

The Texas Commission on Environmental Quality (TCEQ, agency, or commission) proposes amendments to §§309.1, 309.2, 309.10, 309.11, 309.13, and 309.20.

Background and Summary of the Factual Basis for the Proposed Rules

TCEQ is proposing to amend 30 Texas Administrative Code (TAC) Chapter 309 (Domestic Wastewater Effluent Limitations and Plant Siting) to implement Senate Bill (SB) 1145, 89th Regular Legislative Session, which amended Texas Water Code (TWC), §26.131 (Duties of the Railroad Commission), to transfer permitting authority for the land application of produced water that is treated for beneficial use from the Railroad Commission of Texas (RRC) to TCEQ for permit applications filed on or after September 1, 2025.

The rulemaking proposes to amend §§309.1, 309.2, 309.10, 309.11, 309.13, and 309.20 to clarify applicability to the land application of industrial wastewater, including produced water under TWC, §26.131 and establish minimum requirements for land application of produced water.

As part of this rulemaking, the commission is also proposing amendments to 30 TAC Chapter 210 (Use of Reclaimed Water) concurrently in this issue of the *Texas Register*.

Section by Section Discussion

The proposed rules would amend the title of the chapter to “Wastewater Effluent Limitations and Plant Siting” by removing the word “Domestic” to clarify that this chapter applies to both domestic wastewater and industrial wastewater.

The proposed rules would also amend the title of the Subchapter C and §309.20 to “Land

Application of Treated Effluent” by removing the word “Sewage” to similarly clarify that this chapter applies to both domestic wastewater and industrial wastewater.

Proposed amended §309.1, *Scope and Applicability*, would revise subsection (a) to clarify that applicability to treated effluent (i.e., domestic wastewater and industrial wastewater) by removing the reference to only ‘domestic sewage’. The proposed amended section would also correct the title of Figure: 30 TAC §309.1(b) and correct spacing errors under subsections (c) and (d).

Proposed amended §309.2, *Rationale for Effluent Sets*, would revise paragraph (c)(4) to update the reference to Chapter 217 of this title with the correct name, “Design Criteria for Domestic Wastewater Systems”.

Proposed amended §309.10, *Purpose, Scope, and Applicability*, would be revised to clarify applicability to both domestic wastewater and industrial wastewater, including produced water. Subsection (a) would be restructured into paragraphs (a)(1) and (a)(2) and amended, as follows:

Proposed paragraph (a)(1) would be amended to clarify that Subchapter B (relating to Location Standards) applies to land application of industrial wastewater, including produced water, in addition to domestic wastewater treatment facilities. The amended paragraph would also restructure existing provisions related to evaluation of an application as subparagraphs (a)(1)(A) related to domestic wastewater and (a)(1)(C) related to plans and specifications. Proposed new subparagraph (a)(1)(B) would clarify applicability to the evaluation of an application to treat and dispose of industrial wastewater, including produced water under TWC, §26.131.

Proposed paragraph (a)(2) would be amended to expand applicability to both domestic and industrial wastewaters by removing the reference to domestic only. The proposed paragraph would also be amended to clarify applicability to land application permit applications.

Proposed amended §309.11, *Definitions*, would add references to the definitions for “Industrial Wastewater” (as defined in 30 TAC §210.52) and “Produced Water” (as defined in 30 TAC §305.541(b)). Subsequent definitions would be renumbered.

Proposed amended §309.13, *Unsuitable Site Characteristics*, would clarify applicability as well as establish minimum requirements for treatment and disposal of treated effluent.

Proposed amended subsection (c) would be revised to clarify applicability to industrial wastewater, including produced water under TWC, §26.131. Proposed amended subsection (c) would also add new paragraph (6) requiring a wastewater treatment plant unit, or land where irrigation using wastewater effluent occurs, to be located a minimum horizontal distance of 100 feet from a water in the state.

Proposed amended subsection (d) would be amended to clarify that additional requirements under 30 TAC §217.203 of this title (relating to Design Criteria for Natural Treatment Systems) may apply.

Proposed amended §309.20, *Land Application of Treated Effluent*, would correct the title of Figure: 30 TAC §309.20(b)(3)(C).

TCEQ’s jurisdiction at facilities seeking authorization to land apply produced water that has

been treated for beneficial use under this chapter is outlined under §7.117 of this title, *Memorandum of Understanding between the Railroad Commission of Texas (RRC) and the Texas Commission on Environmental Quality (TCEQ)*.

Fiscal Note: Costs to State and Local Government

Kyle Girtten, Analyst in the Budget and Planning Division, has determined that for the first five-year period the proposed rule is in effect, fiscal implications for the agency cannot be estimated.

As authorized by SB 1145 from the 89th Regular Legislative Session (2025), this rulemaking would promulgate language to establish how TCEQ will issue permits for the land application of produced water that is treated for beneficial use and establish minimum requirements for the land application of produced water. Proposed changes to 30 TAC §§309.10 and 309.13 would make clear that produced water will be permitted as industrial wastewater. For such permits, it is anticipated that TCEQ would receive additional revenue from application fees and from annual water quality fees. Application fees are dependent on the classification of the facility with the cost being \$1,250 for a new permit for minor facilities and \$2,050 for major facilities (30 TAC §305.53(a)(6)(D) and (b)). Water quality fees would be set at a minimum of \$1,250 per year for each permit (30 TAC §21.3(6)(B)), with the actual cost being dependent on the permitted flow, amount of pollutants, and toxic rating for the discharge (30 TAC §21.3(6)(B)). As the number and types of permit applications that will be received during the first five years is unknown, the total revenue that would be received for this category of land application permits cannot be estimated.

No fiscal implications are anticipated for other units of state or local government as a result of

administration or enforcement of the proposed rule.

Public Benefits and Costs

Mr. Girten determined that for each year of the first five years the proposed rules are in effect, the public benefit will be rule language that provides clarity and establishes minimum requirements regarding how TCEQ would issue permits for the land application of industrial wastewater, including produced water for beneficial use as authorized by SB 1145 from the 89th Regular Legislative Session (2025). Additionally, the public will benefit from the clarity of promulgated requirements related to the location of wastewater treatment plant units or effluent used for irrigation in relation to waters of the state (30 TAC §309.13(d)(2)). The public will also benefit from various clarifications in the rule. The addition of the requirements proposed in the rule would lead to increased protection of water quality in the waters of the state and the land application of produced water may lead to the increased availability of water for beneficial reuse.

Entities which seek authorization to apply produced water to the land would incur costs to complete their application and upon issuance of the permit, they would incur costs to comply with permit requirements in 30 TAC §309. Costs include application and water quality fees, costs associated with water quality treatment, costs for sampling and analysis of water quality and soil samples, and other costs associated with developing the permit application and meeting reporting and recordkeeping requirements. Overall, costs cannot be estimated because they would be highly dependent on a number of factors, including but not limited to characteristics of the site where water would be applied to the land, the permitted amount of produced water that would be applied to the land, and the quality of the produced water.

Local Employment Impact Statement

The commission reviewed this proposed rulemaking and determined that a Local Employment Impact Statement is not required because the proposed rulemaking does not adversely affect a local economy in a material way for the first five years that the proposed rule is in effect.

Rural Communities Impact Assessment

The commission reviewed this proposed rulemaking and determined that the proposed rulemaking does not adversely affect rural communities in a material way for the first five years that the proposed rules are in effect. The amendments would apply statewide and have the same effect in rural communities as in urban communities.

Small Business and Micro-Business Assessment

No adverse fiscal implications are anticipated for small or micro-businesses due to the implementation or administration of the proposed rule for the first five-year period the proposed rules are in effect. The proposed rule is not compulsory, and entities that seek authorization to land apply produced water would incur costs when seeking a permit, paying fees, and complying with permit requirements. This may include some small businesses engaged in oil and gas extraction and support activities, the number of which cannot be estimated.

Small Business Regulatory Flexibility Analysis

The commission reviewed this proposed rulemaking and determined that a Small Business Regulatory Flexibility Analysis is not required because the proposed rule does not adversely affect a small or micro-business in a material way for the first five years the proposed rules are in effect.

Government Growth Impact Statement

The commission prepared a Government Growth Impact Statement assessment for this proposed rulemaking. The proposed rulemaking does not create or eliminate a government program and will not require an increase or decrease in future legislative appropriations to the agency. The proposed rulemaking does not require the creation of new employee positions, eliminating current employee positions, nor require an increase or decrease in fees paid to the agency. The proposed rulemaking amends an existing regulation, and it does not create, expand, repeal, or limit this regulation. The proposed rulemaking does not increase or decrease the number of individuals subject to its applicability. During the first five years, the proposed rule should not impact positively or negatively the state's economy.

Written comments concerning the cost, benefit, or effect of the proposed rule, including any applicable data, research, or analysis may be submitted to the contact person at the address listed under the Submittal of Comments section of this preamble

Draft Regulatory Impact Analysis Determination

The commission reviewed the rulemaking action in consideration of the regulatory analysis requirements of Texas Government Code (TGC), §2001.0225, and determined that the action is not subject to §2001.0225 because it does not meet the definition of a "Major environmental rule" as defined in §2001.0225(g)(3). A "Major environmental rule" is defined as a rule, the specific intent of which, is to protect the environment or reduce risks to human health from environmental exposure and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. The proposed rulemaking is not specifically intended

to protect the environment or reduce risks to human health from environmental exposure.

Rather, it intends to implement SB 1145, which amended TWC, §26.131 and transferred permitting authority from RRC to TCEQ of applications filed on or after September 1, 2025, for the land application of produced water that is treated for beneficial use, and to clarify applicability to the land application of industrial wastewater, including produced water under TWC, §26.131 and establish minimum requirements for land application of produced water.

Even if the proposed rulemaking was a “Major environmental rule,” TGC, §2001.0225 still would not apply to this rulemaking because §2001.0225 only applies to a “Major environmental rule,” the result of which is to: 1) exceed a standard set by federal law, unless the rule is specifically required by state law; 2) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4) adopt a rule solely under the general powers of the agency instead of under a specific state law.

This rulemaking does not meet any of these four applicability criteria because it: 1) does not exceed a standard set by federal law; 2) does not exceed an express requirement of state law; 3) does not exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; and 4) is not proposed solely under the general powers of the agency, but rather specifically under TWC, §26.131, which authorizes the commission to issue permits for the land application of produced water; §26.027, which authorizes the commission to issue permits; and §26.121, which authorizes the commission to prohibit unauthorized discharges. Therefore, this proposed rulemaking does not fall under any of the applicability criteria in TGC, §2001.0225.

The commission invites public comment regarding the Draft Regulatory Impact Analysis Determination during the public comment period. Written comments on the Draft Regulatory Impact Analysis Determination may be submitted to the contact person at the address listed under the Submittal of Comments section of this preamble.

Takings Impact Assessment

TCEQ evaluated this proposed rule and performed an analysis of whether it constitutes a taking under TGC, Chapter 2007. The proposed rulemaking intends to implement SB 1145, which amended TWC, §26.131 and transferred permitting authority from RRC to TCEQ for the land application of produced water that is treated for beneficial use, and to clarify applicability to the land application of industrial wastewater, including produced water under TWC, §26.131 and establish minimum requirements for land application of produced water.

Promulgation and enforcement of the proposed rulemaking would be neither a statutory nor a constitutional taking of private real property. The proposed rule does not affect private property in a manner that restricts or limits an owner's right to the property that would otherwise exist in the absence of a governmental action. Consequently, this rulemaking action does not meet the definition of a taking under TGC, §2007.002(5).

Consistency with the Coastal Management Program

The commission reviewed the proposed rules and found that they are neither identified in Coastal Coordination Act Implementation Rules, 31 TAC §29.11(b)(2) or (4), nor will they affect any action/authorization identified in Coastal Coordination Act Implementation Rules, 31 TAC §29.11(a)(6). Therefore, the proposed rules are not subject to the Texas Coastal Management

Program.

Written comments on the consistency of this rulemaking may be submitted to the contact person at the address listed under the Submittal of Comments section of this preamble.

Announcement of Hearing

The commission will hold a hybrid virtual and in-person public hearing on this proposal in Austin on June 15, 2026, at 10:00am in Building E, Room 201S at the commission's central office located at 12100 Park 35 Circle. The hearing is structured for the receipt of oral or written comments by interested persons. Individuals may present oral statements when called upon in order of registration. Open discussion will not be permitted during the hearing; however, commission staff members will be available to discuss the proposal 30 minutes prior to the hearing at 9:30am.

Individuals who plan to attend the hearing virtually and want to provide oral comments and/or want their attendance on record must register by June 11, 2026. To register for the hearing, please email Rules@tceq.texas.gov and provide the following information: your name, your affiliation, your email address, your phone number, and whether or not you plan to provide oral comments during the hearing. Instructions for participating in the hearing will be sent on June 12, 2026, to those who register for the hearing.

For the public who do not wish to provide oral comments but would like to view the hearing may do so at no cost at:

<https://events.teams.microsoft.com/event/bc7d1a3d-ecdc-4185-b13e-6a7e4dc60392@871a83a4-a1ce-4b7a-8156-3bcd93a08fba>

Persons who have special communication or other accommodation needs who are planning to attend the hearing should contact Sandy Wong, Office of Legal Services at (512) 239-1802 or 1-800-RELAY-TX (TDD). Requests should be made as far in advance as possible.

Submittal of Comments

Written comments may be submitted to Gwen Ricco, MC 205, Office of Legal Services, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087, or faxed to *fax4808@tceq.texas.gov*. Electronic comments may be submitted at: *<https://tceq.commentinput.com/comment/search>*. File size restrictions may apply to comments being submitted via the TCEQ Public Comments system. All comments should reference Rule Project Number 2026-006-309-OW. The comment period closes on June 16, 2026. Please choose one of the methods provided to submit your written comments.

Copies of the proposed rulemaking can be obtained from the commission's website at *https://www.tceq.texas.gov/rules/propose_adopt.html*. For further information, please contact Shannon Gibson, Water Quality Division, (512) 239-4284.

CHAPTER 309 - ~~[DOMESTIC]~~ WASTEWATER EFFLUENT LIMITATIONS AND PLANT SITING

SUBCHAPTER A: EFFLUENT LIMITATIONS

§§309.1 AND 309.2

Statutory Authority

These amendments to 30 Texas Administrative Code (30 TAC) Chapter 309 are adopted under the Texas Water Code (TWC). Specifically, TWC, §5.013, which establishes the general jurisdiction of the commission while TWC, §5.102, provides the commission with the authority to carry out its duties and general powers under its jurisdictional authority as provided by TWC, §5.103; TWC, §5.103, which requires the commission to adopt any rule necessary to carry out its powers and duties under the code and other laws of the state; TWC, §5.105, which authorizes the commission to adopt rules and policies necessary to carry out its responsibilities and duties under the TWC; and TWC, §5.120, which requires the commission to administer the law for the maximum conservation and protection of the environment and natural resources of the state. These amendments are also adopted under TWC, §26.027, which authorizes the commission to issue permits for the discharge of waste or pollutants into or adjacent to water in the state; TWC, §26.121, which provides the commission's authority to prohibit unauthorized discharges into or adjacent to water in the state; and TWC, §26.131, which provides the commission's authority to issue permits for the discharge of produced water into water in the state and for the land application of produced water.

The adopted amendments implement TWC, §§5.013, 5.102, 5.103, 5.105, 5.120, 26.027, 26.121, and 26.131.

§309.1. Scope and Applicability.

(a) The purpose of this subchapter is to promulgate a set of effluent quality limitations for treated effluent, [domestic sewage] which will be required of permittees as appropriate to maintain water quality in accordance with the commission's surface water quality standards. Any incorporation of federal regulations into this chapter shall apply only to disposal of treated effluent [domestic sewage].

(b) Secondary treatment, with exceptions applicable to certain stabilization pond systems and other natural systems, is defined as a minimum reduction of pollutants to meet the quality specified in Figure: 30 TAC §309.1(b):

Figure: 30 TAC §309.1(b) [T30S309.1(b)]

Biochemical Oxygen Demand (BOD₅), 5-Day (milligram per liter, mg/l)

30-Day Average	20
7-Day Average	30
Daily Maximum	45
Single Grab	65

Total Suspended Solids (TSS) (mg/l)

30-Day Average	20
7-Day Average	30

Daily Maximum	45
Single Grab	65

Dissolved Oxygen (DO) (mg/l)

Single Grab (minimum) 2.0

pH (Standard Units)

Within limits of 6.0 – 9.0

(c) Effective April 1988, all permits containing an ammonia-nitrogen effluent limit are modified to change Biochemical Oxygen Demand (BOD5)[(BOD5)] to carbonaceous biochemical oxygen demand (CBOD5)[(CBOD5)].

(d) Effective January 1, 1988, any permit containing a BOD5 effluent limitation may be monitored and reported as CBOD5 as long as nitrogen is monitored and reported as ammonia-nitrogen at the same sampling frequency. If the permit authorizes a discharge to land or an evaporation pond only, ammonia-nitrogen monitoring and reporting are not required to change to CBOD5[].

(e) The state of Texas has established a state water quality management program and a continuing planning process which sets forth the strategy and procedures for accomplishing the management program's objectives. Essential elements of the program include updates of basin plans, total maximum daily loads, and wasteload evaluations by basin segments. In order to achieve compliance with water quality standards within certain segments, more stringent

effluent quality limitations other than basic secondary treatment may be required to protect water quality.

§309.2. Rationale for Effluent Sets.

(a) The effluent sets in §309.4 of this title (relating to Table 1, Effluent Limitations for Domestic Wastewater Treatment Plants) are intended to represent standard levels of treatment normally required for domestic wastewater treatment plants.

(b) Modifications to the effluent sets listed in §309.4 of this title may be considered by the commission when effluent limits more stringent than secondary treatment are required in order to maintain desired water quality levels.

(c) On a case-by-case basis, modifications to the effluent sets listed in §309.4 of this title may be considered by the commission for certain existing, natural systems which cannot consistently meet pH or total suspended solids (TSS) limitations due to the inherent variability of a particular system. Modifications to the effluent sets may be allowed for a natural system designed for treatment or polishing with a discharge directly into surface water in the state. Natural systems include, but are not necessarily limited to, aerated lagoons followed by stabilization ponds, facultative ponds, stabilization ponds, and constructed wetlands. For the purpose of this chapter, playa lakes are not considered natural systems. The commission will consider the following factors in approving a modification to the effluent sets:

(1) Any modification shall not allow a discharge which would cause a violation of the commission's surface water quality standards or any applicable total maximum daily loads or wasteload evaluation.

(2) A proposal for a modification must be supported by an engineering report, prepared and sealed by a licensed Texas professional engineer representing the permit applicant, which justifies the request for modification with specific information relating to the proposed design and that design's inherent limitations. For considering a request for modification of an existing system that cannot achieve permitted pH or TSS limitations, the engineering report must also document past efforts of design modification, operation, and maintenance, and include data showing for the past three years, influent and effluent hydraulic and organic loadings and the resultant effluent quality achieved.

(3) The commission may set narrative effluent limitations and effluent monitoring requirements as an alternative to a specific numerical effluent limitation when a specific numeric effluent limitation cannot be met because of, but not limited to, seasonal or operational factors. These narrative requirements shall ensure that necessary operational and maintenance actions are consistently carried out by the permittee to meet applicable water quality standards. The commission may request resumption of the original numerical limitations during the next permit renewal or amendment based on a review of the discharge effluent data.

(4) The commission may suspend setting a specific numerical effluent limitation for a temporary period of time not to exceed the remainder of the permit term, pending a review of the actual performance of a natural system's design as long as the facility meets paragraph (1) of this subsection. During any temporary suspension, the permittee must document that the system is operated and maintained for optimal performance in accordance with an operation and maintenance manual prepared in accordance with Chapter 217 of this

title (relating to Design Criteria for Domestic Wastewater Systems) or Chapter 317 of this title (relating to Design Criteria Prior to 2008) as applicable and is meeting water quality standards. After review of performance data and related information submitted by the permittee in a permit application, for permit renewal or amendment, or when submitted at the request of the executive director, the commission may set specific numerical effluent limitations consistent with this subchapter and the performance documented for the particular system.

SUBCHAPTER B: LOCATION STANDARDS

§§309.10, 309.11, 309.13

Statutory Authority

These amendments to 30 Texas Administrative Code (30 TAC) Chapter 309 are adopted under the Texas Water Code (TWC). Specifically, TWC, §5.013, which establishes the general jurisdiction of the commission while TWC, §5.102, provides the commission with the authority to carry out its duties and general powers under its jurisdictional authority as provided by TWC, §5.103; TWC, §5.103, which requires the commission to adopt any rule necessary to carry out its powers and duties under the code and other laws of the state; TWC, §5.105, which authorizes the commission to adopt rules and policies necessary to carry out its responsibilities and duties under the TWC; and TWC, §5.120, which requires the commission to administer the law for the maximum conservation and protection of the environment and natural resources of the state. These amendments are also adopted under TWC, §26.027, which authorizes the commission to issue permits for the discharge of waste or pollutants into or adjacent to water in the state; TWC, §26.121, which provides the commission's authority to prohibit unauthorized discharges into or adjacent to water in the state; and TWC, §26.131, which provides the commission's authority to issue permits for the discharge of produced water into water in the state and for the land application of produced water.

The adopted amendments implement TWC, §§5.013, 5.102, 5.103, 5.105, 5.120, 26.027, 26.121, and 26.131.

§309.10. Purpose, Scope, and Applicability.

(a) (1) This subchapter establishes minimum standards for the location of domestic wastewater treatment facilities and land application of industrial wastewater, including produced water under Tex. Water Code §26.131. These standards are to be applied in the evaluation of an application for a permit to:

(A) treat and dispose of domestic wastewater;

(B) treat and dispose of industrial wastewater, including produced water under Tex. Water Code §26.131; and

(C) for obtaining approval of construction plans and specifications.

(2) This subchapter applies to [~~domestic~~] wastewater and land application permit applications and construction plans and specifications filed on or after October 8, 1990, for new facilities and substantial changes in the function or use of existing units.

(b) The purpose of this subchapter is to condition issuance of a permit and/or approval of construction plans and specifications for new domestic wastewater treatment facilities or the substantial change in the function or use of an existing unit on selection of a site that minimizes possible contamination of water in the state; to define the characteristics that make an area unsuitable or inappropriate for a wastewater treatment facility; to minimize the possibility of exposing the public to nuisance conditions; and to prohibit issuance of a permit for a facility to be located in an area determined to be unsuitable or inappropriate, unless the design, construction, and operational features of the facility will mitigate the unsuitable site characteristics.

§309.11. Definitions.

The following words and terms, when used in this subchapter, shall have the following meanings, unless the context clearly indicates otherwise.

(1) Active geologic processes--Any natural process which alters the surface and/or subsurface of the earth, including, but not limited to, erosion (including shoreline erosion along the coast), submergence, subsidence, faulting, karst formation, flooding in alluvial flood wash zones, meandering river bank cutting, and earthquakes.

(2) Aquifer--A geologic formation, group of formations, or part of a formation capable of yielding a significant amount of groundwater to wells or springs. Portions of formations, such as clay beds, which are not capable of yielding a significant amount of groundwater to wells or springs are not aquifers.

(3) Erosion--The group of natural processes, including weathering, deterioration, detachment, dissolution, abrasion, corrosion, wearing away, and transportation, by which earthen or rock material is removed from any part of the earth's surface.

(4) Existing facility--Any facility used for the storage, processing, or application of domestic wastewater and which has obtained approval of construction plans and specifications as of March 1, 1990.

(5) Industrial wastewater--as defined in 30 Tex. Admin. Code § 210.52(9).

(6) [(5)] New facility--Any domestic wastewater treatment facility which is not an existing facility.

(7) [(6)] Nuisance odor prevention--The reduction, treatment, and dispersal of potential odor conditions that interfere with another's use and enjoyment of property that are caused by or generated from a wastewater treatment plant unit, which conditions cannot be prevented by normal operation and maintenance procedures of the wastewater treatment unit.

(8) [(7)] One hundred-year flood plain--Any land area which is subject to a 1.0% or greater chance of flooding in any given year from any source.

(9) Produced water--as defined in 30 Tex. Admin. Code § 305.541(b).

(10) [(8)] Substantial change in the function or use--An increase in the pollutant load or modification in the existing purpose of the unit.

(11) [(9)] Wastewater treatment plant unit--Any apparatus necessary for the purpose of providing treatment of wastewater (i.e., aeration basins, splitter boxes, bar screens, sludge drying beds, clarifiers, overland flow sites, treatment ponds or basins that contain wastewater, etc.). For purposes of compliance with the requirements of §309.13(e) of this title (relating to Unsuitable Site Characteristics), this definition does not include off-site bar screens, off-site lift stations, flow metering equipment, or post-aeration structures needed to meet permitted effluent minimum dissolved oxygen limitations.

(12) [(10)] Wetlands--Those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, playa lakes, and similar areas.

§309.13. Unsuitable Site Characteristics.

(a) A wastewater treatment plant unit may not be located in the 100-year flood plain unless the plant unit is protected from inundation and damage that may occur during that flood event.

(b) A wastewater treatment plant unit may not be located in wetlands. (This prohibition is not applicable to constructed wetlands.)

(c) A wastewater treatment plant unit may not be located closer than 500 feet from a public water well as provided by §290.41(c)(1)(B) of this title (relating to Water Sources) nor 250 feet from a private water well. The following separation distances apply to any facility used for the storage, processing, or application of domestic wastewater and industrial wastewater, including produced water under Tex. Water Code §26.131. Exceptions to these requirements will be considered at the request of a permit applicant on a case-by-case basis, and alternative provisions will be established in a permit if the alternative condition provides adequate protection to potable water sources and supplies.

(1) A wastewater treatment plant unit, or land where irrigation using wastewater effluent occurs must be located a minimum horizontal distance of 150 feet from a private water well.

(2) A wastewater treatment plant unit, or land where irrigation using wastewater effluent occurs, must be located a minimum horizontal distance of 500 feet from an elevated or ground potable-water storage tank as provided by §290.43(b)(1) of this title (relating to Water Storage).

(3) A wastewater treatment plant unit, or land where irrigation using wastewater effluent occurs, must be located a minimum horizontal distance of 500 feet from a public water well site as provided by §290.41(c)(1)(C) of this title, spring, or other similar sources of public drinking water.

(4) A wet well or pump station at a wastewater treatment facility must be located a minimum horizontal distance of 300 feet from a public water well site, spring, or other similar sources of public drinking water as provided by §290.41(c)(1)(B) of this title.

(5) A wastewater treatment plant unit, or land where irrigation using wastewater effluent occurs, must be located a minimum horizontal distance of 500 feet from a surface water treatment plant as provided by §290.42(a)(2)(A) of this title (relating to Water Treatment).

(6) A wastewater treatment plant unit, or land where irrigation using wastewater effluent occurs, must be located a minimum horizontal distance of 100 feet from a water in the state.

(d) A wastewater treatment [facility] surface impoundment may not be located in areas overlying the recharge zones of major or minor aquifers, as defined by the Texas Water

Development Board, unless the aquifer is separated from the base of the containment structure by a minimum of three feet of material with a hydraulic conductivity toward the aquifer not greater than 10^{-7} cm/sec or a thicker interval of more permeable material which provides equivalent or greater retardation of pollutant migration. A synthetic membrane liner may be substituted with a minimum of 40 mils thickness and an underground leak detection system with appropriate sampling points. Additional requirements under §217.203 of this title (relating to Design Criteria for Natural Treatment Systems) may apply.

(e) One of the following alternatives must be met as a compliance requirement to abate and control a nuisance of odor prior to construction of a new wastewater treatment plant unit, or substantial change in the function or use of an existing wastewater treatment unit.

(1) Lagoons with zones of anaerobic activity (e.g., facultative lagoons, un-aerated equalization basins, etc.) may not be located closer than 500 feet to the nearest property line. All other wastewater treatment plant units may not be located closer than 150 feet to the nearest property line. Land used to treat primary effluent is considered a plant unit. Buffer zones for land used to dispose of treated effluent by irrigation shall be evaluated on a case-by-case basis. The permittee must hold legal title or have other sufficient property interest to a contiguous tract of land necessary to meet the distance requirements specified in this paragraph during the time effluent is disposed by irrigation.

(2) The applicant must submit a nuisance odor prevention request for approval by the executive director. A request for nuisance odor prevention must be in the form of an engineering report, prepared and sealed by a licensed Texas professional engineer in support of the request. At a minimum, the engineering report shall address existing climatological

conditions such as wind velocity and atmospheric stability, surrounding land use which exists or which is anticipated in the future, wastewater characteristics in affected units pertaining to the area of the buffer zone, potential odor generating units, and proposed solutions to prevent nuisance conditions at the edge of the buffer zone and beyond. Proposed solutions shall be supported by actual test data or appropriate calculations. The request shall be submitted, prior to construction, either with a permit application and subject to review during the permitting process or submitted for executive director approval after the permitting process is completed.

(3) The permittee must submit sufficient evidence of legal restrictions prohibiting residential structures within the part of the buffer zone not owned by the applicant. Sufficient evidence of legal restriction may, among others, take the form of a suitable restrictive easement, right-of-way, covenant, deed restriction, deed recorded, or a private agreement provided as a certified copy of the original document. The request shall be submitted, prior to construction, either with a permit application and subject to review during the permitting process or submitted for executive director approval after the permitting process is completed.

(f) For a facility for which a permit application, other than a renewal application, is made after October 8, 1990, if the facility will not meet the buffer zone requirement by one of the alternatives described in subsection (e) of this section, the applicant shall include in the application for the discharge permit a request for a variance. A variance will be considered on a case-by-case basis and, if granted by the commission, shall be included as a condition in the permit. This variance may be granted by the commission, consistent with the policies set out in Texas Water Code, §26.003.

(g) Any approved alternative for achieving the requirements of this section must remain in effect as long as the wastewater treatment plant is permitted by the commission. To comply with this requirement, the permittee must carry out the nuisance odor prevention plan at all times, shall ensure sufficient property ownership or interest and shall maintain easements prohibiting residential structures, as appropriate.

(h) For a permitted facility undergoing renewal of an existing permit with plans and specifications approved prior to March 1, 1990, for which no design change is requested, the facility will not be required to comply with the requirements of this section.

(i) Facilities for which plans and specifications have been approved prior to March 1, 1990, are not required to resubmit revised plans and specifications to meet changed requirements in this section in obtaining renewal of an existing permit.

SUBCHAPTER C: LAND APPLICATION OF TREATED[SEWAGE] EFFLUENT

§309.20

Statutory Authority

These amendments to 30 Texas Administrative Code (30 TAC) Chapter 309 are adopted under the Texas Water Code (TWC). Specifically, TWC, §5.013, which establishes the general jurisdiction of the commission while TWC, §5.102, provides the commission with the authority to carry out its duties and general powers under its jurisdictional authority as provided by TWC, §5.103; TWC, §5.103, which requires the commission to adopt any rule necessary to carry out its powers and duties under the code and other laws of the state; TWC, §5.105, which authorizes the commission to adopt rules and policies necessary to carry out its responsibilities and duties under the TWC; and TWC, §5.120, which requires the commission to administer the law for the maximum conservation and protection of the environment and natural resources of the state. These amendments are also adopted under TWC, §26.027, which authorizes the commission to issue permits for the discharge of waste or pollutants into or adjacent to water in the state; TWC, §26.121, which provides the commission's authority to prohibit unauthorized discharges into or adjacent to water in the state; and TWC, §26.131, which provides the commission's authority to issue permits for the discharge of produced water into water in the state and for the land application of produced water.

The adopted amendments implement TWC, §§5.013, 5.102, 5.103, 5.105, 5.120, 26.027, 26.121, and 26.131.

§309.20. Land Application of Treated[Sewage] Effluent.

(a) Technical report. Each project shall be accompanied by a preliminary engineering report outlining the design of the wastewater application system. The report shall include maps, diagrams, basis of design, calculations, and other pertinent data as described in this section.

(1) Location.

(A) Site map. A copy of the United States Geological Survey 7 1/2 minute topographic map or equivalent for renewals of the area which indicates the exact boundaries of the application operation must be included in the technical report. A map from the 7 1/2 minute series is required if it is published for the site area.

(B) Site drawing. A scale drawing and legal description of all land which is to be a part of the application operation will be included in the technical report. The drawing must show the location of all existing and proposed facilities to include: buildings, wastewater application or treatment facilities, effluent storage and tail water control facilities, buffer zones, and water wells. This drawing must have an index of wells, adjacent property, and other prominent features. Ownership of land tracts adjacent to the irrigated land shall be shown on the site drawing and identified by listing legal ownership.

(2) Geology. The existence of any unusual geological formations such as faults or sink holes on the wastewater application site shall be noted in the technical report and identified on the site map. The conceptual design of the wastewater application system shall include appropriate engineering considerations with respect to limitations presented by these features.

(3) Soils. A general survey of soils with regard to standard classifications shall be compiled for all areas of wastewater application to the soil. Soil surveys compiled by the United States Department of Agriculture Natural Resources Conservation Service shall be utilized where available. Conceptual design aspects related to wastewater application rates, crop systems, seepage, and runoff controls shall be based upon the soil physical and chemical properties, hydraulic characteristics, and crop use suitabilities for the wastewater application site.

(4) Groundwater quality. The technical report shall fully assess the impact of the wastewater application operation on the uses of local groundwater resources. In regard to performing this assessment, the report shall systematically address subparagraphs (A) and (B) of this paragraph.

(A) All water wells within a 1/2 mile radius of the application site boundaries shall be located. If available, the water uses from each well shall be identified. In addition, aspects of construction such as well logs, casing, yield, static elevation, water quality, and age shall be furnished and evaluated in the technical report. Local groundwater resources below the wastewater application site shall be monitored to establish preoperational baseline groundwater quality when monitoring wells are available. Monitoring shall provide the following analytical determination: total dissolved solids, nitrate nitrogen, chlorides, sulfates, pH, and Escherichia coli bacteria.

(B) Groundwater resources serving as sources or potential sources of domestic raw water supply will be protected by limiting wastewater application rates. Effluent

storage and/or treatment ponds presenting seepage hazards to these groundwater resources shall be constructed with adequate liners.

(5) Agricultural practice. The technical report shall describe the crop system proposed for the wastewater application operation. This description shall include a discussion of the adaptability of the crop to the particular soil, climatological, and wastewater sensitivity conditions that will exist at the wastewater application site. Annual nutrient uptake of the crop system shall be specified, and crop harvesting frequencies shall be described within the report.

(b) Irrigation. Irrigation application systems utilize effluent to supply the growth needs of the cover crop.

(1) Secondary effluent. Land application system operators who use land accessible to the general public shall provide a degree of treatment equivalent to secondary treatment standards, as required by §309.3(f)(1) of this title (relating to Application of Effluent Sets), prior to application of wastewater to land areas.

(2) Primary effluent. Land application systems may provide for the application of effluent from primary treatment units provided that the wastewater application system conforms with the requirements contained in subparagraphs (A) - (E) of this paragraph.

(A) The wastewater application system shall be designed and operated to prevent a discharge from entering surface water in the state, and to prevent recharge of groundwater resources which supply or offer the potential of supplying domestic raw water.

(B) The land application system shall be designed and operated to achieve application of effluent without adversely affecting the agricultural productivity of the land application site.

(C) The economic benefits derived from agricultural operations carried out at the land application site are secondary to the proper application of wastewater.

(D) The sewerage system owner shall maintain direct responsibility and control over all aspects of the sewage pretreatment and application operations, as well as all aspects of any agricultural activities carried out on the application site.

(E) The land application system shall contain sufficient area to provide for normal expansion of the facility service area. In most cases, the application system shall have a design life of at least 20 years.

(3) Design analysis. The designing engineers shall utilize a detailed design analysis of limiting hydraulic and nutrient application rates, and effluent storage needs, as the basis of the application system design. All projects shall include the detailed design analysis described in subparagraphs (A) - (C) of this paragraph.

(A) Hydraulic application rate. A water balance study shall be provided as a part of a detailed application rate analysis in order to determine the irrigation water requirement, including a leaching requirement if needed, for the crop system on the wastewater application areas. The water balance study should generally follow the example shown in Table 1 in Figure: 30 TAC §309.20(b)(3)(B). Precipitation inputs to the water balance shall utilize the

average yearly rainfall and the monthly precipitation distribution based on past rainfall records. The consumptive use requirements (evapotranspiration losses) of the crop system shall be developed on a monthly basis. The method of determining the consumptive use requirement shall be documented as a part of the water balance study. A leaching requirement, calculated as shown in Table 1 of this subparagraph, shall be included in the water balance study when the total dissolved solids concentration of the effluent presents the potential for developing excessive soil salinity buildup due to the long term operation of the irrigation system.

(B) Effluent storage. An effluent storage study shall be performed to determine the necessary storage requirements. The storage requirements shall be based on a design rainfall year with a return frequency of at least 25 years (the expected 25 year-one year rainfall, alternately the highest annual rainfall during the last 25 years of record may be used) and a normal monthly distribution, the application rate and cycle, the effluent available on a monthly basis, and evaporation losses. An example of an effluent storage study is shown in Table 3 in Figure: 30 TAC §309.20(b)(3)(B).

Figure: 30 TAC §309.20(b)(3)(B) (No changes.)

TABLE 1
 WATER BALANCE EXAMPLE
 (All Units are Inches of Water per Acre of Irrigated Area)

Month	a	b	Ri	c	d	Total Water Needs (5)+(6)	Effluent Needed in Root Zone (7)-(4)	e	f	g
(1)	Avg. Precip. (2)	Average Runoff (3)	Average Infiltrated Rainfall (4)	Evapotrans- piration (5)	Required Leaching (6)	(7)	(8)	Evaporation from Reservoir surface (9)	Effluent to be applied to Land (8) /K (10)	Consumption from Reservoir (9)+(10) (11)
Jan.	2.11	0.40	1.71	0.80	0.00	0.80	0.00	0.02	0.00	0.02
Feb.	2.43	0.57	1.86	1.20	0.00	1.20	0.00	0.01	0.00	0.01
Mar.	2.02	0.36	1.66	2.80	0.20	3.00	1.34	0.09	1.58	1.67
April	3.19	1.03	2.16	3.40	0.22	3.63	1.46	0.05	1.72	1.77
May	4.19	1.74	2.45	6.10	0.64	6.74	4.29	0.10	5.05	5.15
June	3.30	1.10	2.20	6.50	0.76	7.26	5.06	0.20	5.95	6.15
July	2.20	0.45	1.75	6.70	0.87	7.57	5.82	0.34	6.85	7.19
Aug.	2.12	0.41	1.71	4.60	0.51	5.11	3.40	0.34	4.00	4.34
Sept.	3.58	1.30	2.28	5.10	0.50	5.60	3.32	0.19	3.91	4.10
Oct.	3.09	0.96	2.13	4.10	0.35	4.45	2.32	0.14	2.73	2.87
Nov.	2.23	0.46	1.77	2.10	0.06	2.16	0.39	0.07	0.46	0.53
Dec.	2.34	0.52	1.82	1.00	0.00	1.00	0.00	0.03	0.00	0.03
	32.80	9.30	23.50	44.40	4.11	48.51	27.40	1.58	32.25	33.83

a. Up-to-date rainfall and evaporation data sets are available from the Texas Natural Resource Information System.

- b. Runoff should be determined by an acceptable method such as the Soil Conservation Service method found in SCS Technical Release No. 55. For example purposes only, a CN value of 74 was assumed for good pasture with Class "C" soils.
- c. Suggested source of values is the "Bulletin 6019, Consumptive Use of Water by Major Crops in Texas," Texas Board of Water Engineers.
- d. In low rainfall areas, this is the required leaching to avoid salinity build-up in the soil is calculated using the following equation:

$$L = \frac{Ce (E-Ri)}{Cl-Ce}$$

Where:

Ce = Electrical Conductivity of Effluent

E = Evapotranspiration

Ri = Infiltrated Rainfall

Cl= Maximum Allowable Conductivity of Soil Solution (Table 3)

For example purposes only, a Ce value of 1.5 millimhos/cm at 25°C and a Cl value of 10.0 (Bermuda Grass) were used.

- e. Net Average Evaporation from Reservoir Surface. For example purposes only, irrigation area = 100 acres and reservoir surface area = 5 acres. Therefore, values are 5% of Evaporation figures of Austin, Texas.
- f. K is the irrigation efficiency. K value is 0.85 unless specific information is provided to support a different value.
- g. The total of this column is the maximum allowable application rate in acre-inch per acre per year.

TABLE 2
 EXAMPLE CALCULATION OF STORAGE VOLUME REQUIREMENTS
 (All Units are Inches of Water per Acre of Irrigated Area)

a	b	c		d	e	f
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Month	Effluent Received for Application or Storage	Rainfall Highest Year in Past 25 Year	Runoff Highest Year in Past 25 Year	Infiltrated Rainfall (14) - (15)	Available Water (13) + (16)	Net Year Low Evaporation from Regur. Surf.	25 Storage	Accumulated Storage
(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
Jan.	2.70	3.28	1.09	2.19	4.89	0.00	2.69	8.49
Feb.	2.70	3.80	1.45	2.35	5.05	0.01	2.69	11.18
Mar.	2.70	3.18	1.02	1.26	4.86	0.04	1.67	12.85
April	2.70	4.98	2.35	2.63	5.33	0.02	1.51	14.36
May	2.70	6.57	3.67	2.90	5.60	0.04	-1.86	12.50
June	2.70	5.13	2.47	2.66	5.36	0.09	-2.80	9.70
July	2.70	3.44	1.20	2.24	4.94	0.16	-3.73	5.97
Aug.	2.70	3.33	1.12	2.21	4.91	0.16	-0.87	5.10
Sept.	2.70	5.59	2.84	2.75	5.45	0.08	-0.74	4.36
Oct.	2.70	4.82	2.22	2.60	5.30	0.07	0.45	0.45
Nov.	2.70	3.49	1.23	2.26	4.96	0.03	2.67	3.12
Dec.	2.70	3.64	1.34	2.30	5.00	0.02	2.68	5.80
	32.40	51.25	22.00	29.25	61.65	0.73		

- a. For example purposes only, disposal rate is for a 240,000 gpd facility (2.7 acre-feet per acre per year) irrigating 100 acres. Maximum values for Column 13 are the value (total) of Column 11 divided by 12. Note that the values in Column 13 could be adjusted to allow for seasonal variation in effluent output.
- b. Annual rainfall amount from the highest year in past 25 years of data. Total rainfall is then distributed proportional to monthly averages.
- c. Using rainfall figures in Column 14, calculate runoff with the same method used in Column 3.
- d. Lowest annual evaporation in past 25 years from reservoir surface. Distribute annual value proportionally to monthly average evaporation expressed in inches per irrigated acre. For example purposes only, irrigation area = 100 acres and reservoir surface area = 5 acres. Therefore, values in Column 18 are 5% of evaporation figures for Austin, Texas.

- e. Storage = $\frac{1}{k}$. If the term $\frac{1}{k}$ is negative, then the value for storage =. Irrigation efficiency is 0.85 unless specific information is provided to support a different value.
- f. To allow for the worst condition, the summation was started in October which gives a maximum storage requirement of 14.36 inches per irrigated acre or 120 acre-feet.

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TABLE 3
 Salt Tolerance of Various Crop Plants
 Best growth yields of each crop would occur at a salinity level below the salinity range given.

Relatively Nontolerant	Moderately Salt Tolerant	Relatively Salt Tolerant	Highly Salt Tolerant
2.0 - 4.0	4.0 - 6.0	6.0 - 8.0	8.0 - 12.0
Field Crops			
Field bean Cowpeas Corn (field)	Sorghum (grain) Rye (grain) Castorbean Soybean	Cotton Sugar beet Wheat (grain) Oats (grain) Rice	Barley (grain) Rape
Forage Crops			
White clover Alsike clover Red clover Ladino clover Crimson clover Rose clover Burnet clover	Tall fescue Meadow fescue Orchard-grass Millet Sour clover Birdsfoot trefoil	Wheat-grasses Sudan grass Sweetclover Alfalfa Ryegrass Rye (hay) Wheat (hay) Oats (hay)	Alkali sacaton Bermuda grass Barley (hay) Rhodesgrass Blue grama Panicgrass

(C) Nitrogen application rate. Irrigation shall be limited to prevent excessive nitrogen application. The annual liquid loading shall not exceed that which would introduce more nitrogen than is annually required by the crop plus 20% volatilization. Values of crop nitrogen requirements shall be justified in the design report. The application rate shall be calculated by the formula in Figure: 30 TAC §309.20(b)(3)(C).

Figure: 30 TAC §309.20(b)(3)(C) [T30S309.20(b)(3)(C)]

$$L = \frac{N}{2.7C}$$

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where,

L = annual liquid loading - feet/year

C = effluent nitrogen concentration - mg/l

N = annual crop requirement of nitrogen plus 20% volatilization - pound/acre/yr

(4) Soil testing. Representative soil samples shall be taken from the root zones of wastewater application sites to establish preoperational soil concentrations of pH, total nitrogen, potassium, phosphorus, and conductivity. Sampling procedures shall employ accepted techniques of soil science for obtaining representative analytical results. Preoperational soil concentration of the parameters listed in this paragraph shall be furnished in the technical report. The project development shall provide for a minimum of one soil test annually from each wastewater application site for the duration of the application system design life.

(5) Standard irrigation best management practices.

(A) Screening devices should be installed on all lift pump suction intakes.

(B) The design of sprinkler irrigation systems should allow operational flexibility and efficiency and ease of maintenance.

(i) The system should be designed to provide a uniform water distribution.

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(ii) The designing engineer should consider such items as permanently buried mains with readily accessible valve boxes, two or more lateral lines, and quick coupling valves at the main/lateral connections.

(iii) Cross connection with a potable water supply system is prohibited. Cross connection with a well water system will be reviewed on a case-by-case basis.

(C) Vehicular access to conveyance system locations and equipment should be provided at intervals of 1,000 feet to 1,300 feet.

(D) The cover crop of each wastewater application area shall be harvested a minimum of once per year. Consideration should be given to the selection of crops which will allow two or more harvests per year to be made.

(E) All effluent applied as irrigation water should have a pH within the range of 6.0 to 9.0.

(c) Percolation. Percolation application systems provide for ultimate application of the wastewater by evaporation and percolation with no resulting discharge to surface water in the state.

(1) Percolation systems will not be permitted in those locations where seepage would adversely affect the uses of groundwater resources.

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(2) Primary treatment of the raw sewage shall be provided prior to land application.

(3) Percolation systems shall be limited to sites having soil textures suitable for sustaining a rapid intake rate. Percolation dosing sites shall be limited to soils classified as sands, loamy sands, or sandy loams having a minimum infiltration rate of six inches per hour.

(4) Multiple dosing basins shall be provided for the application of wastewater. The wastewater distribution system shall be designed to provide a maximum dosing period of 24 hours upon any individual dosing basin and a minimum resting period for any individual dosing basin of five days following a period of dosing.

(5) The hydraulic loading rate will be considered on a case-by-case basis. The designing engineer shall identify the permeability of the limiting soil layer.

(6) The design shall provide an area equal to a minimum of 20% of the total application site area for the construction of wastewater storage for use during periods of wet or freezing weather and to provide flexibility of dosing site use.