

The Texas Commission on Environmental Quality (commission or TCEQ) adopts the amendment of §309.3 *without changes* to the proposed text as published in the June 5, 2009, issue of the *Texas Register* (34 TexReg 3495) and will not be republished.

#### BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE ADOPTED RULE

The TCEQ typically includes chlorine exposure time and residual concentration requirements as the bacteria control mechanism for disinfection by chlorination in Texas Pollutant Discharge Elimination System (TPDES) domestic discharge permits. Starting in February 2007, the United States Environmental Protection Agency (EPA) took a new position that bacteria limits are required. This resulted in the EPA objecting to a subset of the commission's draft permits. As a result, the commission could not issue approximately 100 permits during this time. The executive director and EPA reached an agreement in July 2008 regarding bacteria effluent limitations and monitoring requirements in TPDES domestic wastewater permits. The agreement included an interim approach to require bacteria limitations and/or monitoring for selected facilities that met certain criteria for discharges to bacteria impaired water bodies. The agreement also included a long term approach in which the commission would propose rulemaking to establish requirements for bacteria limitations in all TPDES domestic wastewater permits. Conditions in the agreement stated that an adopted rule must be effective by December 31, 2009, and all TPDES domestic wastewater draft permits for which Notice of Application and Preliminary Decision is published on or after January 1, 2010 will have the new requirements as part of the permit language or EPA objections would begin again. The purpose of this rulemaking is to satisfy the agreement with the EPA.

The commission is adopting the contact recreation criterion in the Texas Surface Water Quality Standards as the bacteria limit for domestic TPDES permits. The Texas Surface Water Quality Standards program

has determined that the contact recreation criterion is protective of both human health and the environment. It is also readily achievable with current technology.

#### SECTION DISCUSSION

The commission adopts administrative changes throughout this rulemaking to conform to Texas Register and agency guidelines. These changes include updating cross-references.

Adopted §309.3(g)(2) removes the last sentence in the paragraph that applies to renewal permits for wastewater systems constructed prior to October 8, 1990. There are no longer any active permits issued prior to this date that have not been renewed. The statement is being removed to simplify the rule.

Adopted §309.3(g)(3) replaces the fecal coliform limit with the *Escherichia coli* (*E. coli*) or *Enterococci* bacteria limitation set by §309.3(h) or (i) if applying for an alternative method of disinfection. The requirement was changed to be consistent with other bacteria requirements in this section.

Adopted §309.3(g)(4) allows a permittee to choose to test for *E. coli* or fecal coliform testing for effluent that is land applied through a subsurface area drip dispersal system in an area that has the potential for human contact. This change was made to allow flexibility in testing procedures. Both bacteria tests indicate the safety level of water for human contact. The permittee may choose the test that is more convenient or more cost effective. Subsurface area drip dispersal systems are authorized by a state-only permit and are not subject to the TPDES program, and therefore, not subject to the agreement with EPA.

Adopted §309.3(h) describes bacteria effluent limitations for domestic TPDES permits.

Adopted §309.3(h)(1) lists the indicator bacteria required for fresh water discharges and salt water discharges. The Texas Surface Water Quality Standards and the agreement with EPA require *E. coli* testing for fresh water and *Enterococci* testing for salt water.

Adopted §309.3(h)(2) sets the monthly average bacteria limitation at the geometric mean of the contact recreation standard. The current geometric mean for contact recreation is 126 colony forming units (cfu) per 100 milliliters (ml) for *E. coli* bacteria in fresh water and 35 cfu/100 ml for *Enterococci* in salt water. The Chief Engineer's Office is currently evaluating a change to the fresh water standard. If a change is adopted, staff will use the new *E. coli* criterion for the most stringent contact recreation category for the bacteria limits in TPDES domestic permits issued, amended, or renewed after the date the new standards are adopted.

Adopted §309.3(h)(3) sets the maximum single grab sample bacteria limitation as the single grab sample for the contact recreation standard. Currently, the single grab sample criterion is 394 cfu/100 ml for *E. coli* in fresh water and 89 cfu/100 ml for *Enterococci* in salt water. The levels contemplated for the amended Water Quality Standards would change the grab sample criteria to 399 cfu/100 ml for *E. coli* and 104 cfu/100 ml for *Enterococci* for primary contact recreation, the most stringent contact recreation criteria. If changes are adopted, staff will use the new criterion for the most stringent contact recreation category for the bacteria limits in TPDES domestic permits issued, amended, or renewed after the date the new standards are adopted.

Adopted §309.3(i) is the former §309.3(h) with amendments. The subsection was relettered to allow for

the insertion of the bacteria limits subsection. It allows the executive director to assign a more stringent parameter limit if necessary to protect human health or water quality. The bacteria limit was included in the parameters that can be adjusted by the executive director. Protection of human health was also added, consistent with the commission's mission and other regulations. The list of subsections to which it applies was changed from subsections (a) - (g) to subsections (a) - (h) to include the new bacteria limitations subsection.

#### FINAL REGULATORY IMPACT ANALYSIS DETERMINATION

The commission reviewed this rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and determined that the rulemaking is not subject to §2001.0225, because it does not meet the criteria for a "major environmental rule" as identified in that statute. 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. This rule adoption does not adversely affect, in a material way, the economy, a section of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state. The specific intent of the adopted rulemaking is to establish requirements for bacteria limitations in all TPDES domestic wastewater permits.

The adopted rulemaking modifies the state rules and/or procedural documents to include bacteria effluent limitations and monitoring in all TPDES domestic wastewater permits.

Furthermore, the rulemaking is not subject to Texas Government Code, §2001.0225 because it does not meet any of the four applicable requirements specified in §2001.0225(a). Texas Government Code, §2001.0225(a) applies only to a state agency's adoption of a major environmental rule that: 1) exceeds a standard set by federal law, unless state law specifically requires the rule; 2) exceeds an express requirement of state law, unless federal law specifically requires the rule; 3) exceeds 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) is adopted solely under the general powers of the agency instead of under a specific state law.

The commission invited public comment regarding this draft regulatory impact analysis determination during the comment period. No comments were received on this draft regulatory impact analysis determination.

#### TAKINGS IMPACT ASSESSMENT

The commission evaluated the rulemaking and performed an analysis of whether it constitutes a taking under Texas Government Code, Chapter 2007. The specific purpose of the rulemaking is to modify the Texas Administrative Code to reflect bacteria effluent limitations and monitoring in all TPDES domestic wastewater permits, as mandated by the EPA. This rulemaking substantially advances that stated purpose by modifying 30 TAC §§210.33, 309.3, and 319.9, and repealing §319.10.

Promulgation and enforcement of the adopted rule will not be a statutory or constitutional taking of private real property. Specifically, the rulemaking does not apply to or affect any landowner's rights in private real property because it does not burden (constitutionally), restrict, or limit any landowner's right

to real property or reduce any property value by 25% or more beyond that which would otherwise exist in the absence of the regulations. These actions will not affect private real property.

#### CONSISTENCY WITH THE COASTAL MANAGEMENT PROGRAM

The commission reviewed the rulemaking and found that the adoption is subject to the Texas Coastal Management Program (CMP) in accordance with the Coastal Coordination Act, Texas Natural Resources Code, §§33.201 *et seq.*, and therefore is required to be consistent with all applicable CMP goals and policies. The commission conducted a consistency determination for the adopted rule in accordance with the Coastal Coordination Act Implementation Rules, 31 TAC §505.22 and found the rulemaking is consistent with the applicable CMP goals and policies.

CMP goals applicable to the adopted rule includes the protection, preservation, restoration, and enhancement of the diversity, quality, quantity, functions, and values of coastal natural resource areas and ensure sound management of all coastal resources by allowing for compatible economic development and multiple human uses of the coastal zone.

CMP policies applicable to the adopted rule includes 31 TAC §501.21(b)(1) and (2), which state that discharges shall comply with water quality-based effluent limits and that discharges that increase pollutant loadings to coastal waters shall not impair designated uses of coastal waters and shall not significantly degrade coastal water quality unless necessary for important economic or social development.

This rulemaking adopts bacteria limits for all domestic wastewater facilities that discharge into waters in

the state. By adopting bacteria limits, there will be a more direct and possibly more accurate measure of the level of disinfection achieved in domestic effluent discharged to both fresh and salt water in the areas of concern to the CMP.

Promulgation and enforcement of this rulemaking will not violate or exceed any standards identified in the applicable CMP goals and policies because the adopted rule is consistent with these CMP goals and policies and because this rulemaking does not create or have a direct or significant adverse effect on any coastal natural resource areas.

The commission invited public comment regarding consistency with the coastal management program during the comment period. No comments were received on the consistency with the coastal management program.

#### PUBLIC COMMENT

The commission held a public hearing for this rulemaking in Austin, Texas at TCEQ Building E, at 10:00 a.m. on June 30, 2009. No oral comments were received at the public hearing. The comment period closed on July 6, 2009. The commission received written comments from AECOM USA Group, Inc. (AECOM); EPA; Harris County Attorney's Office on behalf of Harris County Public Infrastructure Department, Harris County Flood Control District, and Harris County Public Health & Environmental Services Department Environmental Public Health Division (Harris County); and the Water Environmental Association of Texas (WEAT). All entities supported the rulemaking, either partially or with changes.

## RESPONSE TO COMMENTS

### *AECOM:*

The time line for monitoring and compliance as proposed in the rules is out of proportion with what is normally granted to wastewater facilities. Typically, a facility owner is assigned a monitoring only period prior to limitations going into effect. The draft rules appear to establish bacteria limits without an interim monitoring only period. If facilities are not able to meet bacteria effluent limitations and structural modifications to the plant will have to be made, a one-year monitoring period in the first permit issued under the proposed bacteria requirements is requested.

**The rule is silent on compliance periods. All currently permitted wastewater treatment facilities are required to and should be designed and operated to disinfect effluent. A facility's disinfection method, whether 20-minute chlorine contact time with a minimum of one milligram per liter (mg/l) residual, properly operated ultraviolet light (UV) system, or a lagoon system with a minimum 21-day retention time should disinfect effluent and thereby comply with bacteria limitations.**

**Measuring bacteria levels is a more direct way of measuring disinfection than chlorine contact time and residual or detention time in a lagoon system.**

**The executive director's agreement with the EPA requires that bacteria limitation be effective upon permit issuance. Section 307.3, Definitions and Abbreviations, allows a compliance period of up to a maximum of three years for newly imposed water quality based effluent limitations. The executive director will evaluate requests for a compliance period on a case-by-case basis. However, EPA has preliminarily indicated that it may consider approving a compliance period for certain facilities only if new construction is required for the facility to meet bacteria limitations.**



**Bacteria limits will not go into effect until a facility's next permit action. The vast majority of permittees in the state will have time to evaluate existing facilities and make needed renovations.**

**The commission has made no changes in response to this comment.**

*EPA*

EPA requested that the commission consider requiring minor wastewater treatment facilities (those discharging less than one million gallons per day (mgd) to dechlorinate their effluent.

**Requiring dechlorination of effluent from minor facilities is beyond the scope of this rulemaking, and Chapter 309 does not set dechlorination standards for any facilities. Dechlorination requirements are located in *Procedures to Implement the Texas Surface Water Quality Standards, RG-194*. EPA will have an opportunity to comment on this document in the near future.**

**The commission has made no changes in response to this comment.**

*HARRIS COUNTY*

Harris County appreciates TCEQ efforts and diligence in developing bacteria effluent limits and monitoring requirements for all domestic wastewater treatment plants.

**The commission acknowledges Harris County's appreciation.**

There are 666 wastewater treatment plants in the Harris County region where there are bacteria impaired segments subject to total maximum daily loads (TMDLs). Sewage from wastewater treatment plants is the single most treatable source of bacteria entering waterways. Studies by Harris County and others indicate rampant re-growth of bacteria following discharge from wastewater treatment plants. A well designed and operated wastewater treatment plant is capable of and should be required to meet monthly average effluent limitations for *E. coli* of 10 cfu per 100 ml of water and a single sample maximum limit of 50 cfu/100 ml. A similar approach should be developed for *Enterococci* limitations.

**Regrowth of indicator bacteria and possibly pathogenic organisms is a potential concern in some situations. At this stage of research efforts on regrowth characteristics the appropriate step in response to federal requirements is to establish across-the-board effluent limits that are equal to the instream recreational criteria in the *Texas Surface Water Quality Standards*. This is a relatively stringent regulatory approach, since the proposed effluent limits will impose water quality standards at the end of pipe, without allowing for instream dilution. More stringent effluent limits can still be required for specific permits or watersheds, as demonstrated by the TMDL evaluation for the Buffalo and White Oak Bayou watersheds, where an average concentration of *E. coli* 63 cfu/100 ml is required as the effluent limit for domestic wastewater discharges. Also, by equating the effluent limit to the instream water quality criteria, rather than to specified numerical concentrations, the proposed rule maintains the flexibility to accommodate any future changes in the water quality standards for contact recreation. Section 309.2(b) gives the executive director the authority on a case-by-case basis to set more stringent limits when needed to protect water quality.**

**The commission has made no changes in response to this comment.**

*WEAT*

Laboratory availability will be a challenge, particularly for small systems. Many commercial laboratories do not accept samples on weekends without charging higher rates. Sampling frequencies need to be addressed to acknowledge laboratory working hours, similar to what is being done with drinking water samples. Holding times for drinking water microbiological testing were extended to 30 hours and frequencies were adjusted to Monday through Thursday to handle sample shipping issues and laboratory testing schedules. The draft rules should include these considerations.

**Sampling frequencies in the rule range from once per calendar quarter to daily. The executive director recognized this issue during the development of the rule and fiscal note. Only facilities that treat more than one mgd using lagoons or five mgd using chlorine have monitoring frequencies (three or more times per week) that would require testing on days other than Monday through Thursday. Facilities that use chlorine to disinfect and treat less than five mgd have a sampling frequency of once per week or less. The monitoring schedule for facilities that use UV disinfection has not been changed from historical practices. UV facilities that treat less than 0.1 mgd are required to test five days per week. Larger UV facilities must test daily.**

**Currently, the only EPA approved method for the enumeration of *E coli* in wastewater is located in 40 Code of Federal Regulations §136.3, which has a maximum six-hour hold time and a two-hour lab setup time. The 30-hour hold time for bacteria in the drinking water program is primarily used for a presence-absence evaluation rather than enumeration against a numerical limitation. The 30-hour hold time methods in the drinking water program have been EPA approved and can be found**

**in 40 CFR §141.21 and §141.704.**

**There is a procedure available to request from the EPA a variance from methods approved in *Standard Methods for the Examination of Water and Wastewater* and 40 CFR. The request procedure requires that the requesting party apply to the EPA through the state authority.**

**The commission has made no changes in response to this comment.**

WEAT commented that the rule's fiscal note does not correctly characterize laboratory costs. WEAT members have been quoted costs between \$30 and \$50 per sample, depending upon location of the utility with respect to contract laboratory. The initial cost to set up in-house sampling for the Colilert procedure has been quoted at \$6,300. None of these costs include training or hourly wages paid to utility staff to comply with the new regulations.

**Research into the cost of bacteria testing by contract laboratories was done in February 2009. The source of contract lab costs is given in the following table.**

**Figure: 30 TAC Chapter 309 - - Preamble**

**Different sources or the difference in the dates the research was done may account for the lower costs quoted by WEAT.**

**The source of set-up and per test costs for in-house labs was Hach Company for the m-ColiBlue24**

**testing method. Information was collected in March 2009. The m-ColiBlue24 method was the most economical and simplest method found in regards to equipment costs, training, and operational costs. More expensive options, such as the Colilert method, were not included, although they are available and are approved methods.**

**The commission has made no changes in response to this comment.**

Many facilities have not been designed to accommodate *E. coli* sampling after the final treatment unit. In order to collect uncontaminated samples, variances or other amendments to TPDES permits may need to be considered to ensure more functional sampling points.

**Sampling for bacteria is required to be conducted following the final treatment unit; similar to sampling for other parameters in a TPDES permit (for example, biochemical oxygen demand and total suspended solids). If there are case-specific issues, an applicant may apply for a change in sample location when a permit application is filed.**

**The commission has made no changes in response to this comment.**

WEAT has a number of smaller utility members that may struggle with the proposed rule. In particular, small systems with ponds may not have adequate contact time to meet the proposed *E. coli* limits. TCEQ needs to consider way of implementing the proposed effluent limits in a manner that will allow permittees time to secure funds and construct any needed improvements before imposing mandatory effluent limits.

It would serve no justice to begin an enforcement campaign against systems when they fail to meet a new

permit condition imposed through a renewal process. Any associated fines would be better utilized constructing improvements to maintain permit compliance.

**All currently permitted wastewater treatment facilities are required to and should be designed and operated to disinfect effluent. A facility's disinfection method, whether 20-minute chlorine contact time with a minimum of one mg/l residual, properly operated ultraviolet light system, or a lagoon system with a minimum 21-day retention time should disinfect effluent, and thereby comply with bacteria limitations. Measuring bacteria levels is a more direct way of measuring disinfection than chlorine contact time and residual or detention time in a lagoon system.**

**The executive director's agreement with the EPA requires that bacteria limitation be effective upon permit issuance. Section 307.3, allows a compliance period of up to a maximum of three years. The executive director will evaluate requests for a compliance period on a case-by-case basis. However, EPA has preliminarily indicated that it may consider approving a compliance period for certain facilities only if new construction is required for the facility to meet bacteria limitations.**

**Bacteria limits will not go into effect until a facility's next permit action. The vast majority of facilities in the state will have time to evaluate existing facilities and make needed renovations.**

**The executive director may consider allowing municipally owned utilities, water supply or sewer service corporations or districts to defer the payment of all or part of an administrative penalty for a violation on the condition that the entity complies with all provisions for corrective action in a commission order to address the violations, as stated in Texas Water Code (TWC), §7.034.**

**The commission has made no changes in response to this comment.**

WEAT's members are concerned about wet weather events and potential non-compliance during the same. Bacteria from runoff may impact permit compliance given the stringency of the proposed limits. WEAT requests consideration for alternative wet weather effluent limits, or in the alternative, enforcement discretion regarding same.

**The TCEQ recognizes that domestic wastewater treatment systems can be stressed during wet-weather periods. However, disinfection systems are required to be designed to treat the two-hour peak flow. Wet weather, including inflow and infiltration, should be part of the calculation of the two-hour peak flow. The average effluent limit is based on the instream criterion for primary contact recreation and is applied as a geometric mean over a monthly period, and a geometric mean calculation helps to reduce the impact of a few elevated samples during a month.**

**In developing enforcement actions, case specific factors will be considered. In addition, the executive director may consider allowing municipally owned utilities, water supply or sewer service corporations or districts to defer the payment of all or part of an administrative penalty for a violation on the condition that the entity complies with all provisions for corrective action in a commission order to address the violations, as stated in TWC, §7.034.**

**The commission has made no changes in response to this comment.**

WEAT reiterates its concerns regarding the correlation of fecal coliform performance with *E. coli* performance at certain wastewater treatment plants. WEAT submitted a comment letter during the informal rule development stage that included a copy of a study that was performed to assess plant performance with respect to effluent concentrations of both fecal coliform and *E. coli*. The study demonstrates that there is not always a good correlation in plant performance. Given that very few of the wastewater treatment facilities in the Texas were designed to explicitly comply with an *E. coli* limit of 126 cfu/100 ml, WEAT is concerned that individual plant performance will vary across the state and suggests that there should be a means to improve plant compliance if/when a problem is identified. WEAT requests the commission utilize enforcement discretion with utilities as the industry only now will begin to produce performance data indicative of compliance with this new limit.

**The executive director reviewed the 2004 study, *Escherichia coli and Fecal Coliform Populations in Disinfected Municipal Wastewater Treatment Plant Effluent and Recommendations to DNR for a Monthly Geometric Mean Escherichia coli Limitation*, during the development of the draft rules. The argument in the study is that the IDEXX<sup>(R)</sup> test inflates the number of viable *E. coli* in relation to the number of viable fecal coliform, and this causes a poor correlation between the two results (*E. coli* versus fecal coliform).**

**Enhanced recovery techniques for stressed organisms are discussed at length in *Standard Methods for the Examination of Water and Wastewater*. These techniques can be applied to analysis of fecal coliform and may, with further study, confirm that the recovery of *E. coli* using IDEXX<sup>(R)</sup> may not be poorly correlated to the actual concentrations of fecal coliform in a given sample. Additionally, IDEXX<sup>(R)</sup> manufactures an enzyme substrate test specifically for fecal coliforms, similar to the test**



for *E. coli*. Both the *E. coli* and the fecal coliform IDEXX<sup>(R)</sup> tests are specifically intended to aid in the recovery of stressed organisms. Neither of these methods to recover stressed organisms were used to confirm the results of the 2004 study.

Concern over whether the IDEXX<sup>(R)</sup> method enhances the survivability of a stressed organism is not applicable to the monitoring TCEQ proposes, because one cannot assume that a stressed organism will not survive when released into environmental waters. Moreover, the assertion that the IDEXX<sup>(R)</sup> method yields inflated *E. coli* concentrations relative to the other methods cited in the study can be countered with the assertion that the other methods cited are likely to under-report the concentrations of fecal coliform present.

There are seven approved methods for the analysis of *E. coli* in wastewater listed in 40 CFR Part 136, Table 1A. A permittee could use any of these seven methods. If the method selected is one for which TCEQ offers a National Environmental Laboratory Accreditation Conference (NELAC) accreditation, a contract laboratory would need to be NELAC-accredited for that method.

The bacteria limit is set at the primary contact recreation standard in Chapter 307. Chapter 307 has required *E. coli* to be used as the indicator organism in fresh water for water quality standards since August 17, 2000. In 2000, TCEQ revised the water quality standards for recreation and changed the indicator bacteria from fecal coliform to *E. coli* for freshwater and *Enterococci* for saltwater. The new indicators and their associated numerical criteria (such as the 126 cfu/100 ml for *E. coli*) are in accordance with EPA's 1986 national guidance criteria for recreation. EPA's 1986 criteria are based on epidemiological studies that showed these new indicators correlated better

**with risk of disease (gastroenteritis) than other indicators such as fecal coliform. The National Beach Act of 2000 required coastal states to adopt *Enterococci* and the associated EPA numerical criteria for saltwater.**

**In developing enforcement actions, case specific factors will be considered. In addition, the executive director may consider allowing municipally owned utilities, and water supply or sewer service corporations or districts to defer the payment of all or part of an administrative penalty for a violation on the condition that the entity complies with all provisions for corrective action in a commission order to address the violations, as stated in TWC, §7.034.**

**The commission has made no changes in response to this comment.**

## **SUBCHAPTER A: EFFLUENT LIMITATIONS**

### **§309.3**

#### **STATUTORY AUTHORITY**

The amendment is adopted under the Texas Water Code (TWC), §5.013, which establishes the general jurisdiction of the commission. TWC, §5.102, which provides the commission with the authority to carry out its duties and general powers under its jurisdictional authority provided by the TWC. 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, §5.104, which states that the commission, by rule, will develop memoranda of understanding necessary to clarify and provide for its respective duties, responsibilities, or functions on any matter under the jurisdiction of the commission that is not expressly assigned to the commission. TWC, §5.105, which authorizes the commission to adopt rules and policies necessary to carry out its responsibilities as provided by the TWC, TWC, §5.120, which requires the commission to "administer the law so as to promote the judicious use and maximum conservation and protection" of the environment and natural resources of the state. TWC, §26.011, which provides the commission with the authority to establish the level of quality to be maintained in, and to control the quality of, the water in the state. TWC, §26.013, which authorizes the executive director to conduct or have conducted any research and investigations it considers advisable and necessary for the discharge of the duties under Chapter 26 of the TWC. TWC, §26.027, which authorizes the TCEQ to issue permits for the discharge of waste or pollutants into or adjacent to water in the state.

The amendment is also adopted under the Texas Water Quality Control Act, which gives the TCEQ the authority to adopt rules for the approval of disposal system plans under TWC, §26.034 as well as the

authority to set standards to prevent the discharge of waste that is injurious to the public health under TWC, §26.041.

This adopted amendment implements TWC, §§5.013, 5.102, 5.103, 5.104, 5.105, 5.120, 26.011, 26.013, 26.027, 26.034, and 26.041.

### **§309.3 Application of Effluent Sets.**

(a) Discharges into effluent limited segments.

(1) All discharges into effluent limited segments shall, at a minimum, achieve secondary treatment. An effluent limited segment is any segment which is presently meeting or will meet applicable water quality criteria following incorporation of secondary treatment for domestic sewage treatment plants and/or best practicable treatment for industries.

(2) New or increased discharges into effluent limited segments shall achieve that level of treatment deemed necessary by the commission, based on the assimilative capacity and uses of the receiving stream.

(b) Discharges into water quality limited segments.

(1) All discharges into water quality limited segments for which evaluations have been developed shall, at a minimum, achieve the treatment level specified in the recommendations of the

evaluation for that discharge. A water quality limited segment is a surface water segment classified by the commission as water quality limited where conventional treatment of waste discharged to the segment is not stringent enough for the segment to meet applicable water quality standards; monitoring data have shown significant violations of water quality standards; advanced waste treatment for point sources is required to protect existing exceptional water quality; or the segment is a domestic water supply reservoir used to supply drinking water.

(2) Discharges into water quality limited segments for which wasteload evaluations or total maximum daily loads have not been developed shall, at a minimum, achieve secondary treatment as provided by §309.1 of this title (relating to Scope and Applicability).

(c) Discharges into certain reservoirs. Any discharge made within five miles upstream of a reservoir or lake which is subject to on-site/private sewage facility regulation adopted under Texas Water Code, Chapter 26 or Texas Civil Statutes, Article 4477-7e, or which may be used as a source for public drinking water supply shall achieve, at a minimum, Effluent Set 2 in §309.4 of this title (relating to Table 1, Effluent Limitations for Domestic Wastewater Treatment Plants). Five miles shall be measured in stream miles from the normal conservation pool elevation. The commission may grant exceptions to this requirement where it can be demonstrated that the exception would not adversely impact water quality.

(d) Discharges from stabilization ponds. Effluent Set 3 in §309.4 of this title shall apply to stabilization pond facilities in which stabilization ponds are the primary process used for secondary treatment and in which the ponds have been designed and constructed in accordance with applicable design criteria. Effluent Set 3 in §309.4 of this title is considered equivalent to secondary treatment for

stabilization pond systems.

(e) Discharge to an evaporation pond. Effluent discharged to evaporation ponds must receive, at a minimum, primary treatment, be within the pH limits of 6.0 - 9.0 standard units, and have a quality of 100 milligrams per liter five-day biochemical oxygen demand or less on a grab sample. For the purpose of this subsection, primary treatment means solids separation which is typically accomplished by primary clarifiers, Imhoff tanks, facultative lagoons, septic tanks, and other such units.

(f) Land disposal of treated effluent. The commission may authorize land disposal of treated effluent when the applicant demonstrates that the quality of ground or surface waters in the state will not be adversely affected. Each project must be consistent with laws relating to water rights. The primary purpose of such a project must be to dispose of treated effluent and/or to further enhance the quality of effluent prior to discharge.

(1) When irrigation systems ultimately dispose of effluent on land to which the public has access, Effluent Set 4 in §309.4 of this title, at a minimum, shall apply. The pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions. When lands to which the public does not have access are to be used for ultimate disposal of effluent, the effluent must, at a minimum, receive primary treatment. Effluent Set 5 in §309.4 of this title shall apply and the pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions. For irrigation systems, primary treatment is the same as described in subsection (e) of this section. Effluent may be used for irrigation only when consistent with Subchapters B and C of this chapter (relating to Location Standards and Land Disposal of

Sewage Effluent).

(2) When overland flow systems are utilized for effluent treatment, the public shall not have access to the treatment area. Primary treated effluent meeting Effluent Set 6 in §309.4 of this title, within the pH limits of 6.0 - 9.0 standard units may be used consistent with environmental safeguards and protection of ground and surface waters. For overland flow systems, primary treatment is the same as described in subsection (e) of this section. At a minimum, Effluent Set 1 in §309.4 of this title shall apply to discharges from overland flow facilities except where more stringent treatment levels are required to meet water quality standards.

(3) When evapotranspiration beds, low pressure dosing, or similar soil absorption systems are utilized for on-site land disposal, the effluent shall, at a minimum, receive primary treatment and meet Effluent Set 7 in §309.4 of this title. Use of these on-site systems shall be consistent with environmental safeguards and the protection of ground and surface waters. Primary treatment is the same as described in subsection (e) of this section.

(4) When subsurface area drip dispersal systems, or similar soil absorption systems ultimately dispose of effluent on land where there is the significant potential for public contact, as defined in §222.5 of this title (relating to Definitions), Effluent Set 4 in §309.4 of this title, at a minimum, shall apply. The pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions.

(5) When subsurface area drip dispersal systems, or similar soil absorption systems

ultimately dispose of effluent on land where there is the minimal potential for public contact, as defined in §222.5 of this title, Effluent Set 5 in §309.4 of this title, at a minimum, shall apply. The pH shall be within the limits of 6.0 - 9.0 standard units unless a specific variance is provided in the permit based upon site-specific conditions.

(6) Treated effluent may be land applied only when consistent with Subchapters B and C of this chapter. Use of subsurface area drip dispersal systems shall be consistent with environmental safeguards and the protection of ground and surface waters.

(7) For the purpose of this subsection, primary treatment means solids separation which is typically accomplished by primary clarifiers, Imhoff tanks, facultative lagoons, septic tanks, and other such units.

(g) Disinfection.

(1) Except as provided in this subsection, disinfection in a manner conducive to the protection of both public health and aquatic life shall be achieved on all domestic wastewater which discharges into waters in the state. Any appropriate process may be considered and approved on a case-by-case basis.

(2) Where chlorination is utilized, any combination of detention time and chlorine residual where the product of chlorine ( $\text{Cl}_2$  mg/l) X Time (T minutes) equals or exceeds 20 is satisfactory provided that the minimum detention time is at least 20 minutes and the minimum residual is at least 0.5



mg/l. The maximum chlorine residual in any discharge shall in no event be greater than four mg/l per grab sample, or that necessary to protect aquatic life.

(3) On a case-by-case basis, the commission will allow chlorination or disinfection alternatives to the specific criteria of time and detention described in paragraph (2) of this subsection that achieve equivalent water quality protection. These alternatives will be considered and their performance standards determined based upon supporting data submitted in an engineering report, prepared and sealed by a registered, professional engineer. The report should include supporting data, performance data, or field tracer studies, as appropriate. The commission will establish effluent limitations as necessary to verify disinfection is adequate, including chlorine residual testing, other chemical testing, and bacteria testing as specified in subsections (h) or (i) of this section.

(4) Except as provided herein, disinfection of domestic wastewater which is discharged by means of land disposal or evaporation pond shall be reviewed on a case-by-case basis to determine the need for disinfection. All effluent discharged to land to which the public has access must be disinfected and if the effluent is to be transferred to a holding pond or tank, the effluent shall be rechlorinated to a trace chlorine residual at the point of irrigation application. All effluent discharged to land via a subsurface area drip dispersal system to which there is a potential for public contact shall be disinfected and shall comply with an *Escherichia coli* (*E. coli*) bacteria effluent limitation of 126 colony forming units per 100 milliliters of water or a fecal coliform effluent limitation of 200 colony forming units per 100 milliliters water, per grab sample, in accordance with paragraph (1) of this subsection.

(5) Unless otherwise specified in a permit, chemical disinfection is not required for

stabilization ponds when the total retention time in the free-water-surface ponds (based on design flow) is at least 21 days.

(h) Effluent limitations for bacteria.

(1) To demonstrate the disinfection level in effluent discharged into water in the state by its wastewater treatment facility, a permittee shall measure the amount of bacteria in the effluent.

(A) To demonstrate disinfection, *Escherichia coli* (*E. coli*) must be the indicator bacteria measured for discharges to fresh water.

(B) To demonstrate disinfection, *Enterococci* must be the indicator bacteria measured for discharges to salt water.

(2) The monthly average bacteria effluent limitation in a Texas Pollutant Discharge Elimination System (TPDES) permit must be the applicable geometric mean for the most stringent contact recreation category as specified in Chapter 307 of this title (relating to Texas Surface Water Quality Standards).

(3) The daily maximum bacteria effluent limitation in a TPDES permit must be the applicable single grab sample for the most stringent contact recreation category in Chapter 307 of this title.

(i) More stringent requirements. The commission may impose more stringent requirements in permits than those specified in subsections (a) - (h) of this section, on a case-by-case basis, where appropriate to maintain desired water quality levels or protect human health.