Operators must submit an annual statement, signed by an appropriate company official, confirming that the operator has: (-a-) reviewed the monitoring and operational data that are relevant to a decision on whether to reevaluate the AOR and the monitoring and	

					operational data that are relevant to a decision on whether to update an approved plan required by §5.203 or §5.206; and (-b-) determined whether any updates were warranted by material change in the monitoring and operational data or in the evaluation of the monitoring and operational data by the operator. (II) Operators must submit either the updated plan or a summary of the modifications for each plan for which an update the operator determined to be warranted pursuant to subclause (I) of this clause. The director may require submission of copies of any updated plans and/or additional information regarding whether or not updates of any particular plans are warranted. (vii) other information as required by the permit…. 5.206**(g) AOR and corrective action**. Notwithstanding the requirement in §5.203(d)(2)(B)(i) of this	

					title to perform a re-evaluation of the AOR, at the frequency specified in the AOR and corrective action plan or permit, the operator of a GS facility also must conduct the following whenever warranted by a material change in the monitoring and/or operational data or in the evaluation of the monitoring and operational data by the operator: (1) a re-evaluation of the AOR by performing all of the actions specified in §5.203(d)(1)(A) - (C) to delineate the AOR and identify all wells that require corrective action; (2) identify all wells in the re-evaluated AOR that require corrective action; (3) perform corrective action on wells requiring corrective action in the re-evaluated AOR in the same manner specified in §5.203(d)(1)(C); and (4) submit an amended AOR and corrective action plan or demonstrate to the director through monitoring data and modeling results that no change to the AOR and corrective action plan is needed.	

					5.207(a)(2)(D) Annual 6reports. The operator must submit an annual report detailing: (i) corrective action performed; (ii) new wells installed and the type, location, number, and information required in §5.203(e) (Application Requirements); (iii) re-calculated AOR unless the operator submits a statement signed by an appropriate company official confirming that monitoring and operational data supports the current delineation of the AOR on file with RRC; …. (vi) The operator must maintain and update required plans in accordance with the provisions of this subchapter. (I) Operators must submit an annual statement, signed by an appropriate company official, confirming that the operator has: (-a-) reviewed the monitoring and operational data	

					that are relevant to a decision on whether to reevaluate the AOR and the monitoring and operational data that are relevant to a decision on whether to update an approved plan required by §5.203 or §5.206; and (-b-) determined whether any updates were warranted by material change in the monitoring and operational data or in the evaluation of the monitoring and operational data by the operator. (II) Operators must submit either the updated plan or a summary of the modifications for each plan for which an update the operator determined to be warranted pursuant to subclause (I) of this clause. The director may require submission of copies of any updated plans and/or additional information regarding whether or not updates of any particular plans are warranted. (vii) other information as required by the permit. (3) The director may require the revision	

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
					of any required plan following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the director or whenever the director determines that such a revision is necessary to comply with the requirements of this subchapter.	
413.	The monitoring and operational conditions that would warrant a reevaluation of the area of review prior to the next scheduled reevaluation as determined by the minimum fixed frequency established in paragraph (b)(2)(i) of this section.	40 CFR §146.84(b)(2)(ii)	**§5.203(d)(2)(B)(iii)** the monitoring and operational conditions that would warrant a re-evaluation of the AOR prior to the next scheduled re-evaluation; and	Similar to the CFR.	See above	The state does not refer to a minimum fixed frequency Minor August 2022 rule changes do not affect stringency; stringency concern remains.
414.	How monitoring and operational data (e.g., injection rate and pressure) will be used to inform an area of review reevaluation; and	40 CFR §146.84(b)(2)(iii)	**§5.203(d)(2)(B)(ii)** how monitoring and operational data will be used to re-evaluate the AOR;	Similar to the CFR.		Similar to CFR; no concerns for stringency.
415.	How corrective action will be conducted to meet the requirements of paragraph (d) of this section, including what corrective action will be performed prior to injection and what, if any, portions of the area of review will have corrective action addressed on a phased basis and how the phasing will be determined; how corrective action will be adjusted if there are changes in the area of review; and how site access will be guaranteed for future corrective action.	40 CFR §146.84(b)(2)(iv)	**§5.203(d)(2)(C)** a corrective action plan that describes: (i) how the corrective action will be conducted; (ii) how corrective action will be adjusted if there are changes in the AOR; (iii) if a phased corrective action is planned, how the phasing will be determined; and (iv) how site access will be secured for future corrective action.	Similar to the CFR.		Similar to CFR; no concerns for stringency. Minor August 2022 rule changes do not affect stringency.
416.	Owners or operators of Class VI wells must perform the following actions to delineate the AOR and identify all wells that require corrective action:	40 CFR §146.84(c)	**§5.203(d)(1) Initial delineation of the AOR and initial corrective action.** The applicant must delineate the AOR, identify all wells that require corrective action, and perform corrective action on those wells. Corrective action may be phased.	Similar to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
417.	Predict, using existing site characterization, monitoring and operational data, and computational modeling, the projected lateral and vertical migration of the carbon dioxide plume and formation fluids in the subsurface from the commencement of injection activities until the plume movement ceases, until pressure differentials sufficient to cause the movement of injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director. The model must:	40 CFR §146.84(c)(1)	**§5.203(d)(1)(A) Delineation of AOR.** (i) Using computational modeling that considers the volumes and/or mass and the physical and chemical properties of the injected CO_2 stream, the physical properties of the formation into which the CO_2 stream is to be injected, and available data including data available from logging, testing, or operation of wells, the applicant must predict the lateral and vertical extent of migration for the CO_2 plume and formation fluids and the pressure differentials required to cause movement of injected fluids or formation fluids into a USDW in the subsurface for the following time periods: (I) five years after initiation of injection; (II) from initiation of injection to the end of the injection period proposed by the applicant; and (III) from initiation of injection until the movement of the CO_2 plume and associated pressure front stabilizes. (ii) The applicant must use a computational model that:	Similar intent to the CFR.		Differences are minor. The state requirement details time periods for the model predictions. The state does not require that modeling be run until injected fluids or formation fluids into a USDW are no longer present, or until the end of a fixed time period as determined by the Director. Provision edited in 2022. See Row 409 about the PISC timeframe; other changes do not affect stringency.
418.	Be based on detailed geologic data collected to characterize the injection zone(s), confining zone(s) and any additional zones; and anticipated operating data, including injection pressures, rates, and total volumes over the proposed life of the geologic sequestration project;	40 CFR §146.84(c)(1)(i)	**§5.203(d)(1)(A)(ii**) (I) is based on geologic and reservoir engineering information collected to characterize the injection zone and the confining zone; (II) is based on anticipated operating data, including injection pressures, rates, temperatures, and total volumes and/or mass over the proposed duration of injection;	Similar to the CFR.		Similar to CFR; no concerns for stringency. August 2022 rule changes do not affect stringency.
419.	Take into account any geologic heterogeneities, other discontinuities, data quality, and their possible impact on model predictions; and	40 CFR §146.84(c)(1)(ii)	**§5.203(d)(1)(A)(ii)(III)** takes into account relevant geologic heterogeneities and data quality, and their possible impact on model predictions;	Same as the CFR.		
420.	Consider potential migration through faults, fractures, and artificial penetrations.	40 CFR §146.84(c)(1)(iii)	**§5.203(d)(1)(A)(ii)(V)** considers potential migration through known faults, fractures, and artificial penetrations and beyond lateral spill points.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
421.	Using methods approved by the Director, identify all penetrations, including active and abandoned wells and underground mines, in the area of review that may penetrate the confining zone(s). Provide a description of each well's type, construction, date drilled, location, depth, record of plugging and/or completion, and any additional information the Director may require; and	40 CFR §146.84(c)(2)	**§5.203(d)(1)(B) Identification and table of penetrations.** The applicant must identify, compile, and submit a table listing all penetrations, including active, inactive, plugged, and unplugged wells and underground mines in the AOR that may penetrate the confining zone, that are known or reasonably discoverable through specialized knowledge or experience. The applicant must provide a description of each penetration's type, construction, date drilled or excavated, location, depth, and record of plugging and/or completion or closure. Examples of specialized knowledge or experience may include reviews of federal, state, and local government records, interviews with past and present owners, operators, and occupants, reviews of historical information (including aerial photographs, chain of title documents, and land use records), and visual inspections of the facility and adjoining properties.	Similar to the CFR.		Similar to CFR; no concerns for stringency.
422.	Determine which abandoned wells in the area of review have been plugged in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs, including use of materials compatible with the carbon dioxide stream.	40 CFR §146.84(c)(3)	**§5.203(d)(1)(C) Corrective action.** The applicant must demonstrate whether each of the wells on the table of penetrations has or has not been plugged and whether each of the underground mines (if any) on the table of penetrations has or has not been closed in a manner that prevents the movement of injected fluids or displaced formation fluids that may endanger USDWs or allow the injected fluids or formation fluids to escape the permitted injection zone.	Similar intent to the CFR.	If the materials are not compatible, the wells may not have been plugged "in a manner that prevents the movement of carbon dioxide or other fluids that may endanger USDWs," which the applicant must demonstrate and the director must approve.	The state requirement does not specify that determination of compatibility with penetrations and CO_2 is required. This is less stringent than the CFR. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
423.	Owners or operators of Class VI wells must perform corrective action on all wells in the area of review that are determined to need corrective action, using methods designed to prevent the movement of fluid into or between USDWs, including use of materials compatible with the carbon dioxide stream, where appropriate.	40 CFR §146.84(d)	**§5.203(d)(1)(C)** Corrective action. The applicant must demonstrate whether each of the wells on the table of penetrations has or has not been plugged and whether each of the underground mines (if any) on the table of penetrations has or has not been closed in a manner that prevents the movement of injected fluids or displaced formation fluids that may endanger USDWs or allow the injected fluids or formation fluids to escape the permitted injection zone. The applicant must perform corrective action on all wells and underground mines in the AOR that are determined to need corrective action. The operator must perform corrective action using materials suitable for use with the CO_2 stream. Corrective action may be phased.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
424.	At the minimum fixed frequency, not to exceed five years, as specified in the area of review and corrective action plan, or when monitoring and operational conditions warrant, owners or operators must:	40 CFR §146.84(e)	**§5.206(g) AOR and corrective action.** Notwithstanding the requirement in §5.203(d)(2)(B)(i) of this title to perform a re-evaluation of the AOR, at the frequency specified in the AOR and corrective action plan or permit, the operator of a geologic storage facility also must conduct the following whenever warranted by a material change in the monitoring and/or operational data or in the evaluation of the monitoring and operational data by the operator:	Similar intent to the CFR.	See above Item 412	The state rule does not specify a minimum AoR reevaluation frequency. Rule was not changed in August 2022; stringency concern remains.
425.	Reevaluate the area of review in the same manner specified in paragraph (c)(1) of this section;	40 CFR §146.84(e)(1)	**§5.206(g)(1)** a re-evaluation of the AOR by performing all of the actions specified in §5.203(d)(1)(A) - (C) of this title to delineate the AOR and identify all wells that require corrective action;	Similar to the CFR.		Similar to CFR; no concerns for stringency.
426.	Identify all wells in the reevaluated area of review that require corrective action in the same manner specified in paragraph (c) of this section;	40 CFR §146.84(e)(2)	**§5.206(g)(2)** identify all wells in the re-evaluated AOR that require corrective action;	Similar to the CFR.		Similar to CFR; no concerns for stringency.
427.	Perform corrective action on wells requiring corrective action in the reevaluated area of review in the same manner specified in paragraph (d) of this section; and	40 CFR §146.84(e)(3)	**§5.206(g)(3)** perform corrective action on wells requiring corrective action in the re-evaluated AOR in the same manner specified in §5.203(d)(1)(C) of this title; and	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
428.	Submit an amended area of review and corrective action plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the AOR and corrective action plan is needed. Any amendments to the area of review and corrective action plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate.	40 CFR §146.84(e)(4)	**§5.206(g)(4)** submit an amended AOR and corrective action plan or demonstrate to the director through monitoring data and modeling results that no change to the AOR and corrective action plan is needed.	Similar intent to the CFR.	5.202**(b) Permit amendment.** Requires the operator to file an application to amend an existing permit with the director at any time that conditions at the GS facility materially deviate from the conditions specified in the permit or permit application. Any amendments must be approved by the director and the amended plan incorporated into the permit.	The state rule does not require that amendments to the plan be approved by the Director and incorporated into the permit as a modification. Rule was not changed in August 2022; stringency concern remains.
429.	The emergency and remedial response plan (as required by §146.94) and the demonstration of financial responsibility (as described by §146.85) must account for the area of review delineated as specified in paragraph (c)(1) of this section or the most recently evaluated area of review delineated under paragraph (e) of this section, regardless of whether or not corrective action in the area of review is phased.	40 CFR §146.84(f)	**§5.203(l) Emergency and remedial response plan.** The applicant must submit an emergency and remedial response plan that: (1) accounts for the entire AOR, regardless of whether or not corrective action in the AOR is phased; **§5.205(b)(3)** The applicant's demonstration of financial responsibility must account for the entire AOR, regardless of whether corrective action in the AOR is phased.	Missing	These will be required to be addressed before issuance of a permit to inject.	The provision cited by the state is for the initial permit application and does not account for revisions of the Emergency and Remedial Response Plan or financial responsibility that address changes to the AoR. 5.203(l)(3), requirements for a safety plan, was expanded in the August 2022 rule based on public comment to address concerns with public notice of emergencies; however, There is no analogous provision in the CFR; no concerns for stringency. The stringency concern about revisions to FR and E&RR plans remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
430.	All modeling inputs and data used to support AOR reevaluations under paragraph (e) of this section shall be retained for 10 years.	40 CFR §146.84(g)	**§5.207(e) Record retention.** The operator must retain all wellhead pressure records, metering records, and integrity test results for at least 10 years. The operator must retain all documentation of good faith claim to necessary and sufficient property rights to operate the geologic storage facility until the director issues the final certificate of closure in accordance with §5.206(k)(7) of this title.	Missing.	&& Not sure what happened here	The state rule includes the following about §5.207 in its preamble: "The Commission proposes to amend current subsection (c), redesignated as subsection (e), to clarify that the operator must retain records, including modeling inputs and data to support area of review calculations and integrity test results, for at least 10 years, rather than five years, consistent with federal regulations at 40 CFR §146.84(g), relating to area of review and corrective action." However, neither the text of §5.207(e) nor other provisions of the rule contain requirement to retain modeling inputs for 10 years. The public commented on 5.207(e) and (m), but no changes were made in the August 2022 rule; stringency concern remains. The definition of "good faith claim" was added as 5.102(29) in the August 2022 update based on public comment. There is no analogous provision in the CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.85 Financial responsibility.						
431.	The owner or operator must demonstrate and maintain financial responsibility as determined by the Director that meets the following conditions:	40 CFR §146.85(a)	**§5.205(b)(1)** A person to whom a permit is issued under this subchapter must provide annually to the director evidence of financial responsibility that is satisfactory to the director. The operator must demonstrate and maintain financial responsibility and resources for corrective action, injection well plugging, post-injection storage facility care and storage facility closure, and emergency and remedial response until the director has provided written verification that the director has determined that the facility has reached the end of the post-injection storage facility care period.	Similar intent to the CFR.		No concerns for stringency.
432.	The financial responsibility instrument(s) used must be from the following list of qualifying instruments:	40 CFR §146.85(a)(1)	**§5.205 (c)(2)(A)** The applicant must include in an application for a geologic storage facility permit:	Similar intent to the CFR.		The state only allows surety bonds and letters of credit to demonstrate financial responsibility. This is more restrictive than the CFR but poses no concerns for stringency.
433.	Trust Funds	40 CFR §146.85(a)(1)(i)		Missing.	Not allowed, State rule more stringent	This instrument is not mentioned in the state rule. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
434.	Surety Bonds	40 CFR §146.85(a)(1)(ii)	**§5.205(c)(2)(A)(ii)** a copy of the form of the bond or letter of credit that will be filed with the Commission; and **§5.205(c)(2)(B)** A geologic storage facility shall not receive CO_2 until a bond or letter of credit in an amount approved by the director under this subsection and meeting the requirements of this subsection as to form and issuer has been filed with and approved by the director. **§5.205(c)(2)(D)(i)** The issuer of any geologic storage facility bond filed in satisfaction of the requirements of this subsection must be a corporate surety authorized to do business in Texas. The form of bond filed under this subsection must provide that the bond be renewed and continued in effect until the conditions of the bond have been met or its release is authorized by the director.	Similar intent to the CFR.		These are the only specified instruments common to the state rule and CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
435.	Letter of Credit	40 CFR §146.85(a)(1)(iii)	**§5.205(c)(2)(A)(ii)** a copy of the form of the bond or letter of credit that will be filed with the Commission; and **§5.205(c)(2)(B)** A geologic storage facility shall not receive CO_2 until a bond or letter of credit in an amount approved by the director under this subsection and meeting the requirements of this subsection as to form and issuer has been filed with and approved by the director. **§5.205(c)(2)(D)(ii)** Any letter of credit filed in satisfaction of the requirements of this subsection must be issued by and drawn on a bank authorized under state or federal law to operate in Texas. The letter of credit must be an irrevocable, standby letter of credit subject to the requirements of Texas Business and Commerce Code, §§5.101 - 5.118. The letter of credit must provide that it will be renewed and continued in effect until the conditions of the letter of credit have been met or its release is authorized by the director.	Similar intent to the CFR.		These are the only specified instruments common to the state rule and CFR; no concerns for stringency.
436.	Insurance	40 CFR §146.85(a)(1)(iv)	No reference found	Missing.	Not allowed	This instrument is not mentioned in the state rule. Rule was not changed in August 2022; stringency concern remains.
437.	Self Insurance (i.e., Financial Test and Corporate Guarantee)	40 CFR §146.85(a)(1)(v)	No reference found	Missing.	Not allowed	This instrument is not mentioned in the state rule. Rule was not changed in August 2022; stringency concern remains.
438.	Escrow Account	40 CFR §146.85(a)(1)(vi)	No reference found	Missing.	Not allowed	This instrument is not mentioned in the state rule. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
439.	Any other instrument(s) satisfactory to the Director	40 CFR §146.85(a)(1)(vii)	No reference found	Missing.	Not allowed	Surety bonds and letters of credit are the only specified instruments common to the state rule and CFR. Rule was not changed in August 2022; stringency concern remains.
440.	The qualifying instrument(s) must be sufficient to cover the cost of:	40 CFR §146.85(a)(2)	**§5.205(c)(2)(C)** The determination of the amount of financial assurance for a geologic storage facility is subject to the following requirements: **§5.205(b)(1)** A person to whom a permit is issued under this subchapter must provide annually to the director evidence of financial responsibility that is satisfactory to the director. The operator must demonstrate and maintain financial responsibility and resources for corrective action, injection well plugging, post-injection storage facility care and storage facility closure, and emergency and remedial response until the director has provided written verification that the director has determined that the facility has reached the end of the post-injection storage facility care period.	Similar intent to the CFR.	Add to Program Description	Similar to CFR; no concerns for stringency Texas appears to require financial responsibility for the same activities as identified in the CFR; however applicants are only required to provide a cost estimate for post-injection site care. It is recommended that the rule be clarified or the program description explain how the rule is equivalent. Rule was not changed in August 2022; stringency concern remains.
441.	Corrective action (that meets the requirements of §146.84);	40 CFR §146.85(a)(2)(i)	**§5.205(b)(1)**	Similar intent to the CFR.		Similar to CFR; no concerns for stringency; see row 440.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
442.	Injection well plugging (that meets the requirements of §146.92);	40 CFR §146.85(a)(2)(ii)	**§5.205(b)(1)**			The state rule does not appear to require that financial responsibility instruments cover the cost of plugging, other than allowing the use of financial responsibility funds to cover it if available. This is less stringent than the CFR. August 2022 rule changes partially addressed stringency concerns. Per the change to §5.205(c)(2)(C)(i) on row 445, plugging costs are no longer explicitly excluded from the dollar amount of financial assurance. A more explicit inclusion of requirements to include financial responsibility for plugging is recommended.
443.	Post injection site care and site closure (that meets the requirements of §146.93); and	40 CFR §146.85(a)(2)(iii)	**§5.205(b)(1)**	Similar intent to the CFR.		Similar to CFR; no concerns for stringency; see row 440.
444.	Emergency and remedial response (that meets the requirements of §146.94).	40 CFR §146.85(a)(2)(iv)	**§5.205(b)(1)**	Similar intent to the CFR.		Similar to CFR; no concerns for stringency; see row 440.
445.	The financial responsibility instrument(s) must be sufficient to address endangerment of underground sources of drinking water.	40 CFR §146.85(a)(3)	**§5.205(c)(2)(C)** The determination of the amount of financial assurance for a geologic storage facility is subject to the following requirements: (i) The director must approve the dollar amount of the financial assurance. The amount of financial assurance required to be filed under this subsection must be equal to or greater than the maximum amount necessary to perform corrective action, emergency response, and remedial action, post-injection monitoring and site care, and closure of the geologic storage facility at any time during the permit term in accordance with all applicable state laws, Commission rules and orders, and the permit;	Differs from the CFR.	State law and RRC regulations require protection against endangerment of USDWs	To the degree that financial responsibility is required to cover the same activities as the CFR, there is probably no concern for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
446.	The qualifying financial responsibility instrument(s) must comprise protective conditions of coverage.	40 CFR §146.85(a)(4)	No reference found	Missing.		Rule was not changed in August 2022; stringency concern remains.
447.	Protective conditions of coverage must include at a minimum cancellation, renewal, and continuation provisions, specifications on when the provider becomes liable following a notice of cancellation if there is a failure to renew with a new qualifying financial instrument, and requirements for the provider to meet a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.	40 CFR §146.85(a)(4)(i)	**§5.205(c)(2)(D)** Bonds and letters of credit filed in satisfaction of the financial assurance requirements for a geologic storage facility must comply with the following standards as to issuer and form. (i) The issuer of any geologic storage facility bond filed in satisfaction of the requirements of this subsection must be a corporate surety authorized to do business in Texas. The form of bond filed under this subsection must provide that the bond be renewed and continued in effect until the conditions of the bond have been met or its release is authorized by the director. (ii) Any letter of credit filed in satisfaction of the requirements of this subsection must be issued by and drawn on a bank authorized under state or federal law to operate in Texas. The letter of credit must be an irrevocable, standby letter of credit subject to the requirements of Texas Business and Commerce Code, § §5.101 - §5.118. The letter of credit must provide that it will be renewed and continued in effect until the conditions of the letter of credit have been met or its release is authorized by the director.	Similar intent to the CFR.	&&	The state rule does not explicitly require cancellation provisions (but does require continuation/renewal). This is less stringent than the CFR. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
448.	Cancellation – for purposes of this part, an owner or operator must provide that their financial mechanism may not cancel, terminate or fail to renew except for failure to pay such financial instrument. If there is a failure to pay the financial instrument, the financial institution may elect to cancel, terminate, or fail to renew the instrument by sending notice by certified mail to the owner or operator and the Director. The cancellation must not be final for 120 days after receipt of cancellation notice. The owner or operator must provide an alternate financial responsibility demonstration within 60 days of notice of cancellation, and if an alternate financial responsibility demonstration is not acceptable (or possible), any funds from the instrument being cancelled must be released within 60 days of notification by the Director.	40 CFR §146.85(a)(4)(i)(A)	**§5.205(c)(2)(D)** Bonds and letters of credit filed in satisfaction of the financial assurance requirements for a geologic storage facility must comply with the following standards as to issuer and form. (i) The issuer of any geologic storage facility bond filed in satisfaction of the requirements of this subsection must be a corporate surety authorized to do business in Texas. The form of bond filed under this subsection must provide that the bond be renewed and continued in effect until the conditions of the bond have been met or its release is authorized by the director. (ii) Any letter of credit filed in satisfaction of the requirements of this subsection must be issued by and drawn on a bank authorized under state or federal law to operate in Texas. The letter of credit must be an irrevocable, standby letter of credit subject to the requirements of Texas Business and Commerce Code §5.101 - §5.118. The letter of credit must provide that it will be renewed and continued in effect until the conditions of the letter of credit have been met or its release is authorized by the director.	Missing	&&	See Row 447.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
449.	Renewal – for purposes of this part, owners or operators must renew all financial instruments, if an instrument expires, for the entire term of the geologic sequestration project. The instrument may be automatically renewed as long as the owner or operator has the option of renewal at the face amount of the expiring instrument. The automatic renewal of the instrument must, at a minimum, provide the holder with the option of renewal at the face amount of the expiring financial instrument.	40 CFR §146.85(a)(4)(i)(B)	**§5.205(c)(2)(D)** Bonds and letters of credit filed in satisfaction of the financial assurance requirements for a geologic storage facility must comply with the following standards as to issuer and form. (i) The issuer of any geologic storage facility bond filed in satisfaction of the requirements of this subsection must be a corporate surety authorized to do business in Texas. The form of bond filed under this subsection must provide that the bond be renewed and continued in effect until the conditions of the bond have been met or its release is authorized by the director. (ii) Any letter of credit filed in satisfaction of the requirements of this subsection must be issued by and drawn on a bank authorized under state or federal law to operate in Texas. The letter of credit must be an irrevocable, standby letter of credit subject to the requirements of Texas Business and Commerce Code, §§5.101 - 5.118. The letter of credit must provide that it will be renewed and continued in effect until the conditions of the letter of credit have been met or its release is authorized by the director.	Similar to CFR	&&	See Row 447.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
450.	Cancellation, termination, or failure to renew may not occur and the financial instrument will remain in full force and effect in the event that on or before the date of expiration: the Director deems the facility abandoned; or the permit is terminated or revoked or a new permit is denied; or closure is ordered by the Director or a U.S. district court or other court of competent jurisdiction; or the owner or operator is named as debtor in a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code; or the amount due is paid.	40 CFR §146.85(a)(4)(i)(C)	**§5.205(c)(2)(D)** Bonds and letters of credit filed in satisfaction of the financial assurance requirements for a geologic storage facility must comply with the following standards as to issuer and form. (i) The issuer of any geologic storage facility bond filed in satisfaction of the requirements of this subsection must be a corporate surety authorized to do business in Texas. The form of bond filed under this subsection must provide that the bond be renewed and continued in effect until the conditions of the bond have been met or its release is authorized by the director. (ii) Any letter of credit filed in satisfaction of the requirements of this subsection must be issued by and drawn on a bank authorized under state or federal law to operate in Texas. The letter of credit must be an irrevocable, standby letter of credit subject to the requirements of Texas Business and Commerce Code, §§5.101 - 5.118. The letter of credit must provide that it will be renewed and continued in effect until the conditions of the letter of credit have been met or its release is authorized by the director.	Missing	&&	See Row 447.
451.	The qualifying financial responsibility instrument(s) must be approved by the Director.	40 CFR §146.85(a)(5)	**§5.205(c)(2)(B)** A geologic storage facility shall not receive CO_2 until a bond or letter of credit in an amount approved by the director under this subsection and meeting the requirements of this subsection as to form and issuer has been filed with and approved by the director.	Similar intent to the CFR.		Similar to the CFR; no concerns for stringency.
452.	The Director shall consider and approve the financial responsibility demonstration for all the phases of the geologic sequestration project prior to issue a Class VI permit (§146.82).	40 CFR §146.85(a)(5)(i)	**§5.205(c)(2)(B)** A geologic storage facility shall not receive CO_2 until a bond or letter of credit in an amount approved by the director under this subsection and meeting the requirements of this subsection as to form and issuer has been filed with and approved by the director.	Missing	The rule requires financial assurance for life of entire project. Not sure why distinction between phases would be necessary.	The state rule does not explicitly reference all phases of the geologic sequestration project. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
453.	The owner or operator must provide any updated information related to their financial responsibility instrument(s) on an annual basis and if there are any changes, the Director must evaluate, within a reasonable time, the financial responsibility demonstration to confirm that the instrument(s) used remain adequate for use. The owner or operator must maintain financial responsibility requirements regardless of the status of the Director's review of the financial responsibility demonstration.	40 CFR §146.85(a)(5)(ii)	**§5.205(c)(2)(E)** The operator of a geologic storage facility must provide to the director annual written updates of the cost estimate to increase or decrease the cost estimate to account for any changes to the AOR and corrective action plan, the emergency response and remedial action plan, the injection well plugging plan, and the post-injection storage facility care and closure plan. The operator must provide to the director upon request an adjustment of the cost estimate if the director has reason to believe that the original demonstration is no longer adequate to cover the cost of injection well plugging and post-injection storage facility care and closure.	Similar intent to the CFR.	&&	The state rule does not specify that the operator must maintain financial responsibility regardless of the status of the Director's review of the update. Rule was not changed in August 2022; stringency concern remains.
454.	The Director may disapprove the use of a financial instrument if he determines that it is not sufficient to meet the requirements of this section.	40 CFR §146.85(a)(5)(iii)	No reference found	Missing.	No permit will be issued if the applicant does not propose the use of a financial instrument determined to be insufficient. Add to Program Description	See Texas Notes. This evaluation should be described in the program description if it is not in the rule. Rule was not changed in August 2022; stringency concern remains.
455.	The owner or operator may demonstrate financial responsibility by using one or multiple qualifying financial instruments for specific phases of the geologic sequestration project.	40 CFR §146.85(a)(6)	No reference found.	Missing.	Texas will ensure that the financial assurance instruments used meet all the CFR requirements. Multiple instruments not necessary.	Texas does not allow the use of multiple financial instruments. This would affect stringency if the single instrument used did not meet all requirements in the CFR. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
456.	In the event that the owner or operator combines more than one instrument for a specific geologic sequestration phase (e.g., well plugging), such combination must be limited to instruments that are not based on financial strength or performance (i.e., self insurance or performance bond), for example trust funds, surety bonds guaranteeing payment into a trust fund, letters of credit, escrow account, and insurance. In this case, it is the combination of mechanisms, rather than the single mechanism, which must provide financial responsibility for an amount at least equal to the current cost estimate.	40 CFR §146.85(a)(6)(i)	No reference found	Missing.	Texas will ensure that the financial assurance instruments used meet all the CFR requirements. Multiple instruments not necessary.	See row 455.
457.	When using a third-party instrument to demonstrate financial responsibility, the owner or operator must provide a proof that the third-party providers either have passed financial strength requirements based on credit ratings; or has met a minimum rating, minimum capitalization, and ability to pass the bond rating when applicable.	40 CFR §146.85(a)(6)(ii)	No reference found	Missing.	Texas will ensure that the financial assurance instruments used meet all the CFR requirements. Multiple instruments not necessary.	See row 455.
458.	An owner or operator using certain types of third party instruments must establish a standby trust to enable EPA to be party to the financial responsibility agreement without EPA being the beneficiary of any funds. The standby trust fund must be used along with other financial responsibility instruments (e.g., surety bonds, letters of credit, or escrow accounts) to provide a location to place funds if needed.	40 CFR §146.85(a)(6)(iii)	No reference found	Missing.	Not an option	See row 455.
459.	An owner or operator may deposit money to an escrow account to cover financial responsibility requirements; this account must segregate funds sufficient to cover estimated costs for Class VI (geologic sequestration) financial responsibility from other accounts and uses.	40 CFR §146.85(a)(6)(iv)	No reference found	Missing.	Not an option	See row 455.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
460.	An owner or operator or its guarantor may use self insurance to demonstrate financial responsibility for geologic sequestration projects. In order to satisfy this requirement the owner or operator must meet a Tangible Net Worth of an amount approved by the Director, have a Net working capital and tangible net worth each at least six times the sum of the current well plugging, post injection site care and site closure cost, have assets located in the United States amounting to at least 90 percent of total assets or at least six times the sum of the current well plugging, post injection site care and site closure cost, and must submit a report of its bond rating and financial information annually. In addition the owner or operator must either: have a bond rating test of AAA, AA, A, or BBB as issued by Standard & Poor's or Aaa, Aa, A, or Baa as issued by Moody's; or meet all of the following five financial ratio thresholds: a ratio of total liabilities to net worth less than 2.0; a ratio of current assets to current liabilities greater than 1.5; a ratio of the sum of net income plus depreciation, depletion, and amortization to total liabilities greater than 0.1; a ratio of current assets minus current liabilities to total assets greater than -0.1; and a net profit (revenues minus expenses) greater than 0.	40 CFR §146.85(a)(6)(v)	No reference found	Missing.	Not an option	See row 455.
461.	An owner or operator who is not able to meet corporate financial test criteria may arrange a corporate guarantee by demonstrating that its corporate parent meets the financial test requirements on its behalf. The parent's demonstration that it meets the financial test requirement is insufficient if it has not also guaranteed to fulfill the obligations for the owner or operator.	40 CFR §146.85(a)(6)(vi)		Missing.	Not an option	See row 455.
462.	An owner or operator may obtain an insurance policy to cover the estimated costs of geologic sequestration activities requiring financial responsibility. This insurance policy must be obtained from a third party provider.	40 CFR §146.85(a)(6)(vii)		Missing.	Not an option	See row 455.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
463.	The requirement to maintain adequate financial responsibility and resources is directly enforceable regardless of whether the requirement is a condition of the permit.	40 CFR §146.85(b)	**§5.206. Permit Standards.** (a) Each condition applicable to a permit shall be incorporated into the permit either expressly or by reference. If incorporated by reference, a specific citation to the rules in this chapter shall be given in the permit. The requirements listed in this section are directly enforceable regardless of whether the requirement is a condition of the permit.	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
464.	The owner or operator must maintain financial responsibility and resources until:	40 CFR §146.85(b)(1)		Missing.		The introductory statement is not included in the state rule, no concerns for stringency.
465.	The Director receives and approves the completed post-injection site care and site closure plan; and	40 CFR §146.85(b)(1)(i)	**§5.205(b) Financial responsibility.** (1) A person to whom a permit is issued under this subchapter must provide annually to the director evidence of financial responsibility that is satisfactory to the director. The operator must demonstrate and maintain financial responsibility and resources for corrective action, injection well plugging, post-injection storage facility care and storage facility closure, and emergency and remedial response until the director has provided written verification that the director has determined that the facility has reached the end of the post-injection storage facility care period.	Similar intent to the CFR.		The Director has to determine that the facility has completed the post-injection phase in the state requirement. No concerns for stringency. (See 146.93 for requirements for authorizing site closure.)
466.	The Director approves site closure.	40 CFR §146.85(b)(1)(ii)	**§5.205(b)(1)**	Similar intent to the CFR.		See above row.

467.	The owner or operator may be released from a financial instrument in the following circumstances:	40 CFR §146.85(b)(2)	**§5.206(k)(3) Prior to closure.** Prior to authorization for storage facility closure, the operator must demonstrate to the director, based on monitoring, other site-specific data, and modeling that is reasonably consistent with site performance that no additional monitoring is needed to assure that the geologic storage facility will not endanger USDWs. The operator must demonstrate, based on the current understanding of the site, including monitoring data and/or modeling, all of the following: (A) the estimated magnitude and extent of the facility footprint (the CO_2 plume and the area of elevated pressure); (B) that there is no leakage of either CO2 or displaced formation fluids that will endanger USDWs; (C) that the injected or displaced fluids are not expected to migrate in the future in a manner that encounters a potential leakage pathway into USDWs; (D) that the injection wells at the site completed into or through the injection zone or confining zone will be plugged and abandoned in accordance with these requirements; and (E) any remaining facility monitoring wells will be properly plugged or are being managed by a person and in a manner approved by the director. (4) Notice of intent for storage facility closure. The operator must notify the director in writing at least 120 days before storage facility closure. At the time of such notice, if the operator has made any changes to the original plan, the operator also must provide the revised plan. The director may approve a shorter notice period. (5) Authorization for storage facility closure. No operator may initiate storage facility closure until the director has approved closure of the storage facility in writing. After the director has authorized storage facility closure, the operator must plug all wells in accordance with the approved plan required by §5.203(k) of this title.	Differs from the CFR.		§5.206(k)(7) allows release of financial responsibility obligations upon approval of site closure. No concerns for stringency. See Row 262 about changes to 5.206(k)(6)(a).

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
			(6) Storage facility closure report. Once the director has authorized storage facility closure, the operator must submit a storage facility closure report within 90 days that must thereafter be retained by the Commission in Austin. The report must include the following information: (A) documentation of appropriate injection and monitoring well plugging. The operator must provide a copy of a survey plat that has been submitted to the Regional Administrator of Region 6 of the United States Environmental Protection Agency. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks including the Latitude/Longitude or X/Y coordinates of the surface location in the NAD 27, NAD 83, or WGS 84 coordinate system, a labeled scale bar, and northerly direction arrow; (B) documentation of appropriate notification and information to such state and local authorities as have authority over drilling activities to enable such state and local authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zones; and (C) records reflecting the nature, composition, volume and mass of the CO_2 stream. If mass is determined using volume, the operator must provide calculations. (7) Certificate of closure. Upon completion of the requirements in paragraphs (3) - (6) of this subsection, the director will issue a certificate of closure. At that time, the operator is released from the requirement in §5.205(c) of this title to maintain financial assurance.			

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
468.	The owner or operator has completed the phase of the geologic sequestration project for which the financial instrument was required and has fulfilled all its financial obligations as determined by the Director, including obtaining financial responsibility for the next phase of the GS project, if required; or	40 CFR §146.85(b)(2)(i)	**§5.205 (c)(3)** The director may consider allowing the phasing in of financial assurance for only corrective action based on project-specific factors.	Missing.	The state rule requires financial assurance for the life of the project.	The rule indicates that financial instruments must be in place until release is authorized by the director; however, other than site closure, no specific events are described. Rule was not changed in August 2022; stringency concern remains.
469.	The owner or operator has submitted a replacement financial instrument and received written approval from the Director accepting the new financial instrument and releasing the owner or operator from the previous financial instrument.	40 CFR §146.85(b)(2)(ii)	No reference found	Missing.	See comment above	See above. Rule was not changed in August 2022; stringency concern remains.
470.	The owner or operator must have a detailed written estimate, in current dollars, of the cost of performing corrective action on wells in the AOR, plugging the injection well(s), post-injection site care and site closure, and emergency and remedial response.	40 CFR §146.85(c)	**§5.205 (c)(2)(E)** The operator of a geologic storage facility must provide to the director annual written updates of the cost estimate to increase or decrease the cost estimate to account for any changes to the AOR and corrective action plan, the emergency response and remedial action plan, the injection well plugging plan, and the post-injection storage facility care and closure plan. The operator must provide to the director upon request an adjustment of the cost estimate if the director has reason to believe that the original demonstration is no longer adequate to cover the cost of injection well plugging and post-injection storage facility care and closure.	Similar to the CFR.		Similar to CFR; no concerns for stringency.
471.	The cost estimate must be performed for each phase separately and must be based on the costs to the regulatory agency of hiring a third party to perform the required activities. A third party is a party who is not within the corporate structure of the owner or operator.	40 CFR §146.85(c)(1)	**§5.205(c)(2)(C)(ii)** A qualified professional engineer licensed by the State of Texas, as required under Occupations Code, Chapter 1001, relating to Texas Engineering Practice Act, must prepare or supervise the preparation of a written estimate of the highest likely amount necessary to close the geologic storage facility. The operator must submit to the director the written estimate under seal of a qualified licensed professional engineer, as required under Occupations Code, Chapter 1001, relating to Texas Engineering Practice Act; and	Similar to the CFR.	Financial assurance for all phases required to be maintained with the exception of corrective action, which may be phased. Appears to be more stringent.	The state requirement is more detailed than the CFR on the third party qualifications. However, it is not specific as to the activities for which cost estimates are required (i.e., corrective action, emergency and remedial response, and well plugging are missing). Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
472.	During the active life of the geologic sequestration project, the owner or operator must adjust the cost estimate for inflation within 60 days prior to the anniversary date of the establishment of the financial instrument(s) used to comply with paragraph (a) of this section and provide this adjustment to the Director. The owner or operator must also provide to the Director written updates of adjustments to the cost estimate within 60 days of any amendments to the area of review and corrective action plan (§146.84), the injection well plugging plan (§146.92), the post-injection site care and site closure plan (§146.93), and the emergency and remedial response plan (§146.94).	40 CFR §146.85(c)(2)	**§5.205(c)(2)(E)** The operator of a geologic storage facility must provide to the director annual written updates of the cost estimate to increase or decrease the cost estimate to account for any changes to the AOR and corrective action plan, the emergency response and remedial action plan, the injection well plugging plan, and the post-injection storage facility care and closure plan. The operator must provide to the director upon request an adjustment of the cost estimate if the director has reason to believe that the original demonstration is no longer adequate to cover the cost of injection well plugging and post-injection storage facility care and closure.	Similar intent to the CFR.	The annual updates must include consideration of inflation. . The director can require additional financial assurance if the director does not agree with the estimate.	The state rule excludes direct mention of inflation, or specify a deadline for submitting the information. Minor August 2022 rule changes do not address stringency concerns.
473.	The Director must approve any decrease or increase to the initial cost estimate. During the active life of the geologic sequestration project, the owner or operator must revise the cost estimate no later than 60 days after the Director has approved the request to modify the area of review and corrective action plan (§146.84), the injection well plugging plan (§146.92), the post-injection site care and site closure plan (§146.93), and the emergency and response plan (§146.94), if the change in the plan increases the cost. If the change to the plans decreases the cost, any withdrawal of funds must be approved by the Director. Any decrease to the value of the financial assurance instrument must first be approved by the Director. The revised cost estimate must be adjusted for inflation as specified at paragraph (c)(2) of this section.	40 CFR §146.85(c)(3)	**§5.205(c)(2)(E)** The operator of a geologic storage facility must provide to the director annual written updates of the cost estimate to increase or decrease the cost estimate to account for any changes to the AOR and corrective action plan, the emergency response and remedial action plan, the injection well plugging plan, and the post-injection storage facility care and closure plan. The operator must provide to the director upon request an adjustment of the cost estimate if the director has reason to believe that the original demonstration is no longer adequate to cover the cost of injection well plugging and post-injection storage facility care and closure.	Similar intent to the CFR.	The annual updates must include consideration of inflation. The director can require additional financial assurance if the director does not agree with the estimate.	The state rule does not distinguish between increases and decreases, nor adjusting for inflation or require approval by the Director. August 2022 rule changes do not address stringency concerns.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
474.	Whenever the current cost estimate increases to an amount greater than the face amount of a financial instrument currently in use, the owner or operator, within 60 days after the increase, must either cause the face amount to be increased to an amount at least equal to the current cost estimate and submit evidence of such increase to the Director, or obtain other financial responsibility instruments to cover the increase. Whenever the current cost estimate decreases, the face amount of the financial assurance instrument may be reduced to the amount of the current cost estimate only after the owner or operator has received written approval from the Director.	40 CFR §146.85(c)(4)		Missing.	The annual updates must include consideration of inflation. The director can require additional financial assurance if the director does not agree with the estimate.	This provision is missing. Rule was not changed in August 2022; stringency concern remains.
475.	The owner or operator must notify the Director by certified mail of adverse financial conditions such as bankruptcy that may affect the ability to carry out injection well plugging and post-injection site care and site closure.	40 CFR §146.85(d)	**§5.205(d) Notice of adverse financial conditions.** (1) The operator must notify the Commission of adverse financial conditions that may affect the operator's ability to carry out injection well plugging and post-injection storage facility care and closure. An operator must file any notice of bankruptcy in accordance with §3.1(f) of this title (relating to Organization Report; Retention of Records; Notice Requirements). The operator must give such notice by certified mail.	Similar to the CFR.		Similar to CFR; no concerns for stringency. The public commented on 5.205(d)(1), but no change was made in the August 2022 rule.
476.	In the event that the owner or operator or the third party provider of a financial responsibility instrument is going through a bankruptcy, the owner or operator must notify the Director by certified mail of the commencement of a voluntary or involuntary proceeding under Title 11 (Bankruptcy), U.S. Code, naming the owner or operator as debtor, within 10 days after commencement of the proceeding.	40 CFR §146.85(d)(1)	**§5.205(d)(2)** The operator filing a bond must ensure that the bond provides a mechanism for the bond or surety company to give prompt notice to the Commission and the operator of any action filed alleging insolvency or bankruptcy of the surety company or the bank or alleging any violation that would result in suspension or revocation of the surety or bank's charter or license to do business.	Similar intent to the CFR.		No concerns for stringency.
477.	A guarantor of a corporate guarantee must make such a notification to the Director if he/she is named as debtor, as required under the terms of the corporate guarantee.	40 CFR §146.85(d)(2)	No reference found	Missing.		Corporate guarantees are not allowed.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
478.	An owner or operator who fulfills the requirements of paragraph (a) of this section by obtaining a trust fund, surety bond, letter of credit, escrow account, or insurance policy will be deemed to be without the required financial assurance in the event of bankruptcy of the trustee or issuing institution, or a suspension or revocation of the authority of the trustee institution to act as trustee of the institution issuing the trust fund, surety bond, letter of credit, escrow account, or insurance policy. The owner or operator must establish other financial assurance within 60 days after such an event.	40 CFR §146.85(d)(3)	**§5.205(d)(3)** Upon the incapacity of a bank or surety company by reason of bankruptcy, insolvency or suspension, or revocation of its charter or license, the Commission must deem the operator to be without bond coverage. The Commission must issue a notice to any operator who is without bond coverage and must specify a reasonable period to replace bond coverage, not to exceed 60 days.	Similar intent to the CFR.		The state requirement allows 90 days instead of 60 days; this is less stringent than the CFR. August 2022 rule changes addressed stringency concerns. 5.205(d)(3) requires a period of bond coverage not to exceed 60 days.
479.	The owner or operator must provide an adjustment of the cost estimate to the Director within 60 days of notification by the Director, if the Director determines during the annual evaluation of the qualifying financial responsibility instrument(s) that the most recent demonstration is no longer adequate to cover the cost of corrective action (as required by §146.84), injection well plugging (as required by §146.92), post-injection site care and site closure (as required by §146.93), and emergency and remedial response (as required by §146.94).	40 CFR §146.85(e)	**§5.205(c)(2)(E)** The operator of a geologic storage facility must provide to the director annual written updates of the cost estimate to increase or decrease the cost estimate to account for any changes to the AOR and corrective action plan, the emergency response and remedial action plan, the injection well plugging plan, and the post-injection storage facility care and closure plan. The operator must provide to the director upon request an adjustment of the cost estimate if the director has reason to believe that the original demonstration is no longer adequate to cover the cost of injection well plugging and post-injection storage facility care and closure.	Similar to the CFR.	The annual updates must include consideration of inflation. The director can require additional financial assurance if the director does not agree with the estimate.	The requirement for an adjustment is similar; however the state does not identify a deadline. Rule was not changed in August 2022; stringency concern remains.
480.	The Director must approve the use and length of pay-in-periods for trust funds or escrow accounts.	40 CFR §146.85(f)	No reference found	Missing.	Not an option	These instruments are not options in the state rule. No concerns for stringency.
40 CFR §146.86 Injection well construction requirements.						
481.	*General*. The owner or operator must ensure that all Class VI wells are constructed and completed to:	40 CFR §146.86(a)	**§5.203(e)(1)(A) General.** The operator of a GS facility must ensure that all anthropogenic CO_2 injection wells are constructed and completed in a manner that will:	Similar to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
482.	Prevent the movement of fluids into or between USDWs or into any unauthorized zones;	40 CFR §146.86(a)(1)	**§5.203(e)(1)(A)(i)** prevent the movement of injected CO_2 or displaced formation fluids into any unauthorized zones or into any areas where they could endanger USDWs;	Same as the CFR.		
483.	Permit the use of appropriate testing devices and workover tools; and	40 CFR §146.86(a)(2)	**§5.203(e)(1)(A)(ii)** allow the use of appropriate testing devices and workover tools; and	Same as the CFR.		
484.	Permit continuous monitoring of the annulus space between the injection tubing and long string casing.	40 CFR §146.86(a)(3)	**§5.203(e)(1)(A)(iii)** allow continuous monitoring of the annulus space between the injection tubing and long string casing.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
485.	*Casing and Cementing of Class VI Wells.*	40 CFR §146.86(b)	**§5.203(e)(1)(B)** Casing and cementing of anthropogenic CO_2 injection wells.	Same as the CFR.		
486.	Casing and cement or other materials used in the construction of each Class VI well must have sufficient structural strength and be designed for the life of the geologic sequestration project. All well materials must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director. The casing and cementing program must be designed to prevent the movement of fluids into or between USDWs. In order to allow the Director to determine and specify casing and cementing requirements, the owner or operator must provide the following information:	40 CFR §146.86(b)(1)	**§5.203(e)(1)(B)(i)** The operator must ensure that injection wells are cased and the casing cemented in compliance with §3.13 of this title (relating to Casing, Cementing, Drilling, Well Control, and Completion Requirements), in addition to the requirements of this section. **(ii)** Casing, cement, cement additives, and/or other materials used in the construction of each injection well must have sufficient structural strength and must be of sufficient quality and quantity to maintain integrity over the design life of the injection well. All well materials must be suitable for use with fluids with which the well materials may be expected to come into contact and must meet or exceed test standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards as approved by the director. **§5.203(e)(2) Construction information.** The applicant must provide the following information for each well to allow the director to determine whether the proposed well construction and completion design will meet the general performance criteria in paragraph (1) of this subsection:	Same as the CFR.		The public commented on 5.203(e)(1)(B)(ii), but no change was made in the August 2022 rule. Minor August 2022 rule changes do not affect stringency.
487.	Depth to the injection zone(s);	40 CFR §146.86(b)(1)(i)	**§5.203(e)(2)(A)** depth to the injection zone;	Same as the CFR.		
488.	Injection pressure, external pressure, internal pressure, and axial loading;	40 CFR §146.86(b)(1)(ii)	**§5.203(e)(2)(D)** proposed injection rate (intermittent or continuous), maximum proposed surface injection pressure, and maximum proposed volume and/or mass of the CO_2 stream to be injected;			Axial loading is not included as a consideration in the state requirement. Minor August 2022 rule changes do not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
489.	Hole size;	40 CFR §146.86(b)(1)(iii)	**§5.203(e)(2)(B)** hole size;	Same as the CFR.		
490.	Size and grade of all casing strings (wall thickness, external diameter, nominal weight, length, joint specification, and construction material);	40 CFR §146.86(b)(1)(iv)	**§5.203(e)(2)(C)** size and grade of all casing and tubing strings (e.g., wall thickness, external diameter, nominal weight, length, joint specification and construction material, tubing tensile, burst, and collapse strengths);	Same as the CFR.		
491.	Corrosiveness of the carbon dioxide stream and formation fluids;	40 CFR §146.86(b)(1)(v)	**§5.203(e)(2)(F)** a description of the capability of the materials to withstand corrosion when exposed to a combination of the CO_2 stream and formation fluids;	Same as the CFR.		
492.	Down-hole temperatures;	40 CFR §146.86(b)(1)(vi)	**§5.203(e)(2)(G)** down-hole temperatures and pressures;	Same as the CFR.		
493.	Lithology of injection and confining zone(s);	40 CFR §146.86(b)(1)(vii)	**§5.203(e)(2)(H)** lithology of injection and confining zones;	Same as the CFR.		
494.	Type or grade of cement and cement additives; and	40 CFR §146.86(b)(1) (viii)	**§5.203(e)(2)(I)** type or grade of cement and additives;	Same as the CFR.		
495.	Quantity, chemical composition, and temperature of the carbon dioxide stream.	40 CFR §146.86(b)(1)(ix)	**§5.203(e)(2)(J)** chemical composition and temperature of the CO_2 stream;	Same as the CFR.		
496.	Surface casing must extend through the base of the lowermost USDW and be cemented to the surface through the use of a single or multiple strings of casing and cement.	40 CFR §146.86(b)(2)	**§5.203(e)(1)(B)(iii)** Surface casing must extend through the base of the lowermost USDW above the injection zone and must be cemented to the surface.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
497.	At least one long string casing, using a sufficient number of centralizers, must extend to the injection zone and must be cemented by circulating cement to the surface in one or more stages.	40 CFR §146.86(b)(3)	**§5.203(e)(1)(B)(v)** At least one long string casing, using a sufficient number of centralizers, must extend to the injection zone and must be cemented by circulating cement to the surface in one or more stages. The long string casing must isolate the injection zone and other intervals as necessary for the protection of USDWs and to ensure confinement of the injected and formation fluids to the permitted injection zone using cement and/or other isolation techniques. If the long string casing does not extend through the injection zone, another well string or liner must be cemented through the injection zone (for example, a chrome liner).	Same as the CFR.	Technology is constantly evolving. Other equivalent or better isolation technique could be developed. The state would seek EPA approval of any alternate method. Include in MOA or Program Description.	The provision that the long string casing must isolate the injection zone "using cement and/or other isolation techniques" may render this provision less stringent than the CFR. 5.203(e)(1)(B)(v) was changed in the August 2022 rule based on public comment, but the rule changes do not address stringency concerns.
498.	Circulation of cement may be accomplished by staging. The Director may approve an alternative method of cementing in cases where the cement cannot be recirculated to the surface, provided the owner or operator can demonstrate by using logs that the cement does not allow fluid movement behind the well bore.	40 CFR §146.86(b)(4)	**§5.203(e)(1)(B)(iv)** Circulation of cement may be accomplished by staging. The director may approve an alternative method of cementing in cases where the cement cannot be circulated to the surface, provided the applicant can demonstrate by using logs that the cement does not allow fluid movement between the casing and the well bore.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
499.	Cement and cement additives must be compatible with the carbon dioxide stream and formation fluids and of sufficient quality and quantity to maintain integrity over the design life of the geologic sequestration project. The integrity and location of the cement shall be verified using technology capable of evaluating cement quality radially and identifying the location of channels to ensure that USDWs are not endangered.	40 CFR §146.86(b)(5)	**§5.203(e)(1)(B)(ii)** Casing, cement, cement additives, and/or other materials used in the construction of each injection well must have sufficient structural strength and must be of sufficient quality and quantity to maintain integrity over the design life of the injection well. <u>All well materials must be suitable for use with fluids with which the well materials may be expected to come into contact and must meet or exceed test standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards as approved by the director.</u> **(vi)** The applicant must verify the integrity and location of the cement using technology capable of radial evaluation of cement quality and identification of the location of channels to ensure that USDWs will not be endangered.	Similar to the CFR.	Disagree that state rule is less stringent. See underlined language.	The state does not explicitly state that cement and cement additives must be compatible with CO2 and formation fluids. August 2022 rule changes do not address stringency concerns. Other minor changes do not affect stringency.
500.	*Tubing and packer.*	40 CFR §146.86(c)		Possibly missing.	"Other materials" covers anything else, including tubing and packer.	There are no explicit requirements for tubing and packer materials. They may be what is meant by "other materials" in the state rule; if so, this should be clarified. August 2022 rule changes do not address stringency concerns.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
501.	Tubing and packer materials used in the construction of each Class VI well must be compatible with fluids with which the materials may be expected to come into contact and must meet or exceed standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards acceptable to the Director.	40 CFR §146.86(c)(1)	**§5.203(e)(1)(B)(ii)** Casing, cement, cement additives, and/or other materials used in the construction of each injection well must have sufficient structural strength and must be of sufficient quality and quantity to maintain integrity over the design life of the injection well. All well materials must be suitable for use with fluids with which the well materials may be expected to come into contact and must meet or exceed test standards developed for such materials by the American Petroleum Institute, ASTM International, or comparable standards as approved by the director.	Possibly missing	See above	See row 500. Minor August 2022 rule changes do not affect stringency.
502.	All owners or operators of Class VI wells must inject fluids through tubing with a packer set at a depth opposite a cemented interval at the location approved by the Director.	40 CFR §146.86(c)(2)	**§5.203(e)(1)(C)(i)** Tubing and packer. All injection wells must inject fluids through tubing set on a packer. Packers must be set no higher than 100 feet above the top of the permitted injection interval or at a location approved by the director.	Possibly missing		See row 500. 5.203(e)(1)(C)(i) was changed in the August 2022 rule based on public comment to clarify that this provision pertains to more than "mechanical" packers. Does not affect stringency.
503.	In order for the Director to determine and specify requirements for tubing and packer, the owner or operator must submit the following information:	40 CFR §146.86(c)(3)	**§5.203(e)(2)** Construction information. The applicant must provide the following information for each well to allow the director to determine whether the proposed well construction and completion design will meet the general performance criteria in paragraph (1) of this subsection:	Possibly missing	See row 500	See row 500.
504.	Depth of setting;	40 CFR §146.86(c)(3)(i)	**§5.203(e)(2)(E)** type of packer and packer setting depth;	Possibly missing	See above	See row 500.
505.	Characteristics of the carbon dioxide stream (chemical content, corrosiveness, temperature, and density) and formation fluids;	40 CFR §146.86(c)(3)(ii)	**§5.203(e)(2) (F)** a description of the capability of the materials to withstand corrosion when exposed to a combination of the CO_2 stream and formation fluids; **(J)** chemical composition and temperature of the CO_2 stream; and	Possibly missing		See row 500

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
506.	Maximum proposed injection pressure;	40 CFR §146.86(c)(3)(iii)	**§5.203(e)(2)(D)** proposed injection rate (intermittent or continuous), maximum proposed surface injection pressure, and maximum proposed volume and/or mass of the CO_2 stream to be injected;	Possibly missing		See row 500
507.	Maximum proposed annular pressure;	40 CFR §146.86(c)(3)(iv)	No reference	Possibly missing		See row 500
508.	Proposed injection rate (intermittent or continuous) and volume and/or mass of the carbon dioxide stream;	40 CFR §146.86(c)(3)(v)	**§5.203(e)(2)(D)** proposed injection rate (intermittent or continuous), maximum proposed surface injection pressure, and maximum proposed volume and/or mass of the CO_2 stream to be injected;	Possibly missing		See row 500
509.	Size of tubing and casing; and	40 CFR §146.86(c)(3)(vi)	**§5.203(e)(2)(C)** size and grade of all casing and tubing strings (e.g., wall thickness, external diameter, nominal weight, length, joint specification and construction material, tubing tensile, burst, and collapse strengths);	Possibly missing		See row 500
510.	Tubing tensile, burst, and collapse strengths.	40 CFR §146.86(c)(3)(vii)	**§5.203(e)(2)(C)** size and grade of all casing and tubing strings (e.g., wall thickness, external diameter, nominal weight, length, joint specification and construction material, tubing tensile, burst, and collapse strengths);	Possibly missing		See row 500

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.87 Logging, sampling, and testing prior to injection well operation.						
511.	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, and lithology of, and the salinity of any formation fluids in all relevant geologic formations to ensure conformance with the injection well construction requirements under §146.86 and to establish accurate baseline data against which future measurements may be compared. The owner or operator must submit to the Director a descriptive report prepared by a knowledgeable log analyst that includes an interpretation of the results of such logs and tests. At a minimum, such logs and tests must include:	40 CFR §146.87(a)	**§5.203(f) Plan for logging, sampling, and testing of injection wells after permitting but before injection**. The applicant must submit a plan for logging, sampling, and testing of each injection well after permitting but prior to injection well operation. The plan need not include identical logging, sampling, and testing procedures for all wells provided there is a reasonable basis for different procedures. Such plan is not necessary for existing wells being converted to anthropogenic CO_2 injection wells in accordance with this subchapter, to the extent such activities already have taken place. The plan must describe the logs, surveys, and tests to be conducted to verify the depth, thickness, porosity, permeability, and lithology of, and the salinity of any formation fluids in, the formations that are to be used for monitoring, storage, and confinement to assure conformance with the injection well construction requirements set forth in subsection (e) of this section, and to establish accurate baseline data against which future measurements may be compared. The plan must meet the following criteria and must include the following information.	Similar intent to the CFR.	Add to Program Description	Texas allows that identical logging, sampling, and testing procedures for all wells need not be described for each well. Texas describes logs to be performed before the surface and long-string casings are installed but does not require logs during installation of the casings. The state rule says that the logging plan is not necessary for existing wells being converted to Class VI if such activities already have taken place; this appears to apply to all testing including falloff tests and step rate tests, which may be needed to set permit conditions. It is recommended that the program description explain how injection pressures would be based on adequate and recent site data. The public commented on 5.203(f)(1), but no change was made in the August 2022 rule; stringency concern remains.
512.	Deviation checks during drilling on all holes constructed by drilling a pilot hole which is enlarged by reaming or another method. Such checks must be at sufficiently frequent intervals to determine the location of the borehole and to ensure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling; and	40 CFR §146.87(a)(1)	**§5.203(f)(1)(A)** During the drilling of any hole that is constructed by drilling a pilot hole that is enlarged by reaming or another method, the operator must perform deviation checks at sufficiently frequent intervals to determine the location of the borehole and to assure that vertical avenues for fluid movement in the form of diverging holes are not created during drilling.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
513.	Before and upon installation of the surface casing:	40 CFR §146.87(a)(2)	**§5.203(f)(1)(B)** Before surface casing is installed, the operator must run appropriate logs, such as resistivity, spontaneous potential, and caliper logs.	Same as the CFR.	Not sure what logs would be run during installation of surface casing. The requirement is for "before" surface casing is installed. State rule details logs required after surface casing installed,	Texas describes logs to be performed before the surface casing installed but not during installation. Rule was not changed in August 2022; stringency concern remains.
514.	Resistivity, spontaneous potential, and caliper logs before the casing is installed; and	40 CFR §146.87(a)(2)(i)	**§5.203(f)(1)(B)** Before surface casing is installed, the operator must run appropriate logs, such as resistivity, spontaneous potential, and caliper logs.	Same as the CFR.		
515.	A cement bond and variable density log to evaluate cement quality radially, and a temperature log after the casing is set and cemented.	40 CFR §146.87(a)(2)(ii)	**§5.203(f)(1)(C)** After each casing string is set and cemented, the operator must run logs, such as a cement bond log, variable density log, and a temperature log, to ensure proper cementing.	Missing	Cannot run cement logs before surface casing set and cemented. ??	These logs are not required to be run before and upon installation of the surface casing. Rule was not changed in August 2022; stringency concern remains.
516.	Before and upon installation of the long string casing:	40 CFR §146.87(a)(3)	**§5.203(f)(1)(D)** Before long string casing is installed, the operator must run logs appropriate to the geology, such as resistivity, spontaneous potential, porosity, caliper, gamma ray, and fracture finder logs, to gather data necessary to verify the characterization of the geology and hydrology.	Same as the CFR.	See above	Texas describes logs to be performed before the long-string casing is installed but not during installation. Rule was not changed in August 2022; stringency concern remains.
517.	Resistivity, spontaneous potential, porosity, caliper, gamma ray, fracture finder logs, and any other logs the Director requires for the given geology before the casing is installed; and	40 CFR §146.87(a)(3)(i)	**§5.203(f)(1)(D)** Before long string casing is installed, the operator must run logs appropriate to the geology, such as resistivity, spontaneous potential, porosity, caliper, gamma ray, and fracture finder logs, to gather data necessary to verify the characterization of the geology and hydrology.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
518.	A cement bond and variable density log, and a temperature log after the casing is set and cemented.	40 CFR §146.87(a)(3)(ii)	**§5.203(e)(1)(B)(vi)** The applicant must verify the integrity and location of the cement using technology capable of radial evaluation of cement quality and identification of the location of channels to ensure that USDWs will not be endangered.	Missing	See comment above	These logs are not required to be run before and upon installation of the surface casing. Rule was not changed in August 2022; stringency concern remains.
519.	A series of tests designed to demonstrate the internal and external mechanical integrity of injection wells, which may include:	40 CFR §146.87(a)(4)	**§5.203(h) Mechanical integrity testing.** (2) Mechanical integrity testing plan. The applicant must prepare and submit a mechanical integrity testing plan as part of a permit application. The performance tests must be designed to demonstrate the internal and external mechanical integrity of each injection well. These tests may include:	Similar to the CFR.		Similar to CFR; no concerns for stringency.
520.	A pressure test with liquid or gas;	40 CFR §146.87(a)(4)(i)	**§5.203(h)(2)(A)** a pressure test with liquid or inert gas;	Same as the CFR.		
521.	A tracer survey such as oxygen-activation logging;	40 CFR §146.87(a)(4)(ii)	**§5.203(h)(2)(B)** a tracer survey such as oxygen-activation logging;	Same as the CFR.		
522.	A temperature or noise log;	40 CFR §146.87(a)(4)(iii)	**§5.203(h)(2)(C)** a temperature or noise log;	Same as the CFR.		
523.	A casing inspection log; and	40 CFR §146.87(a)(4)(iv)	**§5.203(h)(2)(D)** a casing inspection log; and/or	Same as the CFR.		
524.	Any alternative methods that provide equivalent or better information and that are required by and/or approved of by the Director.	40 CFR §146.87(a)(5)	**§5.203(h)(2)(E**) any alternative method approved by the director, and if necessary by the Administrator of EPA under 40 CFR §146.89(e), that provides equivalent or better information approved by the director.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
525.	The owner or operator must take whole cores or sidewall cores of the injection zone and confining system and formation fluid samples from the injection zone(s), and must submit to the Director a detailed report prepared by a log analyst that includes: well log analyses (including well logs), core analyses, and formation fluid sample information. The Director may accept information on cores from nearby wells if the owner or operator can demonstrate that core retrieval is not possible and that such cores are representative of conditions at the well. The Director may require the owner or operator to core other formations in the borehole.	40 CFR §146.87(b)	**§5.203(f)(3)(B)** The operator must submit analyses of whole cores or sidewall cores representative of the injection zone and confining zone and formation fluid samples from the injection zone. The director may accept data from cores and formation fluid samples from nearby wells or other data if the operator can demonstrate to the director that such data are representative of conditions at the proposed injection well.	Similar intent to the CFR.	State rule requires submission of analysis of cores, formation fluids and logging. The focus is on the injection zone and confining zone, therefore, cores from other formations would not be useful.	The state requirement does not describe the content of the logging report (which is less stringent than the CFR) or accept cores from other formations. Rule was not changed in August 2022; stringency concern remains.
526.	The owner or operator must record the fluid temperature, pH, conductivity, reservoir pressure, and static fluid level of the injection zone(s).	40 CFR §146.87(c)	**§5.203(f)(3)(A)** The operator must record and submit the formation fluid temperature, pH, and conductivity, the reservoir pressure, and the static fluid level of the injection zone.	Same as the CFR.		
527.	At a minimum, the owner or operator must determine or calculate the following information concerning the injection and confining zone(s):	40 CFR §146.87(d)	**§5.203(f)(2)(C)**	Missing.		The state rule does not list the subparts of 146.87(d) together, but they are represented in the rule text.
528.	Fracture pressure;	40 CFR §146.87(d)(1)	**§5.203(f)(2)(C)** The operator must determine or calculate the fracture pressures for the injection and confining zone. The Commission will include in any permit it might issue a limit of 90% of the fracture pressure to ensure that the injection pressure does not exceed the fracture pressure of the injection zone.	Similar intent to the CFR.		The state rule further elaborates on use of fracture pressure testing results. 5.203(f)(2)(C) was changed in the August 2022 rule based on public comment to specify that the 90% safety factor is 90% of the fracture pressure of the injection zone. This is consistent with the CFR and does not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
529.	Other physical and chemical characteristics of the injection and confining zone(s); and	40 CFR §146.87(d)(2)	**§5.203(c)(2)(B)** the depth, areal extent, thickness, mineralogy, porosity, permeability, and capillary pressure of, and the geochemistry of any formation fluids in, the storage reservoir and confining zone and any other relevant geologic formations, including geology/facies changes based on field data, which may include geologic cores, outcrop data, seismic surveys, well logs, and lithologic descriptions, and the analyses of logging, sampling, and testing results used to make such determinations;	Similar intent to the CFR.		The state rule lists out the requested characteristics.
530.	Physical and chemical characteristics of the formation fluids in the injection zone(s).	40 CFR §146.87(d)(3)	**§5.203 (c)(2)(B)**	Similar intent to the CFR.		The state rule lists out the requested characteristics.
531.	Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s):	40 CFR §146.87(e)	**§5.203(f)(2) Testing and determination of hydrogeologic characteristics of injection and confining zone.** (A) Prior to operation, the operator must conduct tests to verify hydrogeologic characteristics of the injection zone.	Same as the CFR.		
532.	A pressure fall-off test; and,	40 CFR §146.87(e)(1)	**§5.203(f)(2)(B)** The operator must perform an initial pressure fall-off or other test and submit to the director a written report of the results of the test, including details of the methods used to perform the test and to interpret the results, all necessary graphs, and the testing log, to verify permeability, injectivity, and initial pressure using water or CO_2.	Similar intent to the CFR.		The state rule further elaborates on pressure fall-off testing. The public commented on 5.203(f)(2)(B), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
533.	A pump test; or	40 CFR §146.87(e)(2) (e) Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s): (1) A pressure fall-off test; and, (2) A pump test; or (3) Injectivity tests.		Missing.	146.87(e) requires EITHER a pump test or injectivity tests. The State rules require injectivity testing.	Texas does not specifically require a pump test. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
534.	Injectivity tests.	40 CFR §146.87(e)(3) (e) Upon completion, but prior to operation, the owner or operator must conduct the following tests to verify hydrogeologic characteristics of the injection zone(s): (1) A pressure fall-off test; and, (2) A pump test; or (3) Injectivity tests.		Missing.	146.87(e) requires EITHER a pump test or injectivity tests. The State rules require injectivity testing. State rule does require injectivity test: 5.203(f)(2) Testing and determination of hydrogeologic characteristics of injection and confining zone. (A) Prior to operation, the operator must conduct tests to verify hydrogeologic characteristics of the injection zone. (B) The operator must perform an initial pressure fall-off or other test and submit to the director a written report of the results of the test, including details of the methods used to perform the test and to interpret the results, all necessary graphs, and the testing log, to verify permeability, injectivity, and initial pressure using water or CO_2.	Texas does not specifically require an injectivity test. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
535.	The owner or operator must provide the Director with the opportunity to witness all logging and testing by this subpart. The owner or operator must submit a schedule of such activities to the Director 30 days prior to conducting the first test and submit any changes to the schedule 30 days prior to the next scheduled test.	40 CFR §146.87(f)	**§5.206(i) Commission witnessing of testing and logging**. The operator must provide the division with the opportunity to witness all planned well workovers, stimulation activities, other than stimulation for formation testing, and testing and logging. The operator must submit a proposed schedule of such activities to the Commission at least 30 days prior to conducting the first such activity and submit notice at least 48 hours in advance of any actual activity. Such activities shall not commence before the end of the 30 days unless authorized by the director.	Similar intent to the CFR.		The state requirement appears more specific than the CFR.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.88 Injection well operating requirements.						
536.	Except during stimulation, the owner or operator must ensure that injection pressure does not exceed 90 percent of the fracture pressure of the injection zone(s) so as to ensure that the injection does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. Pursuant to requirements at §146.82(a)(9), all stimulation programs must be approved by the Director as part of the permit application and incorporated into the permit.	40 CFR §146.88(a)	**§5.206(d)(2)(C)** The operator must comply with a maximum surface injection pressure limit approved by the director and specified in the permit. In approving a maximum surface injection pressure limit, the director must consider the results of well tests and, where appropriate, geomechanical or other studies that assess the risks of tensile failure and shear failure. The director must approve limits that, with a reasonable degree of certainty, will avoid initiation or propagation of fractures in the confining zone or cause otherwise non-transmissive faults or fractures transecting the confining zone to become transmissive. In no case may injection pressure cause movement of injection fluids or formation fluids in a manner that endangers USDWs. The Commission shall include in any permit it might issue a limit of 90 percent of the fracture pressure to ensure that the injection pressure does not initiate new fractures or propagate existing fractures in the injection zone(s). In no case may injection pressure initiate fractures in the confining zone(s) or cause the movement of injection or formation fluids that endangers a USDW. The director may approve a plan for controlled artificial fracturing of the injection zone. **§5.206(i)** requires notice before any stimulation activity **§5.203(e)(4)** requires well stimulation plan §5.203(f)(2)(C) The operator must determine or calculate the fracture pressures for the injection and confining zone. The Commission will include in any permit it might issue a limit of 90% of the fracture pressure to ensure that the injection pressure does not exceed the fracture pressure of the injection zone.	Similar to the CFR.		The Texas pressure limit does not specifically refer to 90% of the fracture pressure of the <u>injection zone</u>. This should be clarified. The public commented on 5.206(d)(2)(C), but no change was made in the August 2022 rule. Instead, the August 2022 update includes the addition of "of the injection zone" to 5.203(f)(2)(C). August 2022 rule changes addressed stringency concerns.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
537.	Injection between the outermost casing protecting USDWs and the well bore is prohibited.	40 CFR §146.88(b)	**§5.206(d)(2)(A)** Injection between the outermost casing protecting USDWs and the well bore is prohibited.	Same as the CFR.		
538.	The owner or operator must fill the annulus between the tubing and the long string casing with a non-corrosive fluid approved by the Director. The owner or operator must maintain on the annulus a pressure that exceeds the operating injection pressure, unless the Director determines that such requirement might harm the integrity of the well or endanger USDWs.	40 CFR §146.88(c)	**§5.206(d)(2)(D)** The operator must fill the annulus between the tubing and the long string casing with a corrosion inhibiting fluid approved by the director. The owner or operator must maintain on the annulus a pressure that exceeds the operating injection pressure, unless the director determines that such requirement might harm the integrity of the well or endanger USDWs	Same as the CFR.		The public commented on 5.206(d)(2)(D), but no change was made in the August 2022 rule.
539.	Other than during periods of well workover (maintenance) approved by the Director in which the sealed tubing-casing annulus is disassembled for maintenance or corrective procedures, the owner or operator must maintain mechanical integrity of the injection well at all times.	40 CFR §146.88(d)	**§5.206(f)(2)** Other than during periods of well workover in which the sealed tubing-casing annulus is of necessity disassembled for maintenance or corrective procedures, the operator must maintain mechanical integrity of the injection well at all times.	Same as the CFR.		
540.	The owner or operator must install and use:	40 CFR §146.88(e)	**§5.206(d)(2)(E)** The operator must install and use continuous recording devices to monitor the injection pressure, and the rate, volume, and temperature of the CO_2 stream. The operator must monitor the pressure on the annulus between the tubing and the long string casing. The operator must continuously record, continuously monitor, or control by a preset high-low pressure sensor switch the wellhead pressure of each injection well.	Same as the CFR.		
541.	Continuous recording devices to monitor: the injection pressure; the rate, volume and/or mass, and temperature of the carbon dioxide stream; and the pressure on the annulus between the tubing and the long string casing and annulus fluid volume; and	40 CFR §146.88(e)(1)	**§5.206(d)(2)(E)** The operator must install and use continuous recording devices to monitor the injection pressure, and the rate, volume, and temperature of the CO_2 stream. The operator must monitor the pressure on the annulus between the tubing and the long string casing. The operator must continuously record, continuously monitor, or control by a preset high-low pressure sensor switch the wellhead pressure of each injection well.	Similar to the CFR.		Texas does not refer to mass of CO2; no concern for stringency. Note: in the August 2022 rule, 5.203(i)(1)(C) now includes mass of CO_2 (see Row 375).

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
542.	Alarms and automatic surface shut-off systems or, at the discretion of the Director, down-hole shut-off systems (e.g., automatic shut-off, check valves) for onshore wells or, other mechanical devices that provide equivalent protection; and	40 CFR §146.88(e)(2)	**§5.206(d)(2)(F)** The operator must comply with the following requirements for alarms and automatic shut-off systems. (i) The operator must install and use alarms and automatic shut-off systems designed to alert the operator and shut-in the well when operating parameters such as annulus pressure, injection rate or other parameters diverge from permitted ranges and/or gradients. On offshore wells, the automatic shut-off systems must be installed down-hole.	Similar intent to the CFR.		Minor differences do not affect stringency.
543.	Alarms and automatic down-hole shut-off systems for wells located offshore but within State territorial waters, designed to alert the operator and shut-in the well when operating parameters such as annulus pressure, injection rate, or other parameters diverge beyond permitted ranges and/or gradients specified in the permit.	40 CFR §146.88(e)(3)	**§5.206(d)(2)(F)** The operator must comply with the following requirements for alarms and automatic shut-off systems. (i) The operator must install and use alarms and automatic shut-off systems designed to alert the operator and shut-in the well when operating parameters such as annulus pressure, injection rate or other parameters diverge from permitted ranges and/or gradients. On offshore wells, the automatic shut-off systems must be installed down-hole.	Similar intent to the CFR.		Minor differences do not affect stringency.
544.	If a shutdown (i.e., down-hole or at the surface) is triggered or a loss of mechanical integrity is discovered, the owner or operator must immediately investigate and identify as expeditiously as possible the cause of the shutoff. If, upon such investigation, the well appears to be lacking mechanical integrity, or if monitoring required under paragraph (e) of this section otherwise indicates that the well may be lacking mechanical integrity, the owner or operator must:	40 CFR §146.88(f)	**§5.206(d)(2)(F)(ii)** If an automatic shutdown is triggered or a loss of mechanical integrity is discovered, the operator must immediately investigate and identify as expeditiously as possible the cause. If, upon investigation, the well appears to be lacking mechanical integrity, or if monitoring otherwise indicates that the well may be lacking mechanical integrity, the operator must:	Same as the CFR.		
545.	Immediately cease injection;	40 CFR §146.88(f)(1)	**§5.206(d)(2)(F)(ii)(I)** immediately cease injection;	Same as the CFR.		
546.	Take all steps reasonably necessary to determine whether there may have been a release of the injected carbon dioxide stream or formation fluids into any unauthorized zone;	40 CFR §146.88(f)(2)	**§5.206(d)(2)(F)(ii)(II)** take all steps reasonably necessary to determine whether there may have been a release of the injected CO_2 stream into any unauthorized zone;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
547.	Notify the Director within 24 hours;	40 CFR §146.88(f)(3)	**§5.206(d)(2)(F)(ii)(III)** notify the director as soon as practicable, but within 24 hours;	Same as the CFR.		
548.	Restore and demonstrate mechanical integrity to the satisfaction of the Director prior to resuming injection; and	40 CFR §146.88(f)(4)	**§5.206(d)(2)(F)(ii)(IV)** restore and demonstrate mechanical integrity to the satisfaction of the director prior to resuming injection; and	Same as the CFR.		
549.	Notify the Director when injection can be expected to resume.	40 CFR §146.88(f)(5)	**§5.206(d)(2)(F)(ii)(V)** notify the director when injection can be expected to resume.	Same as the CFR.		
40 CFR §146.89 Mechanical integrity.						
550.	A Class VI well has mechanical integrity if:	40 CFR §146.89(a)	**§5.102(35)(A)** An anthropogenic CO_2 injection well has mechanical integrity if:	Same as the CFR.		The public commented on 5.102(35), but no change was made in the August 2022 rule.
551.	There is no significant leak in the casing, tubing, or packer; and	40 CFR §146.89(a)(1)	**§5.102(35)(A)** (i) there is no significant leak in the casing, tubing, or packer; and (ii) there is no significant fluid movement into a stratum containing an underground source of drinking water through channels adjacent to the injection well bore as a result of operation of the injection well.	Same as the CFR.		
552.	There is no significant fluid movement into a USDW through channels adjacent to the injection well bore.	40 CFR §146.89(a)(2)		Same as the CFR.		
553.	To evaluate the absence of significant leaks under paragraph (a)(1) of this section, owners or operators must, following an initial annulus pressure test, continuously monitor injection pressure, rate, injected volumes; pressure on the annulus between tubing and long-string casing; and annulus fluid volume as specified in §146.88 (e);	40 CFR §146.89(b)	**§5.203(h)(1)(C)** Following an initial annulus pressure test, the operator must continuously monitor injection pressure, rate, temperature, injected volumes and mass, and pressure on the annulus between tubing and long string casing to confirm that the injected fluids are confined to the injection zone. If mass is determined using volume, the operator must provide calculations.	Similar intent to the CFR.		Minor differences do not affect stringency. August 2022 rule changes do not affect stringency.
554.	At least once per year, the owner or operator must use one of the following methods to determine the absence of significant fluid movement under paragraph (a)(2) of this section:	40 CFR §146.89(c)	**§5.203(h)(1)(D)** At least once per year until the injection well is plugged, the operator must confirm the absence of significant fluid movement into a USDW through channels adjacent to the injection wellbore (external integrity) using a method approved by the director (e.g., diagnostic surveys such as oxygen-activation logging or temperature or noise logs).	Same as the CFR.		The public commented on 5.203(h)(1)(D), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
555.	An approved tracer survey such as an oxygen-activation log; or	40 CFR §146.89(c)(1)	**§5.203(h)(1)(D)** At least once per year until the injection well is plugged, the operator must confirm the absence of significant fluid movement into a USDW through channels adjacent to the injection wellbore (external integrity) using a method approved by the director (e.g., diagnostic surveys such as oxygen-activation logging or temperature or noise logs). **§5.203(h)(2) Mechanical integrity testing plan.** The applicant must prepare and submit a mechanical integrity testing plan as part of a permit application. The performance tests must be designed to demonstrate the internal and external mechanical integrity of each injection well. These tests may include: (B) a tracer survey such as oxygen-activation logging; (C) a temperature or noise log; (D) a casing inspection log; and/or	Same as the CFR.		
556.	A temperature or noise log.	40 CFR §146.89(c)(2)		Same as the CFR.		
557.	If required by the Director, at a frequency specified in the testing and monitoring plan required at §146.90, the owner or operator must run a casing inspection log to determine the presence or absence of corrosion in the long-string casing.	40 CFR §146.89(d)		Similar to the CFR.		Similar to CFR; no concerns for stringency.
558.	The Director may require any other test to evaluate mechanical integrity under paragraphs (a)(1) or (a)(2) of this section. Also, the Director may allow the use of a test to demonstrate mechanical integrity other than those listed above with the written approval of the Administrator. To obtain approval for a new mechanical integrity test, the Director must submit a written request to the Administrator setting forth the proposed test and all technical data supporting its use. The Administrator may approve the request if he or she determines that it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the Administrator will be published in the *Federal Register* and may be used in all States in accordance with applicable State law unless its use is restricted at the time of approval by the Administrator.	40 CFR §146.89(e)	**§5.203(h)(2)(E)** any alternative method approved by the director, and if necessary by the Administrator of EPA under 40 CFR §146.89(e), that provides equivalent or better information approved by the director.	Similar intent to the CFR.		The state rule does not describe the process for obtaining approval for new mechanical integrity tests; however these would be approved by EPA so there is no concern for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
559.	In conducting and evaluating the tests enumerated in this section or others to be allowed by the Director, the owner or operator and the Director must apply methods and standards generally accepted in the industry. When the owner or operator reports the results of mechanical integrity tests to the Director, he/she shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the Director must review monitoring and other test data submitted since the previous evaluation.	40 CFR §146.89(f)	**§5.207 Reporting and Record-Keeping** (a) The operator of a geologic storage facility must provide, at a minimum, the following reports to the director and retain the following information. (1) Test records. The operator must file a complete record of all tests in duplicate with the district office within 30 days after the testing. In conducting and evaluating the tests enumerated in this subchapter or others to be allowed by the director, the operator and the director must apply methods and standards generally accepted in the industry. When the operator reports the results of mechanical integrity tests to the director, the operator must include a description of any tests and methods used. In making this evaluation, the director must review monitoring and other test data submitted since the previous evaluation.	Same as the CFR.		The public commented on 5.207(a)(1), but no change was made in the August 2022 rule.
560.	The Director may require additional or alternative tests if the results presented by the owner or operator under paragraphs (a) through (d) of this section are not satisfactory to the Director to demonstrate that there is no significant leak in the casing, tubing, or packer, or to demonstrate that there is no significant movement of fluid into a USDW resulting from the injection activity as stated in paragraphs (a)(1) and (2) of this section.	40 CFR §146.89(g)	**§5.206(f)(4)** The director may require additional or alternative tests if the results presented by the operator do not demonstrate to the director that there is no significant leak in the casing, tubing, or packer or movement of fluid into or between formations containing USDWs resulting from the injection activity.	Similar to the CFR.		Similar to CFR; no concerns for stringency.

	Federal Requirement	Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.90 Testing and monitoring requirements.						
561.	The owner or operator of a Class VI well must prepare, maintain, and comply with a testing and monitoring plan to verify that the geologic sequestration project is operating as permitted and is not endangering USDWs. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The testing and monitoring plan must be submitted with the permit application, for Director approval, and must include a description of how the owner or operator will meet the requirements of this section, including accessing sites for all necessary monitoring and testing during the life of the project. Testing and monitoring associated with geologic sequestration projects must, at a minimum, include:	40 CFR §146.90	**§5.206(e)(1)** The operator of an anthropogenic CO_2 injection well must maintain and comply with the approved monitoring, sampling, and testing plan to verify that the geologic storage facility is operating as permitted and that the injected fluids are confined to the injection zone. **§5.206(a)** Each condition applicable to a permit shall be incorporated into the permit either expressly or by reference. If incorporated by reference, a specific citation to the rules in this chapter shall be given in the permit. The requirements listed in this section are directly enforceable regardless of whether the requirement is a condition of the permit. **§5.203(j) Plan for monitoring, sampling, and testing after initiation of operation.** (1) The applicant must submit a monitoring, sampling, and testing plan for verifying that the geologic storage facility is operating as permitted and that the injected fluids are confined to the injection zone. (2) The plan must include the following:	Similar intent to the CFR.		Minor differences do not affect stringency.
562.	Analysis of the carbon dioxide stream with sufficient frequency to yield data representative of its chemical and physical characteristics;	40 CFR §146.90(a)	**§5.203(j)(2)(A)** the analysis of the CO_2 stream prior to injection with sufficient frequency to yield data representative of its chemical and physical characteristics;	Same as the CFR.		
563.	Installation and use, except during well workovers as defined in §146.88(d), of continuous recording devices to monitor injection pressure, rate, and volume; the pressure on the annulus between the tubing and the long string casing; and the annulus fluid volume added;	40 CFR §146.90(b)	**§5.203(j)(2)(B)** the installation and use of continuous recording devices to monitor injection pressure, rate, temperature, and volume and/or mass, and the pressure on the annulus between the tubing and the long string casing, except during workovers;	Same as the CFR.		Minor August 2022 rule changes do not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
564.	Corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion, which must be performed on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in §146.86(b), by:	40 CFR §146.90(c)	**§5.203(j)(2)(C)** after initiation of injection, the performance on a semi-annual basis of corrosion monitoring of the well materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion to ensure that the well components meet the minimum standards for material strength and performance set forth in subsection (e)(1)(A) of this section. The operator must report the results of such monitoring annually. Corrosion monitoring may be accomplished by:	Similar intent to the CFR.	&&	The state rule requires semi-annual corrosion monitoring (rather than quarterly monitoring as described in the CFR) and annual reporting (instead of semi-annual reporting). This is less stringent than the CFR. Rule was not changed in August 2022; stringency concern remains.
565.	Analyzing coupons of the well construction materials placed in contact with the carbon dioxide stream; or	40 CFR §146.90(c)(1)	**§5.203(j)(2)(C)(i)** analyzing coupons of the well construction materials in contact with the CO_2 stream;	Same as the CFR.		
566.	Routing the carbon dioxide stream through a loop constructed with the material used in the well and inspecting the materials in the loop; or	40 CFR §146.90(c)(2)	**§5.203(j)(2)(C)(ii)** routing the CO_2 stream through a loop constructed with the materials used in the well and inspecting the materials in the loop; or	Same as the CFR.		
567.	Using an alternative method approved by the Director;	40 CFR §146.90(c)(3)	**§5.203(j)(2)(C)(iii)** using an alternative method, materials, or time period approved by the director;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
568.	Periodic monitoring of the ground water quality and geochemical changes above the confining zone(s) that may be a result of carbon dioxide movement through the confining zone(s) or additional identified zones including:	40 CFR §146.90(d)	**§5.203(j)(2)(D)** monitoring of geochemical and geophysical changes, including: (i) periodic sampling of the fluid temperature, pH, conductivity, reservoir pressure and static fluid level of the injection zone and monitoring for pressure changes, and for changes in geochemistry, in a permeable and porous formation near to and above the top confining zone; (ii) periodic monitoring of the quality and geochemistry of an USDW within the AOR and the formation fluid in a permeable and porous formation near to and above the top confining zone to detect any movement of the injected CO_2 through the confining zone into that monitored formation;	Similar intent to the CFR.	The monitoring parameters are minimums. The State rules allow the director to include any permit condition necessary, which would include other parameters if determined to be necessary based on site-specific conditions (see 5.206(e)(3) The director may require additional monitoring as necessary to support, upgrade, and improve computational modeling of the AOR evaluation and to determine compliance with the requirement that the injection activity not allow movement of fluid that would endanger USDWs.	The state identifies specific ground water monitoring parameters. By identifying parameters to monitor, it may provide less flexibility for monitoring programs that are based on site-specific conditions.
569.	The location and number of monitoring wells based on specific information about the geologic sequestration project, including injection rate and volume, geology, the presence of artificial penetrations, and other factors; and	40 CFR §146.90(d)(1)	**§5.203(j)(2)(D)(iii)** the location and number of monitoring wells justified on the basis of the AOR, injection rate and volume, geology, and the presence of artificial penetrations and other factors specific to the geologic storage facility; and	Similar to the CFR.		
570.	The monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data that has been collected under §146.82(a)(6) and on any modeling results in the area of review evaluation required by §146.84(c).	40 CFR §146.90(d)(2)	**§5.203(j)(2)(D)(iv)** the monitoring frequency and spatial distribution of monitoring wells based on baseline geochemical data collected under subsection (c)(2) of this section and any modeling results in the AOR evaluation;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
571.	A demonstration of external mechanical integrity pursuant to §146.89(c) at least once per year until the injection well is plugged; and, if required by the Director, a casing inspection log pursuant to requirements at §146.89(d) at a frequency established in the testing and monitoring plan;	40 CFR §146.90(e)	**§5.203(h)(1)(D)** At least once per year until the injection well is plugged, the operator must confirm the absence of significant fluid movement into a USDW through channels adjacent to the injection wellbore (external integrity) using a method approved by the director (e.g., diagnostic surveys such as oxygen-activation logging or temperature or noise logs). **§5.203(h)(2) Mechanical integrity testing plan.** The applicant must prepare and submit a mechanical integrity testing plan as part of a permit application. The performance tests must be designed to demonstrate the internal and external mechanical integrity of each injection well. These tests may include: (D) a casing inspection log; and/or	Similar to the CFR.		
572.	A pressure fall-off test at least once every five years unless more frequent testing is required by the Director based on site-specific information;	40 CFR §146.90(f)	**§5.203(j)(2)(F)** A pressure fall-off test at least once every five years unless more frequent testing is required by the director based on site-specific information; and	Same as the CFR.		The public commented on 5.203(j)(2)(F), but no change was made in the August 2022 rule.
573.	Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using:	40 CFR §146.90(g)	**§5.203(j)(2)(E)** tracking the extent of the CO_2 plume and the position of the pressure front by using indirect, geophysical techniques, which may include seismic, electrical, gravity, or electromagnetic surveys and/or down-hole CO_2 detection tools;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
574.	Direct methods in the injection zone(s); and,	40 CFR §146.90(g)(1)		Missing.	5.203(j)(2)(D) requires that the plan for monitoring, sampling and testing include monitoring of geochemical and geophysical changes, including: (i) periodic sampling of the fluid temperature, pH, conductivity, reservoir pressure and static fluid level of the injection zone …	Texas does not require direct monitoring within the injection zone. This is less stringent than the CFR. Rule was not changed in August 2022; stringency concern remains.
575.	Indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate;	40 CFR §146.90(g)(2)	**§5.203(j)(2)(E)** tracking the extent of the CO_2 plume and the position of the pressure front by using indirect, geophysical techniques, which may include seismic, electrical, gravity, or electromagnetic surveys and/or down-hole CO_2 detection tools;	Same as the CFR.		
576.	The Director may require surface air monitoring and/or soil gas monitoring to detect movement of carbon dioxide that could endanger a USDW.	40 CFR §146.90(h)	**§5.203(j)(2)(G)** additional monitoring as the director may determine to be necessary to support, upgrade, and improve computational modeling of the AOR evaluation and to determine compliance with the requirements that the injection activity not allow the movement of fluid containing any contaminant into USDWs and that the injected fluid remain within the permitted interval.	Missing.	State UIC regulations do not require soil gas or surface air monitoring. Duplicative of requirements under 40 CFR part 98.	See Texas Notes. No concerns for stringency; however the evaluation of this monitoring, if necessary to evaluate project performance, should be described in the program description. Minor August 2022 rule changes do not affect stringency.
577.	Design of Class VI surface air and/or soil gas monitoring must be based on potential risks to USDWs within the area of review;	40 CFR §146.90(h)(1)	No reference found	Missing.	State UIC regulations do not require soil gas or surface air monitoring. Duplicative of requirements under 40 CFR part 98.	See row 576.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
578.	The monitoring frequency and spatial distribution of surface air monitoring and/or soil gas monitoring must be decided using baseline data, and the monitoring plan must describe how the proposed monitoring will yield useful information on the area of review delineation and/or compliance with standards under §144.12 of this chapter;	40 CFR §146.90(h)(2)	No reference found	Missing.	State UIC regulations do not require soil gas or surface air monitoring. Duplicative of requirements under 40 CFR part 98.	See row 576.
579.	If an owner or operator demonstrates that monitoring employed under §§98.440 to 98.449 of this chapter (Clean Air Act, 42 U.S.C. 7401 et seq.) accomplishes the goals of (h)(1) and (2) of this section, and meets the requirements pursuant to §146.91(c)(5), a Director that requires surface air/soil gas monitoring must approve the use of monitoring employed under §§98.440 to 98.449 of this chapter. Compliance with §§98.440 to 98.449 of this chapter pursuant to this provision is considered a condition of the Class VI permit;	40 CFR §146.90(h)(3)	No reference found	Missing.	State UIC regulations do not require soil gas or surface air monitoring. Duplicative of requirements under 40 CFR part 98.	See row 576.
580.	Any additional monitoring, as required by the Director, necessary to support, upgrade, and improve computational modeling of the area of review evaluation required under §146.84(c) and to determine compliance with standards under §144.12 of this chapter;	40 CFR §146.90(i)	**§5.203(j)(2)(G)** additional monitoring as the director may determine to be necessary to support, upgrade, and improve computational modeling of the AOR evaluation and to determine compliance with the requirements that the injection activity not allow the movement of fluid containing any contaminant into USDWs and that the injected fluid remain within the permitted interval.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
581.	The owner or operator shall periodically review the testing and monitoring plan to incorporate monitoring data collected under this subpart, operational data collected under §146.88, and the most recent area of review reevaluation performed under §146.84(e). In no case shall the owner or operator review the testing and monitoring plan less often than once every five years. Based on this review, the owner or operator shall submit an amended testing and monitoring plan or demonstrate to the Director that no amendment to the testing and monitoring plan is needed. Any amendments to the testing and monitoring plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:	40 CFR §146.90(j)	**§ 5.207(a)(2)(D) Annual reports.** The operator must submit an annual report detailing: (vi) The operator must maintain and update required plans in accordance with the provisions of this subchapter. (I) Operators must submit an annual statement, signed by an appropriate company official, confirming that the operator has: (-a-) reviewed the monitoring and operational data that are relevant to a decision on whether to reevaluate the AOR and the monitoring and operational data that are relevant to a decision on whether to update an approved plan required by §5.203 or §5.206 of this title; and (-b-) determined whether any updates were warranted by material change in the monitoring and operational data or in the evaluation of the monitoring and operational data by the operator. (II) Operators must submit either the updated plan or a summary of the modifications for each plan for which an update the operator determined to be warranted pursuant to subclause (I) of this clause. The director may require submission of copies of any updated plans and/or additional information regarding whether or not updates of any particular plans are warranted.	Similar intent to the CFR.		The text of the state requirement implies that the testing and monitoring plan is reviewed, at minimum, on an annual basis. No concerns for stringency.
582.	Within one year of an area of review reevaluation;	40 CFR §146.90(j)(1)	**§5.207(a)(2)(D)**	Similar intent to the CFR.		See above row.
583.	Following any significant changes to the facility, such as addition of monitoring wells or newly permitted injection wells within the area of review, on a schedule determined by the Director; or	40 CFR §146.90(j)(2)	**§5.207(a)(3)** The director may require the revision of any required plan following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the director or whenver the director determines that such a revision is necessary to comply with the requirements of this subchapter.	Same as the CFR.	Thank you	There is a minor typo in the state rule: “whenver.”

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
584.	When required by the Director.	40 CFR §146.90(j)(3)	**§5.207(a)(3)** The director may require the revision of any required plan following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the director or whenver the director determines that such a revision is necessary to comply with the requirements of this subchapter.	Same as the CFR.	Thank you	There is a minor typo in the state rule: "whenver."
585.	A quality assurance and surveillance plan for all testing and monitoring requirements.	40 CFR §146.90(k)	**§5.203(a)(4) Reports.** An applicant must ensure that all descriptive reports are prepared by a qualified and knowledgeable person and include an interpretation of the results of all logs, surveys, sampling, and tests required in this subchapter. The applicant must include in the application a quality assurance and surveillance plan for all testing and monitoring, which includes, at a minimum, validation of the analytical laboratory data, calibration of field instruments, and an explanation of the sampling and data acquisition techniques.	Same as the CFR.		
40 CFR §146.91 Reporting requirements.						
586.	The owner or operator must, at a minimum, provide, as specified in paragraph (e) of this section, the following reports to the Director, for each permitted Class VI well:	40 CFR §146.91	**§5.207 Reporting and Record-Keeping** (a) The operator of a geologic storage facility must provide, at a minimum, the following reports to the director and retain the following information.	Same as the CFR.		
587.	Semi-annual reports containing:	40 CFR §146.91(a)	**§5.207(a)(2)(C) Semi-annual report.** The operator must report:	Same as the CFR.		
588.	Any changes to the physical, chemical, and other relevant characteristics of the carbon dioxide stream from the proposed operating data;	40 CFR §146.91(a)(1)	**§5.207(a)(2)(C)(ii)** changes to the source as well as the physical, chemical, and other relevant characteristics of the CO_2 stream from the proposed operating data;	Same as the CFR.		August 2022 rule changes do not affect stringency.
589.	Monthly average, maximum, and minimum values for injection pressure, flow rate and volume, and annular pressure;	40 CFR §146.91(a)(2)	**§5.207(a)(2)(C)(iii)** monthly average, maximum and minimum values for injection pressure, flow rate, temperature, and volume and/or mass, and annular pressure;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
590.	A description of any event that exceeds operating parameters for annulus pressure or injection pressure specified in the permit;	40 CFR §146.91(a)(3)	**§5.207(a)(2)(C)(v)** a description of any event that significantly exceeds operating parameters for annulus pressure or injection pressure as specified in the permit;	Same as the CFR.		
591.	A description of any event which triggers a shut-off device required pursuant to §146.88(e) and the response taken;	40 CFR §146.91(a)(4)	**§5.207(a)(2)(C)(vi)** a description of any event that triggers a shutdown device and the response taken; and	Same as the CFR.		
592.	The monthly volume and/or mass of the carbon dioxide stream injected over the reporting period and the volume injected cumulatively over the life of the project;	40 CFR §146.91(a)(5)	**§5.207(a)(2)(C)(iii)** monthly average, maximum and minimum values for injection pressure, flow rate, temperature, and volume and/or mass, and annular pressure;	Similar to the CFR.	The State can calculate the cumulative volumes from the information required to be submitted by the permittee.	The state does not require reporting of cumulative volumes injected. The state requirement here combines 146.91(a)(2) and (5). August 2022 rule changes do not address stringency concerns.
593.	Monthly annulus fluid volume added; and	40 CFR §146.91(a)(6)	**§5.207(a)(2)(C)(iv)** monthly annulus fluid volume added;	Same as the CFR.		
594.	The results of monitoring prescribed under §146.90.	40 CFR §146.91(a)(7)	**§5.207(a)(2)(C)(vii)** the results of monitoring prescribed under §5.206(e) of this title (relating to Permit Standards).	Same as the CFR.		
595.	Report, within 30 days, the results of:	40 CFR §146.91(b)	**§5.207(a)(2)(B)** Report within 30 days. The operator must report:	Same as the CFR.		
596.	Periodic tests of mechanical integrity;	40 CFR §146.91(b)(1)	**§5.207(a)(2)(B)(i)** the results of periodic tests for mechanical integrity;	Same as the CFR.		
597.	Any well workover; and,	40 CFR §146.91(b)(2)	**§5.207(a)(2)(B)(iii)** a description of any well workover.	Same as the CFR.		
598.	Any other test of the injection well conducted by the permittee if required by the Director.	40 CFR §146.91(b)(3)	**§5.207(a)(2)(B)(ii)** the results of any other test of the injection well conducted by the operator if required by the director;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
599.	Report, within 24 hours:	40 CFR §146.91(c)	**§5.207(a)(2)(A) Report within 24 hours.** The operator must report to the appropriate district office the discovery of any significant pressure changes or other monitoring data that indicate the presence of leaks in the well or the lack of confinement of the injected gases to the geologic storage reservoir. Such report must be made orally as soon as practicable, but within 24 hours, following the discovery of the leak, and must be confirmed in writing within five working days.	Same as the CFR.		
600.	Any evidence that the injected carbon dioxide stream or associated pressure front may cause an endangerment to a USDW;	40 CFR §146.91(c)(1)	**§5.207(a)(2)(A) Report within 24 hours.** The operator must report to the appropriate district office the discovery of any significant pressure changes or other monitoring data that indicate the presence of leaks in the well or the lack of confinement of the injected gases to the geologic storage reservoir. Such report must be made orally as soon as practicable, but within 24 hours, following the discovery of the leak, and must be confirmed in writing within five working days.	Similar intent to the CFR.		Protection of USDWs is not stated as the primary goal of this requirement; however operators must report on evidence of a loss of containment. No concern for stringency.
601.	Any noncompliance with a permit condition, or malfunction of the injection system, which may cause fluid migration into or between USDWs;	40 CFR §146.91(c)(2)	**§5.207(a)(2)(A) Report within 24 hours.** The operator must report to the appropriate district office the discovery of any significant pressure changes or other monitoring data that indicate the presence of leaks in the well or the lack of confinement of the injected gases to the geologic storage reservoir. Such report must be made orally as soon as practicable, but within 24 hours, following the discovery of the leak, and must be confirmed in writing within five working days.	Similar intent to the CFR.		The state requirement does not specifically require reporting of noncompliance or malfunction.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
602.	Any triggering of a shut-off system (i.e., down-hole or at the surface);	40 CFR §146.91(c)(3)	**§5.206(c)(2)(F)(ii)** If an automatic shutdown is triggered or a loss of mechanical integrity is discovered, the operator must immediately investigate and identify as expeditiously as possible the cause. If, upon investigation, the well appears to be lacking mechanical integrity, or if monitoring otherwise indicates that the well may be lacking mechanical integrity, the operator must: (III) notify the director as soon as practicable, but within 24 hours;	Similar intent to the CFR.		The state rule does not refer to down-hole or surface shut downs; this likely does not affect stringency.
603.	Any failure to maintain mechanical integrity; or.	40 CFR §146.91(c)(4)	**§5.206(c)(2)(F)(ii)** If an automatic shutdown is triggered or a loss of mechanical integrity is discovered, the operator must immediately investigate and identify as expeditiously as possible the cause. If, upon investigation, the well appears to be lacking mechanical integrity, or if monitoring otherwise indicates that the well may be lacking mechanical integrity, the operator must: (III) notify the director as soon as practicable, but within 24 hours;	Similar intent to the CFR.		Similar to CFR; no concerns for stringency.
604.	Pursuant to compliance with the requirement at §146.90(h) for surface air/soil gas monitoring or other monitoring technologies, if required by the Director, any release of carbon dioxide to the atmosphere or biosphere.	40 CFR §146.91(c)(5)	No reference found	Missing.	State regulations do not require soil gas monitoring for UIC wells	See Texas notes. No concerns for stringency; however the evaluation of this monitoring, if necessary to evaluate project performance, should be described in the program description.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
605.	Owners or operators must notify the Director in writing 30 days in advance of:	40 CFR §146.91(d)	**§5.207(a)(2)(B) Report within 30 days.** The operator must report: **§5.206(i) Commission witnessing of testing and logging.** The operator must provide the division with the opportunity to witness all planned well workovers, stimulation activities, other than stimulation for formation testing, and testing and logging. The operator must submit a proposed schedule of such activities to the Commission at least 30 days prior to conducting the first such activity and submit notice at least 48 hours in advance of any actual activity. Such activities shall not commence before the end of the 30 days unless authorized by the director.	Same as the CFR.		
606.	Any planned well workover;	40 CFR §146.91(d)(1)	**§5.207(a)(2)(B)(iii)** a description of any well workover. **§5.206(i)**	Same as the CFR.		
607.	Any planned stimulation activities, other than stimulation for formation testing conducted under §146.82; and	40 CFR §146.91(d)(2)	**§5.206(i)**	Same as the CFR.		
608.	Any other planned test of the injection well conducted by the permittee.	40 CFR §146.91(d)(3)	**§5.207(a)(2)(B)(i)** the results of periodic tests for mechanical integrity; **(ii)** the results of any other test of the injection well conducted by the operator if required by the director; and **§5.206(i)**	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
609.	Regardless of whether a State has primary enforcement responsibility, owners or operators must submit all required reports, submittals, and notifications under subpart H of this part to EPA in an electronic format approved by EPA.	40 CFR §146.91(e)	**§5.203(a)(1)(A) Form and filing.** Each applicant for a permit to construct and operate a geologic storage facility must file an application with the division in Austin on a form prescribed by the Commission. The applicant must file the application and all attachments with the division and with EPA Region 6 in an electronic format approved by EPA. On the same date, the applicant must file one copy with each appropriate district office and one copy with the Executive Director of the Texas Commission on Environmental Quality. **§5.207(b)(2)** The operator must submit all required reports, submittals, and notifications under this subchapter to the director and to the Environmental Protection Agency in an electronic format approved by the director.	Same as the CFR.		
610.	Records shall be retained by the owner or operator as follows:	40 CFR §146.91(f)		Missing.		See below row. Rule was not changed in August 2022; stringency concern remains.
611.	All data collected under §146.82 for Class VI permit applications shall be retained throughout the life of the geologic sequestration project and for 10 years following site closure.	40 CFR §146.91(f)(1)	**§5.206(m) Retention of records**. The operator must retain for 10 years following storage facility closure records collected during the post-injection storage facility care period. The operator must deliver the records to the director at the conclusion of the retention period, and the records must thereafter be retained at the Austin headquarters of the Commission.	Missing	See line 430	There is no requirement to retain data collected to prepare the permit application. This is less stringent than the CFR. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
612.	Data on the nature and composition of all injected fluids collected pursuant to §146.90(a) shall be retained until 10 years after site closure. The Director may require the owner or operator to deliver the records to the Director at the conclusion of the retention period.	40 CFR §146.91(f)(2)	**§5.206(k)(6) Storage facility closure report**. Once the director has authorized storage facility closure, the operator must submit a storage facility closure report within 90 days that must thereafter be retained by the Commission in Austin. The report must include the following information: (C) records reflecting the nature, composition, volume and mass of the CO_2 stream. If mass is determined using volume, the operator must provide calculations. **§5.206(m) Retention of records.** The operator must retain for 10 years following storage facility closure records collected during the post-injection storage facility care period. The operator must deliver the records to the director at the conclusion of the retention period, and the records must thereafter be retained at the Austin headquarters of the Commission.	Missing.	The state regulations require the operator to provide to these records to the Commission with the closure report. In order to do this, the operator must retain the records. Add to Program description	See Texas notes. No concerns for stringency. However, the program description should describe the record retention process if it is not included in the regulations. August 2022 rule changes do not address concerns about record retention noted above.
613.	Monitoring data collected pursuant to §146.90(b) through (i) shall be retained for 10 years after it is collected.	40 CFR §146.91(f)(3)	**§5.206(k)(6)** **§5.207(e) Record retention**. The operator must retain all wellhead pressure records, metering records, and integrity test results for at least 10 years. The operator must retain all documentation of good faith claim to necessary and sufficient property rights to operate the geologic storage facility until the director issues the final certificate of closure in accordance with §5.206(k)(7) of this title.	Missing.	Add to Program descriptimon	See row 612.
614.	Well plugging reports, post-injection site care data, including, if appropriate, data and information used to develop the demonstration of the alternative post-injection site care timeframe, and the site closure report collected pursuant to requirements at §§146.93(f) and (h) shall be retained for 10 years following site closure.	40 CFR §146.91(f)(4)	**§5.203(k), §5.206(j) and §5.206(k)(6)**	Missing.	Add to Program description	See row 612.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
615.	The Director has authority to require the owner or operator to retain any records required in this subpart for longer than 10 years after site closure.	40 CFR §146.91(f)(5)	No reference found	Missing.	The state rule requires the operator to submit the information to the Commission, where the records are retained for as long as the Commission deems necessary. Add to Program Description	See row 612.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
40 CFR §146.92 Injection well plugging.						
616.	Prior to the well plugging, the owner or operator must flush each Class VI injection well with a buffer fluid, determine bottomhole reservoir pressure, and perform a final external mechanical integrity test.	40 CFR §146.92(a)	**§5.203(k) Well plugging plan**. The applicant must submit a well plugging plan for all injection wells and monitoring wells that penetrate the base of usable quality water that includes the following: (2) proposals for activities to be undertaken prior to plugging an injection well, specifically: (A) flushing each injection well with a buffer fluid; (B) performing tests or measures to determine bottomhole reservoir pressure; (C) performing final tests to assess mechanical integrity;	Same as the CFR.		
617.	*Well Plugging Plan.* The owner or operator of a Class VI well must prepare, maintain, and comply with a plan that is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit. The well plugging plan must be submitted as part of the permit application and must include the following information:	40 CFR §146.92(b)	**§5.206(a)** Each condition applicable to a permit shall be incorporated into the permit either expressly or by reference. If incorporated by reference, a specific citation to the rules in this chapter shall be given in the permit. The requirements listed in this section are directly enforceable regardless of whether the requirement is a condition of the permit. **§5.206(j) Well plugging.** The operator of a geologic storage facility must maintain and comply with the approved well plugging plan required by §5.203(k) of this title. **§5.203(k) Well plugging plan.** The applicant must submit a well plugging plan for all injection wells and monitoring wells that penetrate the base of usable quality water that includes the following:	Similar to the CFR.		Similar to CFR; no concerns for stringency.
618.	Appropriate tests or measures for determining bottomhole reservoir pressure;	40 CFR §146.92(b)(1)	**§5.203(k)(2)(B)** performing tests or measures to determine bottomhole reservoir pressure;	Same as the CFR.		
619.	Appropriate testing methods to ensure external mechanical integrity as specified in §146.89;	40 CFR §146.92(b)(2)	**§5.203(k)(2)(C)** performing final tests to assess mechanical integrity; and	Same as the CFR.		
620.	The type and number of plugs to be used;	40 CFR §146.92(b)(3)	**§5.203(k)(1)(A)** the type and number of plugs to be used;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
621.	The placement of each plug, including the elevation of the top and bottom of each plug;	40 CFR §146.92(b)(4)	**§5.203(k)(1)(B)** the placement of each plug, including the elevation of the top and bottom of each plug;	Same as the CFR.		
622.	The type, grade, and quantity of material to be used in plugging. The material must be compatible with the carbon dioxide stream; and	40 CFR §146.92(b)(5)	**§5.203(k)(1)(C)** the type, grade, and quantity of material to be used in plugging and information to demonstrate that the material is compatible with the CO_2 stream; and	Same as the CFR.		
623.	The method of placement of the plugs.	40 CFR §146.92(b)(6)	**§5.203(k)(1)(D)** the method of placement of the plugs;	Same as the CFR.		
624.	*Notice of intent to plug*. The owner or operator must notify the Director in writing pursuant to §146.91(e), at least 60 days before plugging of a well. At this time, if any changes have been made to the original well plugging plan, the owner or operator must also provide the revised well plugging plan. The Director may allow for a shorter notice period. Any amendments to the injection well plugging plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate.	40 CFR §146.92(c)	**§5.203(k)(3)** a proposal for giving notice of intent to plug monitoring wells that penetrate the base of usable quality water and all injection wells. The applicant's plan must ensure that: (A) the operator notifies the director at least 60 days before plugging a well. At this time, if any changes have been made to the original well plugging plan, the operator must also provide a revised well plugging plan. At the discretion of the director, an operator may be allowed to proceed with well plugging on a shorter notice period; and (B) the operator will file a notice of intention to plug and abandon (Form W-3A) a well with the appropriate Commission district office and the division in Austin at least five days prior to the beginning of plugging operations;	Similar to the CFR.	5.202(d) (2) (A)(v) Basis for permit modification. The director shall modify the permit whenever the director determines that permit changes are necessary based on: (III) any amendments to the injection well plugging plan under §5.203(k) of this title; …	The state rule does not specify that a change to the well plugging plan requires a permit modification. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
625.	*Plugging report.* Within 60 days after plugging, the owner or operator must submit, pursuant to §146.91(e), a plugging report to the Director. The report must be certified as accurate by the owner or operator and by the person who performed the plugging operation (if other than the owner or operator.) The owner or operator shall retain the well plugging report for 10 years following site closure.	40 CFR §146.92(d)	**§5.203(k)(4)** a plugging report for monitoring wells that penetrate the base of usable quality water and all injection wells. The applicant's plan must ensure that within 30 days after plugging the operator will file a complete well plugging record (Form W-3) in duplicate with the appropriate district office. The operator and the person who performed the plugging operation (if other than the operator) must certify the report as accurate; **§5.206(m) Retention of records.** The operator must retain for 10 years following storage facility closure records collected during the post-injection storage facility care period. The operator must deliver the records to the director at the conclusion of the retention period, and the records must thereafter be retained at the Austin headquarters of the Commission.	Similar intent to the CFR.		The state rule requires filing of a report within 30 days, rather than 60 days as stated in the CFR.
40 CFR §146.93 Post-injection site care and site closure.						
626.	The owner or operator of a Class VI well must prepare, maintain, and comply with a plan for post-injection site care and site closure that meets the requirements of paragraph (a)(2) of this section and is acceptable to the Director. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.	40 CFR §146.93(a)	**§5.206(k) Post-injection storage facility care and closure.** (1) Post-injection storage facility care and closure plan. (A) The operator of an injection well must maintain and comply with the approved post-injection storage facility care and closure plan. **§5.206(a)** Each condition applicable to a permit shall be incorporated into the permit either expressly or by reference. If incorporated by reference, a specific citation to the rules in this chapter shall be given in the permit. The requirements listed in this section are directly enforceable regardless of whether the requirement is a condition of the permit.	Same as the CFR.		
627.	The owner or operator must submit the post-injection site care and site closure plan as a part of the permit application to be approved by the Director.	40 CFR §146.93(a)(1)	**§5.203(m) Post-injection storage facility care and closure plan**. The applicant must submit a post-injection storage facility care and closure plan. The plan must include:	Same as the CFR.		The public commented on 5.203(m), but no change was made in the August 2022 rule.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
628.	The post-injection site care and site closure plan must include the following information:	40 CFR §146.93(a)(2)	**§5.203(m) Post-injection storage facility care and closure plan**. The applicant must submit a post-injection storage facility care and closure plan. The plan must include:	Same as the CFR.		
629.	The pressure differential between pre-injection and predicted post-injection pressures in the injection zone(s);	40 CFR §146.93(a)(2)(i)	**§5.203(m)(2)** the pressure differential between pre-injection and predicted post-injection pressures in the injection zone;	Same as the CFR.		
630.	The predicted position of the carbon dioxide plume and associated pressure front at site closure as demonstrated in the area of review evaluation required under §146.84(c)(1);	40 CFR §146.93(a)(2)(ii)	**§5.203(m)(3)** the predicted position of the CO_2 plume and associated pressure front at closure as demonstrated in the AOR evaluation required under subsection (d) of this section;	Same as the CFR.		
631.	A description of post-injection monitoring location, methods, and proposed frequency;	40 CFR §146.93(a)(2)(iii)	**§5.203(m)(4)** a description of the proposed post-injection monitoring location, methods, and frequency;	Same as the CFR.		
632.	A proposed schedule for submitting post-injection site care monitoring results to the Director pursuant to §146.91(e); and,	40 CFR §146.93(a)(2)(iv)	**§5.203(m)(5)** a proposed schedule for submitting post-injection storage facility care monitoring results to the director;	Same as the CFR.		Minor August 2022 rule changes do not affect stringency.
633.	The duration of the post-injection site care timeframe and, if approved by the Director, the demonstration of the alternative post-injection site care timeframe that ensures non-endangerment of USDWs.	40 CFR §146.93(a)(2)(v)		Missing	Alternative PICS timeframe required for all projects.	While Texas does not provide a default 50 year post-injection site care timeframe, the demonstration of the approvable timeframe is nearly identical to the requirements of 146.93(c). See below.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
634.	Upon cessation of injection, owners or operators of Class VI wells must either submit an amended post-injection site care and site closure plan or demonstrate to the Director through monitoring data and modeling results that no amendment to the plan is needed. Any amendments to the post-injection site care and site closure plan must be approved by the Director, be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate.	40 CFR §146.93(a)(3)	**§5.206(k)(1)(C)** Upon cessation of injection, operator of a geologic storage facility must either submit an amended plan or demonstrate to the director through monitoring data and modeling results that no amendment to the plan is needed. **§5.206(k)(1)(B)** The operator must update the plan in accordance with §5.207(a)(2)(D)(vi) of this title. At any time during the life of the geologic sequestration project, the operator may modify and resubmit the post-injection site care and site closure plan for the director's approval within 30 days of such change. Any amendments to the post-injection site care and site closure plan must be approved by the director, be incorporated into the permit, and are subject to the permit modification requirements in §5.202 of this title (relating to Permit Required), as appropriate.	Same as the CFR.		
635.	At any time during the life of the geologic sequestration project, the owner or operator may modify and resubmit the post-injection site care and site closure plan for the Director's approval within 30 days of such change.	40 CFR §146.93(a)(4)	**§5.206(k)(1)(B)** The operator must update the plan in accordance with §5.207(a)(2)(D)(vi) of this title. At any time during the life of the geologic sequestration project, operator may modify and resubmit the post-injection site care and site closure plan for the director's approval within 30 days of such change. Any amendments to the post-injection site care and site closure plan must be approved by the director, be incorporated into the permit, and are subject to the permit modification requirements in §5.202 of this title (relating to Permit Required), as appropriate.	Same as the CFR.		
636.	The owner or operator shall monitor the site following the cessation of injection to show the position of the carbon dioxide plume and pressure front and demonstrate that USDWs are not being endangered.	40 CFR §146.93(b)	**§5.206(k)(2)** Post-injection storage facility monitoring. Following cessation of injection, the owner or operator must continue to conduct monitoring as specified in the Director-approved post-injection site care and site closure plan until the director determines that the position of the CO_2 plume and pressure front are such that the geologic storage facility will not endanger USDWs.	Similar to the CFR.		Similar to CFR; no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
637.	Following the cessation of injection, the owner or operator shall continue to conduct monitoring as specified in the Director-approved post-injection site care and site closure plan for at least 50 years or for the duration of the alternative timeframe approved by the Director pursuant to requirements in paragraph (c) of this section, unless he/she makes a demonstration under (b)(2) of this section. The monitoring must continue until the geologic sequestration project no longer poses an endangerment to USDWs and the demonstration under (b)(2) of this section is submitted and approved by the Director.	40 CFR §146.93(b)(1)	**§5.206(k)(2)** Post-injection storage facility monitoring. Following cessation of injection, the operator must continue to conduct monitoring as specified in the approved plan until the director determines that the position of the CO_2 plume and pressure front are such that the geologic storage facility will not endanger USDWs.	Differs from the CFR.		While Texas does not provide a default 50 year post-injection site care timeframe, the demonstration of the approvable timeframe is nearly identical to the requirements of 146.93(c). See below.
638.	If the owner or operator can demonstrate to the satisfaction of the Director before 50 years or prior to the end of the approved alternative timeframe based on monitoring and other site-specific data, that the geologic sequestration project no longer poses an endangerment to USDWs, the Director may approve an amendment to the post-injection site care and site closure plan to reduce the frequency of monitoring or may authorize site closure before the end of the 50-year period or prior to the end of the approved alternative timeframe, where he or she has substantial evidence that the geologic sequestration project no longer poses a risk of endangerment to USDWs.	40 CFR §146.93(b)(2)	**§5.206(k)(2)** Post-injection storage facility monitoring. Following cessation of injection, the operator must continue to conduct monitoring as specified in the approved plan until the director determines that the position of the CO_2 plume and pressure front are such that the geologic storage facility will not endanger USDWs.	Differs from the CFR.	All applicants are required to determine alternative PISC timeframe.	See above row.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
639.	Prior to authorization for site closure, the owner or operator must submit to the Director for review and approval a demonstration, based on monitoring and other site-specific data, that no additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs.	40 CFR §146.93(b)(3)	**§5.206(k)(3)** Prior to closure. Prior to authorization for storage facility closure, the operator must demonstrate to the director, based on monitoring, other site-specific data, and modeling that is reasonably consistent with site performance that no additional monitoring is needed to assure that the geologic storage facility will not endanger USDWs. The operator must demonstrate, based on the current understanding of the site, including monitoring data and/or modeling, all of the following: (A) the estimated magnitude and extent of the facility footprint (the CO_2 plume and the area of elevated pressure); (B) that there is no leakage of either CO_2 or displaced formation fluids that will endanger USDWs; (C) that the injected or displaced fluids are not expected to migrate in the future in a manner that encounters a potential leakage pathway into USDWs; (D) that the injection wells at the site completed into or through the injection zone or confining zone will be plugged and abandoned in accordance with these requirements; and (E) any remaining facility monitoring wells will be properly plugged or are being managed by a person and in a manner approved by the director.	Similar to the CFR.		Similar to CFR; no concerns for stringency.
640.	If the demonstration in paragraph (b)(3) of this section cannot be made (i.e., additional monitoring is needed to ensure that the geologic sequestration project does not pose an endangerment to USDWs) at the end of the 50-year period or at the end of the approved alternative timeframe, or if the Director does not approve the demonstration, the owner or operator must submit to the Director a plan to continue post-injection site care until a demonstration can be made and approved by the Director.	40 CFR §146.93(b)(4)		Differs from the CFR.	PISC required until demonstration made	While Texas does not provide a default 50 year post-injection site care timeframe, the demonstration of the approvable timeframe is nearly identical to the requirements of 146.93(c). See below.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
641.	*Demonstration of alternative post-injection site care timeframe*. At the Director's discretion, the Director may approve, in consultation with EPA, an alternative post-injection site care timeframe other than the 50 year default, if an owner or operator can demonstrate during the permitting process that an alternative post-injection site care timeframe is appropriate and ensures non-endangerment of USDWs. The demonstration must be based on significant, site-specific data and information including all data and information collected pursuant to §§146.82 and 146.83, and must contain substantial evidence that the geologic sequestration project will no longer pose a risk of endangerment to USDWs at the end of the alternative post-injection site care timeframe.	40 CFR §146.93(c)	No reference	Missing.	All applicants required to determine alternative PISC timeframe.	While Texas does not provide a default 50 year post-injection site care timeframe, the demonstration of the approvable timeframe is nearly identical to the requirements of 146.93(c).
642.	A demonstration of an alternative post-injection site care timeframe must include consideration and documentation of:	40 CFR §146.93(c)(1)	**§5.203(m) Post-injection storage facility care and closure plan**. The applicant must submit a post-injection storage facility care and closure plan. The plan must include: (7) consideration and documentation of:	Differs from the CFR.		See above row.
643.	The results of computational modeling performed pursuant to delineation of the area of review under §146.84;	40 CFR §146.93(c)(1)(i)	**§5.203(m)(7)(A)** the results of computational modeling performed pursuant to delineation of the AOR under subsection (d) of this section;	Same as the CFR.		
644.	The predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any USDWs; and/or the timeframe for pressure decline to pre-injection pressures;	40 CFR §146.93(c)(1)(ii)	**§5.203(m)(7)(B)** the predicted timeframe for pressure decline within the injection zone, and any other zones, such that formation fluids may not be forced into any USDWs, and/or the timeframe for pressure decline to pre-injection pressures;	Same as the CFR.		
645.	The predicted rate of carbon dioxide plume migration within the injection zone, and the predicted timeframe for the cessation of migration;	40 CFR §146.93(c)(1)(iii)	**§5.203(m)(7)(C)** the predicted rate of CO_2 plume migration within the injection zone, and the predicted timeframe for the stabilization of the CO_2 plume and associated pressure front;	Same as the CFR.		August 2022 rule changes do not affect stringency.
646.	A description of the site-specific processes that will result in carbon dioxide trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;	40 CFR §146.93(c)(1)(iv)	**§5.203(m)(7)(D)** a description of the site-specific processes that will result in CO_2 trapping including immobilization by capillary trapping, dissolution, and mineralization at the site;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
647.	The predicted rate of carbon dioxide trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;	40 CFR §146.93(c)(1)(v)	**§5.203(m)(7)(E)** the predicted rate of CO_2 trapping in the immobile capillary phase, dissolved phase, and/or mineral phase;	Same as the CFR.		
648.	The results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in paragraphs (iv) and (v) of this section;	40 CFR §146.93(c)(1)(vi)	**§5.203(m)(7)(F)** the results of laboratory analyses, research studies, and/or field or site-specific studies to verify the information required in subparagraphs (D) and (E) of this paragraph;	Same as the CFR.		
649.	A characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., carbon dioxide, formation fluids) movement;	40 CFR §146.93(c)(1)(vii)	**§5.203(m)(7)(G)** a characterization of the confining zone(s) including a demonstration that it is free of transmissive faults, fractures, and micro-fractures and of appropriate thickness, permeability, and integrity to impede fluid (e.g., CO_2, formation fluids) movement;	Same as the CFR.		
650.	The presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic sequestration project or any other projects in proximity to the predicted/modeled, final extent of the carbon dioxide plume and area of elevated pressure;	40 CFR §146.93(c)(1)(viii)	**§5.203(m)(7)(H)** the presence of potential conduits for fluid movement including planned injection wells and project monitoring wells associated with the proposed geologic storage project or any other projects in proximity to the predicted/modeled, final extent of the CO_2 plume and area of elevated pressure;	Same as the CFR.		
651.	A description of the well construction and an assessment of the quality of plugs of all abandoned wells within the area of review;	40 CFR §146.93(c)(1)(ix)	**§5.203(m)(7)(I)** a description of the well construction and an assessment of the quality of plugs of all abandoned wells within the AOR;	Same as the CFR.		
652.	The distance between the injection zone and the nearest USDWs above and/or below the injection zone; and	40 CFR §146.93(c)(1)(x)	**§5.203(m)(7)(J)** the distance between the injection zone and the nearest USDWs above and/or below the injection zone;	Same as the CFR.		
653.	Any additional site-specific factors required by the Director.	40 CFR §146.93(c)(1)(xi)	**§5.203(m)(7)(K)** any additional site-specific factors required by the Director;	Same as the CFR.		
654.	Information submitted to support the demonstration in paragraph (c)(1) of this section must meet the following criteria:	40 CFR §146.93(c)(2)	**§5.203(m)(8)** information submitted to support the demonstration in paragraph (1) of this subsection, which shall meet the following criteria:	Same as the CFR.		
655.	All analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;	40 CFR §146.93(c)(2)(i)	**§5.203(m)(8)(A)** all analyses and tests performed to support the demonstration must be accurate, reproducible, and performed in accordance with the established quality assurance standards;	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
656.	Estimation techniques must be appropriate and EPA-certified test protocols must be used where available;	40 CFR §146.93(c)(2)(ii)	**§5.203(m)(8)(B)** estimation techniques must be appropriate and EPA-certified test protocols must be used where available;	Same as the CFR.		
657.	Predictive models must be appropriate and tailored to the site conditions, composition of the carbon dioxide stream and injection and site conditions over the life of the geologic sequestration project;	40 CFR §146.93(c)(2)(iii)	**§5.203(m)(8)(C)** predictive models must be appropriate and tailored to the site conditions, composition of the CO_2 stream, and injection and site conditions over the life of the geologic storage project;	Same as the CFR.		
658.	Predictive models must be calibrated using existing information (e.g., at Class I, Class II, or Class V experimental technology well sites) where sufficient data are available;	40 CFR §146.93(c)(2)(iv)	**§5.203(m)(8)(D)** predictive models must be calibrated using existing information where sufficient data are available;	Similar to the CFR.	The most likely place this information would be available would be in the permit files of other well classes.	The state provision does not include information from other well classes. While this is a minor difference, since Texas does not provide for a 50 year default timeframe it is recommended that this be included. Rule was not changed in August 2022; stringency concern remains.
659.	Reasonably conservative values and modeling assumptions must be used and disclosed to the Director whenever values are estimated on the basis of known, historical information instead of site-specific measurements;	40 CFR §146.93(c)(2)(v)	**§5.203(m)(8)(E)** reasonably conservative values and modeling assumptions must be used and disclosed to the Director whenever values are estimated on the basis of known, historical information instead of site-specific measurements;	Same as the CFR.		
660.	An analysis must be performed to identify and assess aspects of the alternative post-injection site care timeframe demonstration that contribute significantly to uncertainty. The owner or operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration.	40 CFR §146.93(c)(2)(vi)	**§5.203(m)(8)(F)** an analysis must be performed to identify and assess aspects of the alternative PISC timeframe demonstration that contribute significantly to uncertainty. The operator must conduct sensitivity analyses to determine the effect that significant uncertainty may contribute to the modeling demonstration;	Same as the CFR.		
661.	An approved quality assurance and quality control plan must address all aspects of the demonstration; and,	40 CFR §146.93(c)(2)(vii)	**§5.203(m)(8)(G)** an approved quality assurance and quality control plan must address all aspects of the demonstration;	Same as the CFR.		
662.	Any additional criteria required by the Director.	40 CFR §146.93(c)(2)(viii)	**§5.203(m)(8)(H)** any additional criteria required by the director.	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
663.	*Notice of intent for site closure.* The owner or operator must notify the Director in writing at least 120 days before site closure. At this time, if any changes have been made to the original post-injection site care and site closure plan, the owner or operator must also provide the revised plan. The Director may allow for a shorter notice period.	40 CFR §146.93(d)	**§5.206(k)(4)** Notice of intent for storage facility closure. The operator must notify the director in writing at least 120 days before storage facility closure. At the time of such notice, if the operator has made any changes to the original plan, the operator also must provide the revised plan. The director may approve a shorter notice period.	Same as the CFR.		
664.	After the Director has authorized site closure, the owner or operator must plug all monitoring wells in a manner which will not allow movement of injection or formation fluids that endangers a USDW.	40 CFR §146.93(e)	**§5.206(k)(5) Authorization for storage facility closure.** No operator may initiate storage facility closure until the director has approved closure of the storage facility in writing. After the director has authorized storage facility closure, the operator must plug all wells in accordance with the approved plan required by §5.203(k) of this title.	Similar intent to the CFR.		The reference to 5.203(k) should be 5.203(m). Otherwise, there are no concerns for stringency.
665.	The owner or operator must submit a site closure report to the Director within 90 days of site closure, which must thereafter be retained at a location designated by the Director for 10 years. The report must include:	40 CFR §146.93(f)	**§5.206(k)(6) Storage facility closure report.** Once the director has authorized storage facility closure, the operator must submit a storage facility closure report within 90 days that must thereafter be retained by the Commission in Austin. The report must include the following information:	Similar to the CFR.		Similar to CFR; no concerns for stringency.
666.	Documentation of appropriate injection and monitoring well plugging as specified in §146.92 and paragraph (e) of this section. The owner or operator must provide a copy of a survey plat which has been submitted to the local zoning authority designated by the Director. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks. The owner or operator must also submit a copy of the plat to the Regional Administrator of the appropriate EPA Regional Office;	40 CFR §146.93(f)(1)	**§5.206(k)(6)(A)** documentation of appropriate injection and monitoring well plugging. The operator must provide a copy of a survey plat that has been submitted to the Regional Administrator of Region 6 of the United States Environmental Protection Agency. The plat must indicate the location of the injection well relative to permanently surveyed benchmarks including the Latitude/Longitude or X/Y coordinates of the surface location in the NAD 27, NAD 83, or WGS 84 coordinate system, a labeled scale bar, and northerly direction arrow;	Same as the CFR.		August 2022 rule changes do not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
667.	Documentation of appropriate notification and information to such State, local and Tribal authorities that have authority over drilling activities to enable such State, local, and Tribal authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zone(s); and	40 CFR §146.93(f)(2)	**§5.206(k)(6)(B)** documentation of appropriate notification and information to such state and local authorities as have authority over drilling activities to enable such state and local authorities to impose appropriate conditions on subsequent drilling activities that may penetrate the injection and confining zones;	Similar to the CFR.		The state requirement does not include Tribal authorities. If this is not applicable based on state organization it should be described in the program description. Rule was not changed in August 2022; stringency concern remains.
668.	Records reflecting the nature, composition, and volume of the carbon dioxide stream.	40 CFR §146.93(f)(3)	**§5.206(k)(6)(C)** records reflecting the nature, composition, volume and mass of the CO_2 stream. If mass is determined using volume, the operator must provide calculations.	Same as the CFR.		August 2022 rule changes do not affect stringency.
669.	Each owner or operator of a Class VI injection well must record a notation on the deed to the facility property or any other document that is normally examined during title search that will in perpetuity provide any potential purchaser of the property the following information:	40 CFR §146.93(g)	**§5.206(l) Deed notation**. The operator of a geologic storage facility must record a notation on the deed to the facility property; on any other document that is normally examined during title search; or on any other document that is acceptable to the county clerk for filing in the official public records of the county that will in perpetuity provide any potential purchaser of the property the following information:	Similar to the CFR.		Similar to CFR; no concerns for stringency.
670.	The fact that land has been used to sequester carbon dioxide;	40 CFR §146.93(g)(1)	**§5.206(l)(2)** that land has been used to geologically store CO_2 ;	Same as the CFR.		
671.	The name of the State agency, local authority, and/or Tribe with which the survey plat was filed, as well as the address of the Environmental Protection Agency Regional Office to which it was submitted; and	40 CFR §146.93(g)(2)	**§5.206(l)(3)** that the survey plat has been filed with the Commission; **(4)** the address of the office of the United States Environmental Protection Agency, Region 6, to which the operator sent a copy of the survey plat; and	Same as the CFR.		
672.	The volume of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred.	40 CFR §146.93(g)(3)	**§5.206(l)(5)** the volume and mass of fluid injected, the injection zone or zones into which it was injected, and the period over which injection occurred. If mass is determined using volume, the operator must provide calculations.	Same as the CFR.		August 2022 rule changes do not affect stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
673.	The owner or operator must retain for 10 years following site closure, records collected during the post-injection site care period. The owner or operator must deliver the records to the Director at the conclusion of the retention period, and the records must thereafter be retained at a location designated by the Director for that purpose.	40 CFR §146.93(h)	**§5.206(m) Retention of records**. The operator must retain for 10 years following storage facility closure records collected during the post-injection storage facility care period. The operator must deliver the records to the director at the conclusion of the retention period, and the records must thereafter be retained at the Austin headquarters of the Commission.	Similar to the CFR.		Similar to CFR; no concerns for stringency.
40 CFR §146.94 Emergency and remedial response.						
674.	As part of the permit application, the owner or operator must provide the Director with an emergency and remedial response plan that describes actions the owner or operator must take to address movement of the injection or formation fluids that may cause an endangerment to a USDW during construction, operation, and post-injection site care periods. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.	40 CFR §146.94(a)	**§5.203(l) Emergency and remedial response plan**. The applicant must submit an emergency and remedial response plan that: (2) describes actions to be taken to address escape from the permitted injection interval or movement of the injection fluids or formation fluids that may cause an endangerment to USDWs during construction, operation, closure, and post-closure periods; **§5.206(a)** Each condition applicable to a permit shall be incorporated into the permit either expressly or by reference. If incorporated by reference, a specific citation to the rules in this chapter shall be given in the permit. The requirements listed in this section are directly enforceable regardless of whether the requirement is a condition of the permit.	Same as the CFR.		Note that Texas also requires that the plan include staff training procedures. No concerns for stringency.
675.	If the owner or operator obtains evidence that the injected carbon dioxide stream and associated pressure front may cause an endangerment to a USDW, the owner or operator must:	40 CFR §146.94(b)	**§5.206(g)(3)** Action. If an operator obtains evidence that the injected CO_2 stream and associated pressure front may cause an endangerment to USDWs, the operator must:	Same as the CFR.		
676.	Immediately cease injection;	40 CFR §146.94(b)(1)	**§5.206(g)(3)(A)** immediately cease injection;	Same as the CFR.		
677.	Take all steps reasonably necessary to identify and characterize any release;	40 CFR §146.94(b)(2)	**§5.206(g)(3)(B)** take all steps reasonably necessary to identify and characterize any release;	Same as the CFR.		
678.	Notify the Director within 24 hours; and	40 CFR §146.94(b)(3)	**§5.206(g)(3)(C)** notify the director as soon as practicable but within at least 24 hours; and	Same as the CFR.		

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
679.	Implement the emergency and remedial response plan approved by the Director.	40 CFR §146.94(b)(4)	**§5.206(g)(3)(D)** implement the approved emergency and remedial response plan.	Same as the CFR.		
680.	The Director may allow the operator to resume injection prior to remediation if the owner or operator demonstrates that the injection operation will not endanger USDWs.	40 CFR §146.94(c)	**§5.206(g)(4)** Resumption of injection. The director may allow the operator to resume injection prior to remediation if the operator demonstrates that the injection operation will not endanger USDWs.	Same as the CFR.		
681.	The owner or operator shall periodically review the emergency and remedial response plan developed under paragraph (a) of this section. In no case shall the owner or operator review the emergency and remedial response plan less often than once every five years. Based on this review, the owner or operator shall submit an amended emergency and remedial response plan or demonstrate to the Director that no amendment to the emergency and remedial response plan is needed. Any amendments to the emergency and remedial response plan must be approved by the Director, must be incorporated into the permit, and are subject to the permit modification requirements at §§144.39 or 144.41 of this chapter, as appropriate. Amended plans or demonstrations shall be submitted to the Director as follows:	40 CFR §146.94(d)	**§5.207(a)(2)(D) Annual reports.** The operator must submit an annual report detailing: (vi) The operator must maintain and update required plans in accordance with the provisions of this subchapter. (I) Operators must submit an annual statement, signed by an appropriate company official, confirming that the operator has: (-a-) reviewed the monitoring and operational data that are relevant to a decision on whether to reevaluate the AOR and the monitoring and operational data that are relevant to a decision on whether to update an approved plan required by §5.203 or §5.206 of this title; and (-b-) determined whether any updates were warranted by material change in the monitoring and operational data or in the evaluation of the monitoring and operational data by the operator. (II) <u>Operators must submit either the updated plan or a summary of the modifications for each plan for which an update the operator determined to be warranted pursuant to subclause (I) of this clause.</u> The director may require submission of copies of any updated plans and/or additional information regarding whether or not updates of any particular plans are warranted.	Similar intent to the CFR.	See underlined language	The state rule implies that the Emergency and Remedial Response Plan is to be reviewed on an annual basis along with other plans but does not explicitly state this. The rule should be revised to align to the CFR, or the program description should describe how the plans are reviewed and updated if needed. Rule was not changed in August 2022; stringency concern remains.
682.	Within one year of an area of review reevaluation;	40 CFR §146.94(d)(1)	**§5.207(a)(2)(D)**	Missing.	Annual report required	See Texas Notes and the above row. Rule was not changed in August 2022; stringency concern remains.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
683.	Following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the Director; or	40 CFR §146.94(d)(2)	**§5.207(a)(3)** The director may require the revision of any required plan following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the director or whenver the director determines that such a revision is necessary to comply with the requirements of this subchapter.	Same as the CFR.	Thank you	Typo, "whenver."
684.	When required by the Director.	40 CFR §146.94(d)(3)	**§5.207(a)(3)** The director may require the revision of any required plan following any significant changes to the facility, such as addition of injection or monitoring wells, on a schedule determined by the director or whenver the director determines that such a revision is necessary to comply with the requirements of this subchapter.	Same as the CFR.		Typo, "whenver."
40 CFR §146.95 Class VI injection depth waiver requirements.						
685.	This section sets forth information which an owner or operator seeking a waiver of the Class VI injection depth requirements must submit to the Director; information the Director must consider in consultation with all affected Public Water System Supervision Directors; the procedure for Director – Regional Administrator communication and waiver issuance; and the additional requirements that apply to owners or operators of Class VI wells granted a waiver of the injection depth requirements.	40 CFR §146.95	**§5.201(f)** Injection depth waiver. An operator may seek a waiver from the Class VI injection depth requirements for geologic storage to allow injection into non-USDW formations while ensuring that USDWs above and below the injection zone are protected from endangerment. An operator seeking a waiver of the requirement to inject below the lowermost USDW shall submit, concurrent with the permit application or a permit amendment application, a supplemental report that complies with 40 20 CFR §146.95. The Commission adopts 40 CFR §146.95 by reference, effective September 20, 2022.	Same as the CFR.		The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency. 5.201(f) was changed in the August 2022 rule based on public comment. The public submitted another comment on 5.201(f), but no change was made in the August 2022 rule. These rule changes do not affect stringency.
686.	In seeking a waiver of the requirement to inject below the lowermost USDW, the owner or operator must submit a supplemental report concurrent with permit application. The supplemental report must include the following,	40 CFR §146.95(a)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
687.	A demonstration that the injection zone(s) is/are laterally continuous, is not a USDW, and is not hydraulically connected to USDWs; does not outcrop; has adequate injectivity, volume, and sufficient porosity to safely contain the injected carbon dioxide and formation fluids; and has appropriate geochemistry.	40 CFR §146.95(a)(1)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
688.	A demonstration that the injection zone(s) is/are bounded by laterally continuous, impermeable confining units above and below the injection zone(s) adequate to prevent fluid movement and pressure buildup outside of the injection zone(s); and that the confining unit(s) is/are free of transmissive faults and fractures. The report shall further characterize the regional fracture properties and contain a demonstration that such fractures will not interfere with injection, serve as conduits, or endanger USDWs.	40 CFR §146.95(a)(2)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
689.	A demonstration, using computational modeling, that USDWs above and below the injection zone will not be endangered as a result of fluid movement. This modeling should be conducted in conjunction with the area of review determination, as described in §146.84, and is subject to requirements, as described in §146.84(c), and periodic reevaluation, as described in §146.84(e).	40 CFR §146.95(a)(3)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
690.	A demonstration that well design and construction, in conjunction with the waiver, will ensure isolation of the injectate in lieu of requirements at 146.86(a)(1) and will meet well construction requirements in paragraph (f) of this section.	40 CFR §146.95(a)(4)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
691.	A description of how the monitoring and testing and any additional plans will be tailored to the geologic sequestration project to ensure protection of USDWs above and below the injection zone(s), if a waiver is granted.	40 CFR §146.95(a)(5)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
692.	Information on the location of all the public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review.	40 CFR §146.95(a)(6)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
693.	Any other information requested by the Director to inform the Regional Administrator's decision to issue a waiver.	40 CFR §146.95(a)(7)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
694.	To inform the Regional Administrator's decision on whether to grant a waiver of the injection depth requirements at §§144.6 of this chapter, 146.5(f), and 146.86(a)(1), the Director must submit, to the Regional Administrator, documentation of the following :	40 CFR §146.95(b)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
695.	An evaluation of the following information as it relates to siting, construction, and operation of a geologic sequestration project with a waiver:	40 CFR §146.95(b)(1)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
696.	The integrity of the upper and lower confining units;	40 CFR §146.95(b)(1)(i)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
697.	The suitability of the injection zone(s) (e.g., lateral continuity; lack of transmissive faults and fractures; knowledge of current or planned artificial penetrations into the injection zone(s) or formations below the injection zone);	40 CFR §146.95(b)(1)(ii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
698.	The potential capacity of the geologic formation(s) to sequester carbon dioxide, accounting for the availability of alternative injection sites;	40 CFR §146.95(b)(1)(iii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
699.	All other site characterization data, the proposed emergency and remedial response plan, and a demonstration of financial responsibility;	40 CFR §146.95(b)(1)(iv)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
700.	Community needs, demands, and supply from drinking water resources;	40 CFR §146.95(b)(1)(v)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
701.	Planned needs, potential and/or future use of USDWs and non-USDWs in the area;	40 CFR §146.95(b)(1)(vi)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
702.	Planned or permitted water, hydrocarbon, or mineral resource exploitation potential of the proposed injection formation(s) and other formations both above and below the injection zone to determine if there are any plans to drill through the formation to access resources in or beneath the proposed injection zone(s)/formation(s);	40 CFR §146.95(b)(1)(vii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
703.	The proposed plan for securing alternative resources or treating USDW formation waters in the event of contamination related to the Class VI injection activity; and,	40 CFR §146.95(b)(1)(viii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
704.	Any other applicable considerations or information requested by the Director.	40 CFR §146.95(b)(1)(ix)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
705.	Consultation with the Public Water System Supervision Directors of all States and Tribes having jurisdiction over lands within the area of review of a well for which a waiver is sought.	40 CFR §146.95(b)(2)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
706.	Any written waiver-related information submitted by the Public Water System Supervision Director(s) to the (UIC) Director.	40 CFR §146.95(b)(3)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
707.	Pursuant to requirements at §124.10 of this chapter and concurrent with the Class VI permit application notice process, the Director shall give public notice that a waiver application has been submitted. The notice shall clearly state:	40 CFR §146.95(c)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
708.	The depth of the proposed injection zone(s);	40 CFR §146.95(c)(1)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
709.	The location of the injection well(s);	40 CFR §146.95(c)(2)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
710.	The name and depth of all USDWs within the area of review;	40 CFR §146.95(c)(3)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
711.	A map of the area of review;	40 CFR §146.95(c)(4)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
712.	The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and,	40 CFR §146.95(c)(5)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
713.	The results of UIC-Public Water System Supervision consultation required under paragraph (b)(2) of this section.	40 CFR §146.95(c)(6)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
714.	Following public notice, the Director shall provide all information received through the waiver application process to the Regional Administrator. Based on the information provided, the Regional Administrator shall provide written concurrence or non-concurrence regarding waiver issuance.	40 CFR §146.95(d)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
715.	If the Regional Administrator determines that additional information is required to support a decision, the Director shall provide the information. At his or her discretion, the Regional Administrator may require that public notice of the new information be initiated.	40 CFR §146.95(d)(1)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
716.	In no case shall a Director of a State-approved program issue a waiver without receipt of written concurrence from the Regional Administrator.	40 CFR §146.95(d)(2)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
717.	If a waiver is issued, within 30 days of waiver issuance, EPA shall post the following information on the Office of Water's Web site:	40 CFR §146.95(e)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
718.	The depth of the proposed injection zone(s);	40 CFR §146.95(e)(1)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
719.	The location of the injection well(s);	40 CFR §146.95(e)(2)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
720.	The name and depth of all USDWs within the area of review;	40 CFR §146.95(e)(3)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
721.	A map of the area of review;	40 CFR §146.95(e)(4)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
722.	The names of any public water supplies affected, reasonably likely to be affected, or served by USDWs in the area of review; and	40 CFR §146.95(e)(5)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
723.	The date of waiver issuance.	40 CFR §146.95(e)(6)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
724.	Upon receipt of a waiver of the requirement to inject below the lowermost USDW for geologic sequestration, the owner or operator of the Class VI well must comply with:	40 CFR §146.95(f)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
725.	All requirements at §§146.84, 146.85, 146.87, 146.88, 146.89, 146.91, 146.92, and 146.94;	40 CFR §146.95(f)(1)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
726.	All requirements at §146.86 with the following modified requirements:	40 CFR §146.95(f)(2)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
727.	The owner or operator must ensure that Class VI wells with a waiver are constructed and completed to prevent movement of fluids into any unauthorized zones including USDWs, in lieu of requirements at §146.86(a)(1).	40 CFR §146.95(f)(2)(i)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
728.	The casing and cementing program must be designed to prevent the movement of fluids into any unauthorized zones including USDWs in lieu of requirements at §146.86(b)(1).	40 CFR §146.95(f)(2)(ii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
729.	The surface casing must extend through the base of the nearest USDW directly above the injection zone and be cemented to the surface; or, at the Director's discretion, another formation above the injection zone and below the nearest USDW above the injection zone.	40 CFR §146.95(f)(2)(iii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
730.	All requirements at §146.90 with the following modified requirements:	40 CFR §146.95(f)(3)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
731.	The owner or operator shall monitor the groundwater quality, geochemical changes, and pressure in the first USDWs immediately above and below the injection zone(s); and in any other formations at the discretion of the Director.	40 CFR §146.95(f)(3)(i)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
732.	Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods to monitor for pressure changes in the injection zone(s); and, indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines, based on site-specific geology, that such methods are not appropriate.	40 CFR §146.95(f)(3)(ii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
733.	All requirements at §146.93 with the following, modified post-injection site care monitoring requirements:	40 CFR §146.95(f)(4)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
734.	The owner or operator shall monitor the groundwater quality, geochemical changes and pressure in the first USDWs immediately above and below the injection zone; and in any other formations at the discretion of the Director.	40 CFR §146.95(f)(4)(i)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.

Federal Requirement		Federal Citation	Texas State Citation and Requirement	Different From Federal Requirement?	Texas Notes	EPA Comments
735.	Testing and monitoring to track the extent of the carbon dioxide plume and the presence or absence of elevated pressure (e.g., the pressure front) by using direct methods in the injection zone(s); and indirect methods (e.g., seismic, electrical, gravity, or electromagnetic surveys and/or down-hole carbon dioxide detection tools), unless the Director determines based on site-specific geology, that such methods are not appropriate;	40 CFR §146.95(f)(4)(ii)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.
736.	Any additional requirements requested by the Director designed to ensure protection of USDWs above and below the injection zone(s).	40 CFR §146.95(f)(5)	**§5.201(f)**			The state rule incorporates 40 CFR §146.95 by reference, no concerns for stringency.