

REVISED 3/20/97

The Texas Natural Resource Conservation Commission (commission) adopts the repeal of §§331.8 and 331.31-331.36, and adopts amendments to §§331.2, 331.4, 331.7, 331.9-331.13, 331.42-331.46, 331.63-331.66, 331.68, 331.81-331.86, 331.121, and 331.122. Sections 331.9 and 331.42 are adopted with changes to the proposed text as published in the January 17, 1997 issue of the *Texas Register* (22 TexReg 823); and §§331.2, 331.4, 331.7, 331.10-331.13, 331.43-331.46, 331.63-331.66, 331.68, 331.81-331.86, 331.121, and 331.122 are adopted without changes and will not be republished.

EXPLANATION OF ADOPTED RULE

The purpose of this rule package is to maintain consistency with federal regulations, clarify existing regulations, and amend regulations that have no environmental impact to allow for either greater flexibility than currently allowed or removal of unnecessary restrictions. While state requirements must be at least as stringent as the corresponding federal requirement, states authorized to implement the federal Underground Injection Control (UIC) program are not required to adopt the federal requirements verbatim (see 40 CFR §145.11(b)(1)). Therefore, in most cases, this adopted rule package neither contains identical language to the federal regulations referenced nor does it incorporate or paraphrase all of that corresponding federal provision. However, in all cases, the amended rule ensures at least the equivalent level of environmental protection as that afforded by the corresponding federal regulation. The package is not intended as a major overhaul of the UIC program, but as an update for purposes of maintaining federal UIC program delegation and providing some regulatory relief.

Section §331.9, concerning Injection Authorized by Rule, is adopted with a correction. Old §331.9(a), (b), and (e) were deleted in the proposal but the cross-references to them in new §331.9(c)(1) and (2) (old §331.9(g)(1) and (2)) inadvertently were not deleted. This change removes the incorrect cross-references to subsections that have already been deleted and retains the provision of paragraph (3) in subsection (c). This change complies with the intent of the original proposal.

Section 331.42 is adopted with a clerical correction.

TAKINGS IMPACT ASSESSMENT

The commission has prepared a Takings Impact Assessment for these rules pursuant to Texas Government Code Annotated §2007.043. The following is a summary of that assessment. The specific purpose of the rules is to incorporate federal language into current state regulations so that the UIC Program can maintain compliance with the federal program. The rules will significantly advance this specific purpose by allowing the commission to maintain primacy, and thus state control, for the UIC Program without making the existing rules any less stringent. Promulgation and enforcement of these rule amendments will not create a burden on private real property.

These rule amendments are minor in nature and do not impose any additional or substantial burden on private real property. Authorized UIC facilities are already subject to these federal requirements; these amendments merely incorporate the federal requirements into the state UIC program. Also, because this rulemaking is reasonably taken to fulfill an obligation mandated by federal law, these rule

amendments are excepted from the Private Real Property Preservation Act pursuant to §2007.3(b)(4) of the Texas Government Code.

HEARING AND COMMENTERS

A public hearing was conducted in Austin on February 6, 1997, but no comments were received.

STATUTORY AUTHORITY

The repealed and amended sections are adopted under the authority of Texas Water Code §§5.103, 5.105, and 27.019, which provide the commission with the authority to adopt rules reasonably required for the performance of its powers and duties under the Texas Water Code and other laws of the state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

SUBCHAPTER A : GENERAL PROVISIONS

§§331.2, 331.4, 331.7, 331.9-331.13

The amendments are adopted under the authority of Texas Water Code §§5.103, 5.105, and 27.019, which provide the commission with the authority to adopt rules reasonably required for the performance of its powers and duties under the Texas Water Code and other laws of the state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

§331.2. Definitions.

General definitions can be found in Chapter 3 of this title (relating to Definitions). The following words and terms, when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise.

Area of review - The area surrounding an injection well described according to the criteria set forth in §331.42 of this title (relating to Area of Review) or in the case of an area permit, the project area plus a circumscribing area the width of which is either one fourth of a mile or a number calculated according to the criteria set forth in §331.42 of this title.

Disposal well - A well that is used for the disposal of waste into a subsurface stratum.

Drilling mud - A heavy suspension used in drilling an injection well, introduced down the drill pipe and through the drill bit.

Existing injection well - A Class I well which was authorized before August 25, 1988, by an approved state program, or an EPA-administered program or a well which has become a Class I well as a result of a change in the definition of the injected waste which would render the waste hazardous under 30 Texas Administrative Code (TAC) §335.1 of this title (relating to Definitions).

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.

RCRA - 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.).

SDWA - The Safe Drinking Water Act (Pub. L. 93-523, as amended; 42 U.S.C. 300f et seq.).

Salt cavern solid waste disposal well or salt cavern disposal well - For the purposes of this chapter relating to Underground Injection Control, regulations of the commission, and not to UIC Class II or UIC Class III wells in salt caverns regulated by the Texas Railroad Commission, a salt cavern disposal well is a type of UIC Class I injection well used:

(A)-(B) (No change.)

Total dissolved solids (TDS) - The total dissolved (filterable) solids as determined by use of the method specified in 40 Code of Federal Regulations (CFR) 136.

Upper limit - A parameter value established by the commission in a permit/production area authorization which when exceeded indicates mining solutions may be present in designated monitor wells.

Well stimulation - 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, but is not limited to surging, jetting, blasting, acidizing, and hydraulic fracturing.

Workover - An operation in which a down-hole component of a well is repaired, the engineering design of the well is changed, or the mechanical integrity of the well is compromised. Workovers include operations such as sidetracking, the addition of perforations within the permitted injection interval, and the addition of liners or patches. For the purposes of this chapter, workovers do not include well stimulation operations.

§331.4. Mechanical Integrity Required.

Injection is prohibited for Class I and III wells which lack mechanical integrity, the result of which may pollute an underground source of drinking water. Except where excluded in the case of authorization by rule, mechanical integrity under §331.43 of this title (relating to Mechanical Integrity Standards) must be demonstrated to the satisfaction of the executive director before operation begins. Injection may be prohibited for Class V wells which lack mechanical integrity. The executive director may require a demonstration of mechanical integrity at any time if there is reason to believe mechanical integrity is lacking. When the executive director determines that a Class I or III well lacks mechanical

integrity, he shall give written notice of his determination to the owner or operator. Unless the executive director requires immediate cessation, the owner or operator shall cease injection into the well within 48 hours of receipt of the executive director's determination. The executive director may allow plugging of the well or require the permittee to perform additional construction, operation, monitoring, reporting, and corrective actions which are necessary to prevent the movement of fluid into or between underground sources of drinking water (USDWs) caused by the lack of mechanical integrity. The owner or operator may resume injection upon written notification from the executive director that the owner or operator has demonstrated mechanical integrity.

§331.7. Permit Required.

(a) (No change.)

(b) For Class III in situ uranium solution mining wells, Frasch sulfur wells, and other Class III operations under commission jurisdiction, an area permit authorizing more than one well may be issued for a defined permit area in which wells of similar design and operation are proposed. The wells must be operated by a single owner or operator. Before commencing operation of those wells, the permittee may be required to obtain a production area authorization for separate production or mining areas within the permit area.

§331.9. Injection Authorized by Rule.

(a) Plugging and abandonment of a well authorized by rule at any time after January 1, 1982, shall be accomplished in accordance with the standards of §331.46 of this title (relating to Closure Standards).

(b) Injection into Class V Wells, unless otherwise provided is authorized by virtue of this rule; injection into new Class V wells used for the disposal of over 1,000 gallons per day of sewage or sewage effluent must apply for and obtain a permit from the commission before operations.

(1) Well authorization under this section expires upon the effective date of a permit issued under §331.7 of this title (relating to Permit Required).

(2) An owner or operator of a Class V well is prohibited from injecting into the well:

(A) upon the effective date of permit denial;

(B) upon failure to submit a permit application in a timely manner under subsection (c) of this section;

(C) upon failure to submit inventory information in a timely manner under §331.10 of this title (relating to Inventory of Wells Authorized by Rule); or

(D) upon failure to comply with a request for information in a timely manner.

(c) The executive director may require the owner or operator of an injection well authorized by rule to apply for and obtain an injection well permit. The owner or operator shall submit a complete application within 90 days after the receipt of a letter from the executive director requesting that the owner or operator of an injection well submit an application for permit. Cases for which a permit may be required include, but are not limited to, wells not in compliance with the standards required by this section.

(d) Class IV wells injecting hazardous waste-contaminated ground water that is of acceptable quality to aid remediation and that is being reinjected into the same formation from which it was drawn, as authorized by §331.6 of this title (relating to Prohibition of Class IV Well Injection), shall be authorized by rule.

§331.10. Inventory of Wells Authorized by Rule.

(a) (No change.)

(b) Drillers of injection wells authorized by rule may inventory wells by submission of a form to be provided by the executive director.

(c) (No change.)

§331.11. Classification of Injection Wells.

(a) Injection wells within the jurisdiction of the commission are classified as follows:

(1)-(3) (No change.)

(4) Class V. Generally, wells covered by this paragraph inject non-hazardous fluids into or above formations that contain USDWs. Injection wells within the jurisdiction of the commission, but not included in Classes I, III, or IV. Class V wells include, but are not limited to:

(A)-(J) (No change.)

(b) (No change.)

§331.12. Conversion of Wells.

(a) Persons utilizing wells authorized by permit, rule, or otherwise, who wish to convert the well from its authorized purpose to a new or additional purpose must first obtain the appropriate approval described in paragraphs (1)-(3) of this section:

(1)-(3) (No change.)

(b) Conversions of wells that remain exclusively within the jurisdiction of the Railroad Commission are not affected by this rule. For example, a conversion from a Class II disposal well to a water supply well regulated by the Railroad Commission would neither enter nor exit the jurisdiction of this agency and thus would not be subject to this rule.

§331.13. Exempted Aquifer.

(a)-(b) (No change.)

(c) An aquifer or portion of an aquifer may be designated as an exempted aquifer if the following criteria are met:

(1) (No change.)

(2) Until exempt status is removed according to procedures in subsection (f) of this section, it will not in the future serve as a source of drinking water for human consumption because:

(A)-(D) (No change.)

(d) No designation of an exempted aquifer submitted as part of a UIC Program shall be final until approved by the EPA as part of the delegated UIC program.

(e) Subsequent to program approval or promulgation, the commission may, after notice and opportunity for a public hearing, identify additional exempted aquifers.

(f) After notice and opportunity for public hearing, the designation of exempted aquifer may be removed by the commission thereby eliminating the exempt status, provided restoration has been accomplished if required.

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on

SUBCHAPTER C : GENERAL STANDARDS AND METHODS

§§331.42-331.46

The amendments are adopted under the authority of Texas Water Code §§5.103, 5.105, and 27.019, which provide the commission with the authority to adopt rules reasonably required for the performance of its powers and duties under the Texas Water Code and other laws of the state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

§331.42. Area of Review.

(a) The area of review is the area surrounding an injection well or a group of injection wells, for which the permit application must detail the information required in Subchapter G of this title (relating to Consideration Prior to Permit Issuance).

(b) The area of review is:

(1)-(2) (No change.)

(3) for Class III wells, the project area plus a circumscribing area, a minimum of 1/4 mile, the width of which is the lateral distance from the perimeter of the project area, in which the pressures in the injection zone may cause the migration of the injection and/or formation fluid into a USDW; or

(4) for Class V wells, an area determined by a radius of at least 1/4 mile from the proposed or existing wellbore.

(c) The computation of the cone of influence may be based upon the parameters listed below and should be calculated for an injection time period equal to the expected life of the injection well or pattern. The following modified Theis equation illustrates one form which the mathematical model may take. Figure 1: 30 TAC §331.42(c)

(d) After an appropriate review, the commission may modify the area of review. In no event shall the boundary of an area of review be less than 2 1/2 miles for Class I wells or 1/4 mile from any other injection well covered by the appropriate authorization. The following factors are to be included in the review:

(1) Chemistry of injection and formation fluids;

(2) Hydrogeology;

(3) Population and its dependence on ground water use; and

(4) Historical practices in the area.

(e) The executive director may require an owner or operator of an existing injection well to submit any reasonably available information regarding the area of review, if the information would aid a review for the prevention or correction of freshwater pollution.

§331.43. Mechanical Integrity Standards.

(a) An injection well has mechanical integrity if:

(1) there is no significant leak in the casing, tubing, or packer, and

(2) if there is no significant fluid movement through vertical channels adjacent to the injection wellbore.

(b) A salt cavern has integrity if it:

(1) has no anomalies or irregularities that would prevent optimum cavern filling or that would prevent the cavern from holding pressure; and

(2) has no pressure communication or fluid flow between other caverns or formations outside the salt stock. The tests to show salt cavern integrity shall consist of cavern pressure and sonar tests, or other tests approved by the executive director, to determine the geometric shape of the unfilled cavern.

(c) Methods and standards approved by the EPA through federal Underground Injection Control Program delegation to the commission, shall be applied in conducting and evaluating the tests required by this section.

(d) When the owner or operator reports the results of mechanical integrity tests to the executive director, he shall include a description of the test(s) and the method(s) used. In making his/her evaluation, the executive director shall review monitoring and other test data submitted since the previous evaluation.

(e) The executive director may require additional or alternative tests if the results presented by the owner or operator under subsection (d) of this section are not satisfactory to the executive director to demonstrate that there is no movement of fluid into or between USDWs resulting from the injection activity.

§331.44. Corrective Action Standards.

(a) Corrective action standards for all wells. In determining the adequacy of corrective action proposed or required to prevent or correct pollution of underground sources of drinking waters (USDWs), and fresh or surface water, the following factors shall be considered:

(1)-(8) (No change.)

(9) Reliability of the procedures used to identify abandoned wells;

(10) Any other factors which might affect the movement of fluids into or between USDWs; and

(11) For Class III wells only, when setting corrective action requirements the executive director shall consider the overall effect of the project on the hydraulic gradient in potentially affected USDWs, and the corresponding changes in potentiometric surfaces(s) and flow directions(s) rather than the discrete effect of each well. If a decision is made that corrective action is not necessary based on the determinations in this paragraph, the monitoring program required in §331.84 of this title (relating to Monitoring Requirements) shall be designed to verify the validity of those determinations.

(b) Additional Corrective action standards for Class I wells.

(1)-(6) (No change.)

(7) If at any time the operator cannot assure the continuous attainment of the performance standard in §331.62(5) of this title (relating to Construction Standards), the executive director may require a corrective action plan and compliance schedule. The operator must demonstrate compliance with the performance standard, as a condition for receiving approval of continued operation of the well. The executive director also may require permit changes to provide for additional testing and/or monitoring of the well to insure the continuous attainment of the performance standard. The commission may order closure of the well if the operator fails to demonstrate, to the executive directors satisfaction, that the performance standard is satisfied.

§331.45. Executive Director Approval of Construction and Completion.

The executive director may approve or disapprove the construction and completion for an injection well or project. In making a determination whether to grant approval, the following shall be reviewed for compliance with the standards of this chapter:

(1) for Class I wells, other than salt cavern disposal wells and associated salt caverns:

(A)-(D) (No change.)

(E) results of the injection zone and confining zone testing program as required in §331.62(7) of this title (relating to Construction Standards) and §331.65(a) of this title (relating to Pre-operation Reports);

(F)-(I) (No change.)

(J) compliance with the casing and cementing performance standard in §331.62(5) of this title, and where necessary, changes to the permit to provide for additional testing and/or monitoring of the well to insure the continuous attainment of the performance standard; and

(K) compliance with the cementing requirements in §331.62(6).

(2)-(3) (No change.)

§331.46. Closure Standards.

(a)-(c) (No change.)

(d) In closure of all Class I wells, including salt cavern disposal wells, Class III wells, and permitted Class V wells, a well shall be plugged in a manner which will not allow the movement of fluids through the well, out of the injection zone either into or between underground sources of drinking waters (USDWs) or to the land surface. Well plugs shall consist of cement or other materials approved

in writing by the executive director, which provide protection equivalent to or greater than that provided by cement.

(e) The permittee shall notify the executive director before commencing closure according to an approved plan. For Class I wells this notice shall be given at least 60 days before commencement. At the discretion of the executive director, a shorter notice period may be allowed. The executive director shall review any revised, updated, or additional closure plans.

(f)-(j) (No change.)

(k) For Class I wells only, a monument or other permanent marker shall be placed at or attached to the plugged well before abandonment. The monument shall state the permit number, date of abandonment, and company name.

(l) Each owner of a Class I hazardous waste injection well, and the owner of the surface or subsurface property on or in which a Class I hazardous waste injection well is located, must record, within 60 days after approval by the executive director of the closure operations, a notation on the deed to the facility property or on some other instrument which is normally examined during a title search that will, in perpetuity, provide any potential purchaser of the property the following information:

(1) (No change.)

(2) the name of the state agency or local authority with which the plat was filed, as well as the Austin address of the Underground Injection Control (UIC) staff of the commission, to which it was submitted; and

(3) (No change.)

(m) Within 30 days after completion of closure, the permittee shall file with the executive director a closure report on forms provided by the commission. The report shall be certified as accurate by the owner or operator and by the person who performed the closure operation (if other than the owner or operator). This report shall consist of a statement that the well was closed in accordance with the closure plan previously submitted and approved by the executive director. Where the actual closure differed from the plan previously submitted, a written statement shall be submitted specifying the differences between the previous plan and the actual closure.

(n)-(o) (No change.)

(p) The obligation to implement the closure plan survives the termination of a permit or the cessation of injection activities. The requirement to maintain and implement an approved plan is directly enforceable regardless of whether the closure plan requirement is a condition of the permit.

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on

**SUBCHAPTER D : STANDARDS FOR CLASS I WELLS OTHER THAN
SALT CAVERN SOLID WASTE DISPOSAL WELLS**

§§331.63-331.66, 331.68

The amendments are adopted under the authority of Texas Water Code §§5.103, 5.105, and 27.019, which provide the commission with the authority to adopt rules reasonably required for the performance of its powers and duties under the Texas Water Code and other laws of the state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

§331.63. Operating Requirements.

(a) (No change.)

(b) Except during well stimulation, injection pressure at the wellhead shall not exceed a maximum which shall be calculated so as to assure that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the injection zone, initiate new fractures or propagate existing fractures in the confining zone, or cause movement of fluid out of the injection zone that may pollute USDWs or surface water.

(c)-(g) (No change.)

(h) The permittee shall notify the executive director before commencing any workover operation. The notification shall be in writing and shall include plans for the proposed work. Approval by the executive director shall be obtained before the permittee may begin the workover. The executive director may grant an exception to the prior written notification and permission requirements when immediate action is required to comply with subsection (a) of this section.

(i) Pressure control equipment shall be installed and maintained during workovers which involve the removal of tubing.

(j) (No change.)

(k) The owner or operator shall maintain mechanical integrity of the injection well at all times.

§331.64. Monitoring and Testing Requirements.

(a)-(b) (No change.)

(c) Continuous recording devices shall be installed, used, and maintained in proper operating condition at all times to record injection tubing pressures, injection flow rates, injection fluid temperatures, injection volumes, tubing-long string casing annulus pressure and volume, and any other

data specified by the permit. The instruments shall be housed in weatherproof enclosures. The owner or operator shall also install and use:

(1)-(2) (No change.)

(3) If an automatic alarm or shutdown is triggered, the owner or operator shall immediately investigate as expeditiously as possible the cause of the alarm or shutoff. 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 owner or operator shall:

(A) cease injection of waste fluids unless authorized by the executive director to continue or resume injection;

(B)-(C) (No change.)

(4) If the loss of mechanical integrity is discovered by monitoring or during periodic mechanical integrity testing, the owner or operator shall:

(A)-(E) (No change.)

(5) (No change.)

(d) Mechanical integrity testing.

(1) The integrity of the long string casing, injection tube, and annular seal shall be tested annually by means of an approved pressure test with a liquid or gas and whenever there has been a well workover. The integrity of the bottom-hole cement shall be tested annually by means of an approved radioactive tracer survey. A radioactive tracer survey may be required after workovers that have the potential to damage the cement within the injection zone.

(2) A temperature log, noise log, oxygen activation log, or other approved log shall be required by the executive director at least once every five years to test for fluid movement along the borehole.

(3) A casing inspection, casing evaluation, or other approved log shall be run whenever the owner or operator conducts a workover in which the injection string is pulled, unless the executive director waives this requirement due to well construction or other factors which limit the test's reliability, or based upon the satisfactory results of a casing inspection log run within the previous five years. The executive director may require that a casing inspection log be run every five years, if there is sufficient reason to believe the integrity of the long string casing of the well may be adversely affected by naturally occurring or man-made events.

(4) The executive director may allow the use of a test to demonstrate mechanical integrity other than those listed in paragraph (1) of this subsection with the written approval of the

administrator of the United States Environmental Protection Agency (EPA) or his authorized representative. To obtain approval, the executive director shall submit a written request to the EPA administrator, which shall set forth the proposed test and all technical data supporting its use. The EPA administrator shall approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the EPA administrator shall be published in the *Federal Register* and may be used unless its use is restricted at the time of approval by the EPA administrator.

(e) (No change.)

(f) Corrosion monitoring.

(1) Corrosion monitoring of well materials shall be conducted quarterly. Test materials shall be the same as those used in the injection tubing, packer, and long string casing, and shall be continuously exposed to the waste fluids with the exception of when the well is taken out of service. The owner or operator shall demonstrate that the waste stream will be compatible with the well materials with which the waste is expected to come into contact, and to submit to the executive director a description of the methodology used to make that determination. Compatibility for purposes of this requirement is established if contact with injected fluids will not cause the well materials to fail to satisfy any design requirement imposed under §331.62(1) of this title (relating to Design Criteria). Testing shall be by:

(A) placing coupons of the well construction materials in contact with the waste stream; or

(B) routing the waste stream through a loop constructed with the material used in the well; or

(C) using an alternative method approved by the executive director.

(2) The test shall use materials identical to those used in the construction of the well, and those materials must be continuously exposed to the operating pressures and temperatures (measured at the wellhead) and flow rates of the injection operation; and

(3) The owner or operator shall monitor the materials for loss of mass, thickness, cracking, pitting, and other signs of corrosion on a quarterly basis to ensure that the well components meet the minimum standards for material strength and performance set forth in §331.62(1) of this title (relating to Construction Standards).

(4) Corrosion monitoring may be waived by the executive director if the injection well owner or operator satisfactorily demonstrates, before authorization to conduct injection operations, that the waste streams will not be corrosive to the well materials with which the waste is expected to come into contact throughout the life of the well. The demonstration shall include a description of the methodology used to make that determination.

(g) Ambient monitoring.

(1) Based on a site-specific assessment of the potential for fluid movement from the well or injection zone and on the potential value of monitoring wells to detect fluid movement, the executive director shall require the owner or operator to develop a monitoring program. When prescribing a monitoring system, the executive director may also require:

(A) Continuous monitoring for pressure changes in the first aquifer overlying the confining zone. When a monitor well is installed, the owner or operator shall, on a quarterly basis, sample the aquifer and analyze for constituents specified by the executive director;

(B) the use of indirect, geophysical techniques to determine the position of the waste front, the water quality in a formation designated by the executive director, or to provide other site specific data;

(C) periodic monitoring of the ground water quality in the first aquifer overlying the injection zone;

(D) periodic monitoring of the ground water quality in the lowermost USDW;
and

(E) any additional monitoring necessary to determine whether fluids are moving into or between USDWs.

(2) The pressure buildup in the injection zone shall be monitored annually, including at a minimum, a shut down of the well for a time sufficient to conduct a valid observation of the pressure fall-off curve.

(h) (No change.)

(i) The owner or operator shall submit information demonstrating to the satisfaction of the executive director that the waste stream and its anticipated reaction products will not alter the permeability, thickness, or other relevant characteristics of the confining or injection zones such that they would no longer meet the requirements specified in §331.121(c) of this title (relating to Class I Wells).

§331.65. Reporting Requirements.

(a) Pre-operation reports. For new wells, including wells converting to Class I status, the requirements are as follows.

(1) Completion report. Within 90 days after the completion or conversion of the well, the permittee shall submit a Completion Report to the executive director. The report shall include a

surveyor's plat showing the exact location and giving the latitude and longitude of the well. The report shall also include a certification that a notation on the deed to the facility property or on some other instrument which is normally examined during title search has been made stating the surveyed location of the well, the well permit number, and its permitted waste streams. The permittee shall also include in the report the following, prepared and sealed by a professional engineer with current registration under the Texas Engineering Practice Act:

(A)-(K) (No change.)

(L) compliance with the casing and cementing performance standard in §331.62(5) of this title (relating to Construction Standards); and

(M) compliance with the cementing requirements in §331.62(6) of this title.

(2)-(4) (No change.)

(b) Operating reports.

(1) (No change.)

(2) Injection operation monthly report. For commercial facilities only:

(A) The permittee shall submit within 30 days after the last day of each month a report to the commission including the following information for wastes received and injected during the month:

(i) names and locations of the companies and plants generating the wastes;

(ii) chemical and physical characteristics and volume of waste received from each company including pH;

(iii) names of companies transporting the wastes; and

(iv) a log of injection operations for each injection episode including but not limited to time of injection, injection rate, injection pressures, injection fluid volume, injection fluid pH, and injection fluid density.

(B) The permittee shall submit to the commission within 20 days of the last day of each month a report of injection operations on forms provided by the commission. These forms shall comply with the reporting requirements of 40 Code of Federal Regulations (CFR) 146.69(a). The executive director may require more frequent reporting.

(3) Injection zone annual report. For all facilities, the permittee shall submit annually with the December report of injection operation an updated graphic or other acceptable report of the pressure effects of the well upon its injection zone as required by §331.64(g) of this title (relating to Ambient Monitoring). To the extent this information is reasonably available, the report shall also include:

(A) locations of newly constructed or newly discovered wells that penetrate the confining and/or injection zone within the area of review if those wells were not included in the technical report accompanying the permit application or in later reports;

(B) a tabulation of data as required by §331.121(2)(B) of this title (relating to Class I Wells) for wells within the area of review that penetrate the injection zone or confining zone;

(C) the condition of the wells identified in subparagraph (A) of this paragraph and their effect on the injection activities;

(D) the protocol followed to identify, locate, and ascertain the condition of the wells identified in subparagraph (A) of this paragraph;

(E) a corrective action plan for wells not adequately constructed, completed, or plugged; and

(F) for non-commercial facilities only, a current injection fluid analysis.

(4)-(5) (No change.)

(c) Workover reports. Within 30 days after the completion of the workover, a report shall be filed with the executive director including the reason for well workover and the details of all work performed.

§331.66. Additional Requirements and Conditions.

(a) A permit for a Class I well shall include expressly or by reference the following conditions:

(1)-(4) (No change.)

(b) (No change.)

§331.68. Post-Closure Care.

(a) The owner or operator of a Class I hazardous well shall prepare, maintain, and comply with a plan for post-closure care that meets the requirements of subsection (b) of this section, and is acceptable to the executive director. The obligation to implement the post-closure plan survives the

termination of a permit or the cessation of injection activities. The requirement to maintain an approved plan is directly enforceable regardless of whether the requirement is a condition of the permit.

(1)-(2) (No change.)

(3) The plan shall assure financial responsibility as required in §§331.141-331.147 of this title (relating to Financial Responsibility). The owner or operator shall demonstrate and maintain financial responsibility for post-closure by using a trust fund, surety bond, letter of credit, financial test, insurance, or corporate guarantee, that meets the specifications for the mechanisms and instruments revised as appropriate to cover closure and post-closure care in §§331.141-331.147 of this title. The amount of the funds available shall be no less than the amount identified in paragraph (4)(F) of this subsection. The obligation to maintain financial responsibility for post-closure care survives the termination of a permit or the cessation of injection.

(4) (No change.)

(5) At the request of the owner or operator, or on his own initiative, the executive director may modify the post-closure plan after submission of the plugging and abandonment report following the procedures in §305.72 of this title (relating to UIC Permit Modification at the Request of the Permittee).

(b) The owner or operator shall:

(1)-(2) (No change.)

(3) submit a survey plat to the local zoning authority designated by the executive director. The plat shall indicate the location of the well relative to permanently surveyed benchmarks. A copy of the plat shall be submitted to the Underground Injection Control (UIC) program at the Austin office of the commission.

(4)-(5) (No change.)

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on

SUBCHAPTER E : STANDARDS FOR CLASS III WELLS

§§331.81-331.86

The amendments are adopted under the authority of Texas Water Code §§5.103, 5.105, and 27.019, which provide the commission with the authority to adopt rules reasonably required for the performance of its powers and duties under the Texas Water Code and other laws of the state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

§331.81. Applicability.

This subchapter establishes criteria and standards that apply to all Class III wells.

§331.82. Construction Requirements.

(a) Casing and cementing. All new Class III wells shall be cased and cemented to prevent the migration of fluids which may cause the pollution of USDWs. The casing and cement used in the construction of each newly drilled well shall be designed for the life expectancy of the well. In

determining and specifying casing and cementing requirements, the following factors shall be considered:

(1)-(7) (No change.)

(b) (No change.)

(c) Logs and tests. Appropriate logs and other tests shall be conducted during the drilling and construction of all new Class III wells. A descriptive report interpreting the results of those logs and tests shall be prepared by a knowledgeable log analyst and submitted to the executive director. The logs and tests appropriate to each type of Class III well shall be determined based on the intended function, depth, construction, and other characteristics of the well, availability of similar data in the area of the drilling site, and the need for additional information that may arise from time to time as the construction of the well progresses.

(1) (No change.)

(2) Mechanical integrity, as described in §331.43 of this title (relating to Mechanical Integrity Standards), shall be demonstrated following construction of the well.

(A) Except as provided by subparagraph (B) of this section, the following tests shall be used to evaluate the mechanical integrity of the injection well:

(i) To test for significant leaks under §331.43(a)(1) of this title, monitoring of annulus pressure, or pressure test with liquid or gas, or radioactive tracer survey, or for Class III uranium solution mining wells only, a single point resistivity survey in conjunction with a pressure test to detect any leaks in the casing, tubing, or packer; and

(ii) To test for significant fluid movement under §331.43(a)(2) of this title, temperature log, noise log, radioactive tracer survey, cement bond log, oxygen activation log, or for Class III uranium solution mining wells only, cement records that demonstrate the absence of significant fluid movement where other tests are not suitable. For Class III wells where the cement records are used to demonstrate the absence of significant fluid movement, the monitoring program prescribed by §331.84 of this title (relating to Monitoring Requirements) shall be designed to verify the absence of significant fluid movement.

(B) The executive director may allow the use of a test to demonstrate mechanical integrity other than those listed in subparagraph (A) of this paragraph with the written approval of the administrator of the United States Environmental Protection Agency (EPA) or his authorized representative. To obtain approval, the executive director shall submit a written request to the EPA administrator, which shall set forth the proposed test and all technical data supporting its use. The EPA administrator shall approve the request if it will reliably demonstrate the mechanical integrity of wells for which its use is proposed. Any alternate method approved by the EPA administrator shall be published in the *Federal Register* and may be used unless its use is restricted at the time of approval by the EPA administrator.

(3) Additional logs and tests may be required by the executive director when appropriate.

(d)-(f) (No change.)

(g) Monitor well location. Where injection is into a formation which contains water with less than 10,000 mg/l TDS, monitoring wells shall be completed into the injection zone and into any USDW above the injection zone which could be affected by the mining operation. These wells shall be located to detect any excursion of injection fluids, production fluids, process by-products, or formation fluids outside the mining area or zone. If the operation may be affected by subsidence or catastrophic collapse, the monitoring wells shall be located so that they will not be physically affected. Designated monitoring wells shall be installed at least 100 feet inside any permit area boundary, unless excepted by written authorization from the commission.

(h) Subsidence or catastrophic collapse. Where the injection wells penetrate a USDW in an area subject to subsidence or catastrophic collapse an adequate number of monitoring wells shall be completed into the USDW to detect any movement of injected fluids, process by-products or formation fluids into the USDW. The monitoring wells shall be located outside the physical influence of the subsidence or catastrophic collapse.

(i) Monitor well criteria. In determining the number, location, construction, and frequency of monitoring of the monitoring wells the following criteria shall be considered:

(1) the population relying on the USDW affected or potentially affected by the injection operation;

(2)-(6) (No change.)

§331.83. Operating Requirements.

(a) Injection pressure at the wellhead shall not exceed a maximum, as specified in the permit or commission order, which shall be calculated so as to assure that the pressure in the injection zone during injection does not:

(1)-(2) (No change.)

(3) cause the migration of injection or formation fluids into USDWs.

(b) Injection between the outermost casing protecting USDWs and the wellbore is prohibited.

§331.84. Monitoring Requirements.

(a) Injection fluid shall be analyzed for physical and chemical characteristics with sufficient frequency to yield representative data on its characteristics. Whenever the injection fluid is modified to

the extent that the analysis is incorrect or incomplete, a new analysis shall be submitted to the executive director.

(b)-(e) (No change.)

(f) Quarterly monitoring of wells required by §331.82(h) of this title (relating to Construction Requirements).

§331.85. Reporting Requirements.

(a)-(d) (No change.)

(e) Routine monitoring data required in §331.84(c) and (d) of this title (relating to Monitoring Requirements) shall be reported at least quarterly to the executive director on a form provided by the executive director and in accordance with the form completion instructions. These reports must be postmarked no later than the 10th day of the following reporting period.

(f) (No change.)

(g) The first report required by subsection (f) of this section shall include a groundwater analysis in the manner required by §331.106(2) of this title (relating to Remedial Action for Excursion). A copy of all reports shall be mailed to the executive director, postmarked within two days of the end

of each report period. The first report period shall begin with the day the presence of mining solution in a designated Monitor Well is verified. The permittee shall continue to make remedial action reports until clean-up is accomplished.

§331.86. Closure.

(a) Mine facilities. Within 120 days after acknowledgment of completion of mining activities, or if final restoration of the mine area aquifers is required, upon completion of final restoration, the permittee shall accomplish closure of the mining facilities in accordance with approved plugging and abandonment plans submitted as part of the supplementary technical report. Modification to plugging and abandonment plans or extension of time limit past 120 days must be approved in writing by the executive director.

(b) (No change.)

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on

SUBCHAPTER G : CONSIDERATION PRIOR TO PERMIT ISSUANCE

§331.121, §331.122

The amendments are adopted under the authority of Texas Water Code §§5.103, 5.105, and §27.019, which provide the commission with the authority to adopt rules reasonably required for the performance of its powers and duties under the Texas Water Code and other laws of the state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

§331.121. Class I Wells.

(a) The commission shall consider the following before issuing a Class I Injection Well Permit:

(1) (No change.)

(2) all information in the Technical Report submitted with the application for permit in conformance with Chapter 305 of this title (relating to Consolidated Permits) including, but not limited to:

(A)-(F) (No change.)

(G) proposed operating data:

(i) average and maximum daily injection rate and volume of the fluid
or waste to be injected over the anticipated life of the injection well;

(ii)-(vii) (No change.)

(H)-(K) (No change.)

(L) contingency plans, based on a reasonable worst case scenario, to cope with
all shut-ins; loss of cavern integrity, or well failures so as to prevent migration of fluid into any
USDW;

(M)-(P) (No change.)

(3)-(5) (No change.)

(b)-(c) (No change.)

(d) The commission shall also consider the following additional criteria, which must be addressed in the technical report of the application, before issuing a salt cavern Class I injection well permit:

(1) geologic suitability of the location:

(A) a thorough geologic characterization of the salt dome, including the geometry of the salt stock and its calculated movement and calculated salt loss rate. Data submitted must be sufficient to image underneath all overhangs, to delineate the edge of the salt stock, to define any other caverns or co-uses of the salt stock, and to address any conditions that may result in potential adverse impact on the salt stock. Well logs, seismic reflection surveys, gravity surveys, and any other appropriate geophysical methods necessary to characterize the salt dome are to be utilized. Seismic reflection data submitted must include a surface recorded three-dimensional seismic grid survey sufficient to image underneath all suspected overhangs and to delineate the edge of the stock.

(B)-(D) (No change.)

(2)-(5) (No change.)

(e) (No change.)

(f) Interim Status under the Resource Conservation and Recovery Act (RCRA) for Class I hazardous waste injection wells. The minimum state standards which define acceptable injection of hazardous waste during the period of interim status are set out in this chapter. The issuance of an underground injection well permit does not automatically terminate RCRA interim status. A Class I well's interim status does, however, automatically terminate upon issuance to that well of a RCRA permit, or upon the well's receiving a RCRA permit-by-rule under §335.47 of this title (relating to Special Requirements for Persons Eligible for a Federal Permit by Rule). Thus, until a Class I well injecting hazardous waste receives a RCRA permit or RCRA permit-by-rule, the well's interim status requirements are the applicable requirements imposed under this chapter, including any requirements imposed in the UIC permit.

(g) (No change.)

§331.122. Class III Wells.

The commission shall consider the following before issuing a Class III Injection Well or Area Permit:

(1) (No change.)

(2) all information in the Technical Report submitted with the application for permit, including the following:

(A) (No change.)

(B) a tabulation of reasonably available data on all wells within the area of review which penetrate the proposed injection zone. This data shall include a description of each well's type, construction, date drilled, location, depth, record of plugging and completion, and any additional information the executive director may require;

(C) maps and cross-sections indicating the vertical and lateral limits of those aquifers within the area of review that contain water with less than 10,000 mg/liter TDS, their position relative to the injection formation, and the direction of water movement.

(D)-(K) (No change.)

(L) expected changes in pressure, native fluid displacement, direction of movement of injection fluid;

(M) contingency plans to cope with all shut-ins or well failures so as to prevent the migration of contaminating fluids into fresh water; and

(N) the corrective action proposed to be taken under §331.44 of this title (relating to Corrective Action Standards).

(3)-(5) (No change.)

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on

SUBCHAPTER A : GENERAL PROVISIONS

§331.8

The repeal is adopted under Texas Water Code §§5.103, 5.105, and 27.019, which authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to carry out the powers and duties under the provisions of Texas Water Code Chapter 27, and other laws of this state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

§331.8 Application Required for Existing Wells.

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on

SUBCHAPTER B : JURISDICTION OVER IN SITU URANIUM MINING

§§331.31-331.36

The repeals are adopted under Texas Water Code §§5.103, 5.105, and 27.019, which authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to carry out the powers and duties under the provisions of Texas Water Code Chapter 27, and other laws of this state; and under the Texas Health and Safety Code, §361.017 and §361.024, which further authorize the Texas Natural Resource Conservation Commission to promulgate rules necessary to manage industrial solid and municipal hazardous wastes.

§331.31. Authority of Texas Department of Health.

§331.32. Authority of Texas Water Commission.

§331.33. Joint Authority Over Holding Ponds.

§331.34. Applications.

§331.35. Permits.

§331.36. Financial Assurances.

This agency hereby certifies that the adoption has been reviewed by legal counsel and found to be a valid exercise of the agency's legal authority.

Issued in Austin, Texas, on