

The Texas Commission on Environmental Quality (commission) adopts the amendments to §§290.38, 290.39, 290.41 – 290.47, 290.104, 290.106, 290.107, 290.111, 290.117, 290.121, and 290.122. Sections 290.39, 290.42, 290.45, 290.46, and 290.111 are adopted *with changes* to the proposed text as published in the August 8, 2003 issue of the *Texas Register* (28 TexReg 6206). Sections 290.38, 290.41, 290.43, 290.44, 290.47, 290.104, 290.106, 290.107, 290.117, 290.121, and 290.122 are adopted *without changes* to the proposed text and will not be republished.

BACKGROUND AND SUMMARY OF THE FACTUAL BASIS FOR THE ADOPTED RULES

The commission adopts the amendments primarily to implement state rules that conform with the requirements of certain federal regulations. The regulations include the federal National Primary Drinking Water Regulations: Long Term 1 Enhanced Surface Water Treatment Rule published by the United States Environmental Protection Agency (EPA) in the January 14, 2002 issue of the *Federal Register* (67 FR 1812), codified in 40 Code of Federal Regulations (CFR) Parts 9, 141, and 142; and the federal National Primary Drinking Water Regulations: Filter Backwash Recycling Rule published by the EPA in the June 8, 2001 issue of the *Federal Register* (66 FR 31086), codified in 40 CFR Parts 9, 141, and 142. The commission also adopts technical corrections to the state rules that are analogous to minor revisions made by the EPA to the federal National Primary Drinking Water Regulations for Lead and Copper, also known as the federal Lead and Copper Rule Minor Revisions, published by the EPA in the January 12, 2000 issue of the *Federal Register* (65 FR 1950), codified in 40 CFR Parts 9, 141, and 142; and the federal National Primary Drinking Water Regulations: Public Notification Rule published by the EPA in the May 4, 2000 issue of the *Federal Register* (65 FR 25982), codified in 40 CFR Part 9, *et al.* In addition to these federally mandated revisions, the commission adopts changes that are either “state-only” (i.e., no federal counterpart) or that are related to a federal counterpart, but are different from the federal regulations, including: specifying how the agency implements the minimum capacity requirements for public water systems; providing requirements for laboratories at surface water treatment plants; describing air relief device requirements; revising sanitary control easement, operator certification, reporting, security, maintenance, meter calibration, and electrical wiring requirements; adding items to “Appendix I, Assessment of Hazard and Selection of Assemblies”; and reorganizing and modifying source water, water treatment, and turbidity requirements. Although not detailed in each case under the SECTION BY SECTION DISCUSSION, the commission also adopts non-substantive revisions including corrections of references, typographical errors, and formatting changes throughout this adoption to conform with Texas Register requirements.

SECTION BY SECTION DISCUSSION

Subchapter D, Rules and Regulations for Public Water Systems

Section 290.38, Definitions

The commission adopts the amended definition of “Drinking water standards” in §290.38(17) to correct the reference to Subchapter F by deleting the word “Supply” from its title. Under adopted paragraph (46) in the definition of “Public health engineering practices,” and throughout the proposal, the ambiguous phrase “these sections” is replaced by the phrase “this subchapter,” or “the requirements in this subchapter.”

Section 290.39, General Provisions

The commission adopts amended §290.39(d)(3)(C) to update the name of the agency and replace the word “should” with “shall.” Similar corrections are made throughout the adoption. The commission adopts amended §290.39(e)(4) to conform to adopted §290.41(c)(1)(F). Adopted §290.39(e)(4) requires submission of a copy of each fully executed sanitary control easement and any other documentation demonstrating compliance with §290.41(c)(1)(F).

The commission adopts streamlined language involving acronyms in §290.39(f)(10), (g)(2) and (4), and (n). The commission adopts amended §290.39(n) to group several requirements related to financial assurance in previously existing subsection (n)(2). The last two sentences in previously existing subsection (n)(2) are now relocated to subsection (n)(2)(A) and (B), respectively, and the previously existing subsection (n)(3) requirement is now moved to subsection (n)(2)(C).

Section 290.41, Water Sources

The commission adopts amended §290.41(a) to correct an error in the reference to Subchapter F. The commission adopts amended §290.41(c)(1)(F), which reformats this subparagraph and revises it to allow public water systems to submit a substitute for the requirement to obtain a sanitary control easement or sanitary control easements. In this regard, the adopted amendment requires the public water system to submit a copy of the sanitary control easement(s) covering land within 150 feet of the well, or obtain executive director approval for either of three substitutes. The three substitutes are specified in adopted new clause (iv)(I) - (III), as follows: (I) a copy of the recorded deed and map demonstrating that the public water system owns all real property within 150 feet of the well; (II) a copy of the recorded deed and map demonstrating that the public water system owns a portion of real property within 150 feet of the well, and a copy of the recorded sanitary control easement(s) that the public water system has obtained, recorded, and submitted to the executive director applicable to the remaining portion of real property within 150 feet of the well not owned by the public water system; or (III) for a political subdivision, a copy of an ordinance or land use restriction adopted and enforced by the political subdivision which provides an equivalent or higher level of sanitary protection to the well

as a sanitary control easement. Adopted new clause (v) provides that if the executive director approves a sanitary control easement substitute identified in proposed clause (iv)(I) or (II) for a public water system and the system conveys the property it owns within 150 feet of the well to another person or persons, the public water system must at that time obtain, record, and submit to the executive director a copy of the recorded sanitary control easement(s) applicable to the portion of the conveyed property within 150 feet of the well, unless the executive director approves a substitute identified in adopted clause (iv)(III).

The commission adopts amended subsection (c)(3)(A) to require, as part of the well completion data, a legible copy of the recorded deed or deeds for all real property within 150 feet of the well, a legible copy of the sanitary control easement(s) or other documentation demonstrating compliance with paragraph (1)(F), and a map demonstrating the well location in relation to surrounding property boundaries.

The commission adopts amended subsection (c)(4) regarding the construction standards for pitless units. The commission adopts amended subsection (c)(4)(D) to require that, with the exception of the fact that the well is constructed with a pitless unit, the well must meet all of the other design requirements for public water system wells. With this revision, the last sentences of previously existing subsection (c)(4)(A) and (E) are deleted because they were redundant.

The commission adopts amended §290.41(d)(4) to modify the design requirement for springs and other similar sources. The adopted amendment applies several requirements previously applicable only to public water systems utilizing groundwater sources to public water systems utilizing springs and other similar water sources. These adopted amendments are “state-only” requirements. These requirements include: 1) discharge from a well blow-off line, if provided, shall terminate in a downward direction and at a point which will not be submerged by flood waters; 2) an air release device, if provided on the discharge piping, shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants; and 3) all openings to the atmosphere shall be covered with 16-mesh or finer corrosion-resistant screening material or an acceptable equivalent. This amendment is intended to reduce the potential for contamination that might result from an improperly designed blow-off valve or air release valve in a public water system utilizing water from springs or other similar water sources. The amendment should help assure the sanitary integrity of water as it is transported from the spring catchment basin to the treatment facilities. The amendment would also create consistency between the commission’s §290.41(c) design requirements applicable to “Groundwater sources and development” and the commission’s §290.41(d) design criteria applicable to “Springs and other water sources.”

The commission adopts the amendment to §290.41(e), which involves “state-only” requirements. The commission adopts amended §290.41(e)(2) to add subparagraph (G), requiring that the 500-foot separation distance between water treatment plants and wastewater treatment plants also applies to the water treatment plant intake structure. The adopted language states that intakes shall not be located within 500 feet of a sewage treatment plant or lands irrigated with sewage effluent. The adopted revisions to subsection (e)(3) delete and relocate several provisions that apply to the water treatment plant rather than the intake location. The adoption also revises the previously existing requirement that pumping units shall be located in well-drained areas not subject to flooding to a requirement that the raw water pump station shall be located in a well-drained area and shall be designed to remain in operation during flood events. The commission adopts revisions which relocate the requirements applicable to surface water treatment plants previously contained in subsection (e)(3)(A) and (B) to the section covering all water treatment plants under §290.42(a)(2)(A) and (B) and which relocate the requirements previously contained in subsection (e)(3)(C) to §290.42(m). The commission adopts amended subsection (e)(3)(C) and (D) so that it applies to the raw water pump station, and not to the water treatment plant. The adopted amended requirements are renumbered as subsection (e)(4) and (5).

Section 290.42, Water Treatment

The commission adopts amended §290.42 to make the provisions of this section consistent with federal regulatory requirements and to relocate requirements pertaining to plant location from the section on water sources to the section on water treatment. The adopted amendment to §290.42(a) relocates the siting requirements for surface water treatment plants from §290.41(e) to §290.42(a), as previously discussed. The adopted amendment to subsection (a) adds the heading “Capacity and location” to meet Texas Register formatting requirements and to extend the requirements to all water treatment plants. The technical requirement previously contained in subsection (a) is renumbered as subsection (a)(1). Adopted subsection (a)(2) and (3) correspond to previously existing requirements under §290.41(e)(3), (e)(3)(A), (B), and (D), which are relocated. The commission adopts this extension of its siting requirements to all water treatment plants in order to improve the reliability and sanitary integrity of all plants where potable water is treated. The commission finds that the surface and subsurface contaminant sources that pose threats to the treated water produced by surface water treatment plants also pose threats to the treated water produced by other treatment plants. Such other treatment plants include those that treat groundwater or groundwater that is under the direct influence of surface water and those that retreat potable water purchased from other public water systems. Furthermore, the commission finds that the need to properly dispose of treatment plant wastes is not limited to surface water treatment plants and that all treatment plants need to be accessible during periods of inclement weather in order to assure its customers a continuous supply of potable water. Finally, the commission

asserts that extending the siting requirements to all water treatment plants is consistent with historical and current industry design and construction practices as well as with the policies and procedures of the commission.

The commission adopts amended §290.42(b)(7) to reduce the risk of treated water contamination that could occur through an improperly designed air relief device. The adopted rule requires air release devices to be installed in such a manner as to preclude submergence or entrance of contaminants. In this respect, the rule includes a “state-only” requirement that all openings to the atmosphere be covered with 16-mesh or finer, corrosion-resistant screening material or an equivalent acceptable to the executive director. These changes are consistent with existing requirements for air release devices that are located on treated water lines in the distribution system. The amended rule will help assure that untreated water, insects, and debris do not contaminate treated water before it leaves the plant and is piped directly to consumers.

The commission adopts amended §290.42(c)(1) to remove references to dates that have already passed which served to phase in certain treatment requirements and to eliminate redundant terminology. The commission adopts amended subsection (c)(6), regarding the return of decant water and sludge to the treatment process at plants that are treating water from springs and similar sources, to assure that the design of recycling facilities at these systems meets the same requirements as those that apply to surface water treatment plants, which is a requirement that is needed to maintain consistency with the federal Filter Backwash Recycling Rule. Adopted subsection (c)(7) reduces the risk of treated water contamination that could occur through an improperly designed air relief device. The adopted language requires air release devices on treated waterlines to be installed in such a manner as to preclude submergence or entrance of contaminants. In this respect, the rule includes a “state-only” requirement that all openings to the atmosphere be covered with 16-mesh or finer, corrosion-resistant screening material or an equivalent acceptable to the executive director. As previously mentioned, these changes are consistent with existing requirements for air release devices that are located on treated water lines in the distribution system. The adopted amendments will also help assure that untreated water, insects, and debris do not contaminate treated water before it leaves the plant and is piped directly to consumers.

The adopted amendment to §290.42(d)(1) removes references to dates that have already passed which served to phase in certain treatment requirements and to eliminate redundant terminology. Adopted subsection (d)(2)(F) reduces the risk of contamination that could occur through an improperly designed air relief device, as previously described. The commission adopts amended subsection (d)(3) to

incorporate design and operational mandates contained in the federal Filter Backwash Recycling Rule, and certain related requirements. The last sentence of previously existing subsection (d)(3) is relocated to subsection (i) and rule references are streamlined.

The commission adopts amended subsection (d)(3)(A) regarding the recycling of decant water to address a federal Filter Backwash Recycling Rule requirement. The adopted rule requires the liquids from sludge settling lagoons, spent backwash water tanks, dewatering facilities, and similar facilities to be returned to the raw waterline upstream of the raw water sample tap and coagulant feed point, unless the executive director has approved an alternate recycling location. The blended recycled liquids are required to pass through all of the major unit processes at the plant. Returning recycled liquids to a location upstream of the raw water sample tap eliminates the need for operators to collect and composite multiple water samples in order to run jar tests and other process control analyses and eliminates potential compositing errors. Furthermore, returning recycled liquids upstream of the coagulant feed point assures that the raw water and recycled water are mixed before the treatment process begins and facilitates proper plant operation. This requirement is different from the federal Filter Backwash Recycling Rule, in that it provides more specific language with regard to the required location where the recycled liquids must be returned.

The commission adopts amended subsection (d)(3)(B) to require that recycle facilities be designed to minimize the magnitude and impact of hydraulic surges that occur during the recycling process. This requirement is different from the federal regulations, in that it directly addresses the minimization of the magnitude and impact of hydraulic surges. In response to comment as discussed further in this preamble, the phrase "Recycle facilities shall be designed" has been adopted to replace the proposed phrase "Flow equalization basins, variable speed pumps, or other facilities shall be provided." The reason for this change at adoption is because the commission did not intend to require the installation of any additional facilities at treatment plants which are not experiencing hydraulic surges. Therefore, rather than adopting the prescriptive language of the proposal, the commission adopts a design performance standard as a more reasonable approach which provides for protection of the public health.

The commission adopts a "state-only" requirement under amended subsection (d)(3)(C) to prevent water systems from recycling the solids produced by dewatering facilities without the prior approval of the executive director because the commission asserts that these solids harbor elevated pathogen levels and such a prohibition should not adversely impact plant performance.

The amendment to subsection (d)(6) and (7) is adopted in order to set forth the standardized design criteria for chemical storage and feed facilities. Previously existing subsection (d)(6) contained the design criteria for chemical storage facilities and previously existing subsection (d)(7) contained the design criteria for chemical feed facilities. The commission adopts this amendment to relocate all of these design requirements to a new subsection (f). Therefore, adopted subsection (d)(6) states that chemical storage facilities shall comply with the applicable requirements in §290.42(f)(1), and adopted subsection (d)(7) states that chemical feed facilities shall comply with the applicable requirements in §290.42(f)(2).

The commission adopts amended subsection (d)(11)(E)(ii) to require systems serving fewer than 10,000 people to install an on-line turbidimeter and recorder on each filter at their surface water treatment plants by January 1, 2005, except for systems with only two filters, which may conduct continuous monitoring of combined filter effluent turbidity in lieu of individual filter effluent turbidity monitoring under certain conditions. Previously existing subsection (d)(11)(E)(ii) required all filters with a capacity of 1.0 million gallons per day or more to be equipped with an on-line turbidimeter, and this language has been deleted. The allowance for continuous monitoring of combined filter effluent turbidity for systems with only two filters represents a change from proposal made in response to comment, as discussed later in the RESPONSE TO COMMENTS section of this preamble. The adopted rule language provides that the executive director may allow this combined filter effluent monitoring if: 1) the public water system has only two filters that were installed prior to October 1, 2000 and were never equipped with individual on-line turbidimeters and recorders, and 2) the plant is equipped with an on-line turbidimeter and recorder which will allow the operator to measure and record the turbidity level of the combined filter effluent at a location prior to clearwell storage at 15-minute intervals.

The commission adopts amended subsection (d)(11)(E)(iii) to require that systems serving at least 10,000 people be equipped with an on-line turbidimeter and recorder that will allow the operator to measure and record the turbidity of the water from each filter at 15-minute intervals. The previously existing rule language indicated that the operator must be able to determine the turbidity of the water, but did not indicate that the recorder must be used to create a record of the data.

The commission adopts amended subsection (d)(11)(E)(v) to recognize that filters which are equipped with on-line turbidimeters and recorders can establish a filter backwash criteria that is based on turbidity breakthrough rather than the accumulated loss of head. Because turbidity breakthrough usually occurs before terminal headloss is reached, the commission is allowing systems that have filters

with on-line turbidimeters and recorders to forego the installation of loss-of-head devices. This amendment helps offset the additional capital cost of the on-line turbidity instrumentation and helps reduce operational and maintenance costs.

The commission adopts amended subsection (d)(15)(A) and (B) to reflect that the statutory responsibility for the certifying laboratories that conduct microbiological analysis for public water systems has been transferred from the Texas Department of Health to the Texas Commission on Environmental Quality. The commission does not adopt any of the proposed language in proposed subsection (d)(15)(G) because the commission finds that this language would be more appropriately included in a commission regulatory guidance document than a commission rule. The commission adopts the proposed relocation of a requirement for surface water treatment plants previously contained in subsection (d)(15)(G) to adopted subsection (d)(16). This aspect of the adopted rules involves “state-only” requirements. In addition, the commission has deleted a reference to a past compliance date from previously existing subsection (d)(15)(G) and under adopted subsection (d)(16) has authorized the executive director to approve requests to locate the computer at a site other than the treatment plant if certain conditions are met, including that: 1) if performance data can be reliably transmitted to the remote location on a real-time basis, 2) the plant operator has access to the computer at all times, and 3) performance data is readily accessible to agency staff during routine and special investigations.

As discussed previously in this preamble, the commission has relocated the design requirements for chemical storage and chemical feed systems from previously existing subsection (d)(6) and (7) to adopted subsection (f).

With the exception of §290.42(f)(1)(A), the language contained in adopted subsection (f)(1) is identical to that contained in previously existing subsection (d)(6). In subsection (f)(1)(A), the commission adopts minor modifications to the language previously contained in subsection (d)(6)(A). One minor modification is needed to provide that this requirement will apply only to bulk storage facilities that are needed to comply with a treatment technique requirement or maximum contaminant level (MCL). Also, the adopted amendment includes a requirement that the capacity of these bulk storage facilities shall be based on the design capacity of the treatment plant. As previously noted, the language in adopted subsection (f)(1)(B) - (G) is identical to the language contained in previously existing subsection (d)(6)(B) - (G).

With the exception of adopted subsection (f)(2)(A), the language contained in adopted subsection (f)(2) is identical to that previously contained in subsection (d)(7). In subsection (f)(2)(A), the commission

adopts a minor modification to the language previously contained in subsection (d)(7)(A). The adopted modification may reduce the construction and maintenance costs for surface water treatment plants because this requirement will now apply only to feed facilities that are needed to comply with a treatment technique requirement or MCL instead of to all the chemical feed systems at the plants. As previously noted, the language in adopted subsection (f)(2)(B) - (I) is identical to the language previously contained in subsection (d)(7)(B) - (I).

The commission adopts subsection (g) to correct an error in the references to §290.39(l) and Subchapter F. Adopted §290.42(i) adds the last sentence that was contained in previously existing subsection (d)(3), and streamlines the rule references. The commission adopts the relocation of the requirement for proper disposal of plant wastes to subsection (i) because, at its previous location under subsection (d)(3), the requirement applied only to surface water treatment plants while the provision should apply to the waste disposal practices at all public water systems.

Adopted §290.42(k) corrects an error in the reference to “Texas Hazard Communications Act” and revises “Title 5” to “Title 6.” The provision concerning the “plant operations manual” under previously existing §290.42(k) is redesignated as §290.42(l) to accommodate previously described adopted amendments, and amended to acknowledge that the manual can also serve as a mechanism to guide operators during natural or man-made events which could cause adverse impacts to a water system. The commission adopts §290.42(m) in order to relocate the regulatory requirement previously contained in §290.41(e)(3)(C). The commission includes the minimum security requirement for water treatment plants in this new subsection (m) because the existing requirement applies only to surface water treatment plants, while the provision should apply to the security requirements at all water treatment plants. This aspect of the adopted rule involves “state-only” requirements.

Section 290.43, Water Storage

The commission adopts amended §290.43 in numerous places to correct typographical errors, such as replacing “clear well” with “clearwell,” spelling out “pounds per square inch” and parenthetically including the acronym “psi,” adding hyphens where appropriate, and spelling out “American National Standards Institute/National Sanitation Foundation.” The commission adopts amended §290.43(e) to provide that an intruder-resistant fence is not required when water system facilities are installed in a lockable building that is designed to prevent intruder access.

Section 290.44, Water Distribution

The commission adopts amended §290.44 to correct the spelling of “waterline” in subsections (a)(4), (c), and (e)(4)(A) and (B). Other adopted revisions under §290.44 involve acronyms, grammatical changes, typographical error corrections, and minor administrative revisions to comply with Texas Register requirements.

Section 290.45, Minimum Water System Capacity Requirements

The commission adopts amended §290.45 as “state-only” requirements in order to indicate the manner in which the rules are interpreted by the commission and that the adopted amendments are not intended to increase or decrease the existing capacity requirements for any public water system.

The adopted amendment to §290.45(a)(1) indicates that the capacity requirements in this section apply to individual pump stations and pressure planes only if the individual facility serves an area of the system that cannot be served effectively by the public water system’s other facilities. The adopted amendment adds the phrase “which serve portions of the system that are hydraulically separated from, or incapable of being served by, other pump stations or pressure planes.” The commission adopts subsection (a)(5) and (6) to further indicate how it evaluates compliance with the requirements of this section. The commission adopts, as a “state-only” requirement, subsection (a)(5) to specify that the executive director may exclude the capacity of facilities that have been inoperative for at least 120 days prior to the evaluation when determining compliance with the commission’s capacity requirements unless those facilities will be returned to an operative condition within the next 30 days. Subsection (a)(5) has been changed at adoption in response to comment to change “inoperative for the past 30 days” to “inoperative for the past 120 days.” It is also adopted with the addition of the phrase “executive director may exclude the” and the deletion of the phrase “shall not be included.”

Subsection (a)(6) is adopted to ensure that the treatment facilities at all public water systems have sufficient capacity to meet the system’s treated water production requirements, by requiring that the capacity of the treatment facilities shall not be less than the required raw water or groundwater production rate or the anticipated maximum daily demand of the system.

The adopted amendment to §290.45(d)(2)(A) provides a reference to subparagraph (B), which provides that the commission allows small noncommunity water systems without transient accommodation units to meet the capacity requirements of subsection (d)(2)(B) if they provide ground storage facilities.

Section 290.46, Minimum Acceptable Operating Practices for Public Drinking Water Systems

The commission adopts amended and reorganized operator certification requirements in §290.46(e) that apply to public water systems. The organization of the previously existing rule groups the requirements regarding the number of operators that are required at each system in a different paragraph than the requirements regarding the type of operators that are required at each system. The adopted “state-only” revision consolidates both operator number and operator type requirements into one paragraph applicable to each type of system. In addition to reorganizing subsection (e), the commission adopts several modifications to certain requirements that apply to systems that treat surface water or serve more than 1,000 connections.

The adopted “state-only” amendment to §290.46(e) reflects the new organizational structure of the subsection and incorporates the provisions previously contained in subsection (e)(3) to avoid redundancy. The adoption also relocates the exclusion that previously existed in subsection (e)(7) to subsection (e)(1) so that it is located more prominently.

The adopted amendment to §290.46(e)(2) relocates the operator certification requirements that apply to most public water systems. The content of the previously existing subsection (e)(2) is incorporated into adopted subsection (e)(3)(C), (4)(C), (5)(B) and (D), and (6)(B).

The commission adopts new subsection (e)(2)(A) and (C), containing identical language to that previously contained in subsection (e)(5) and (6), respectively. The commission adopts amended subsection (e)(2)(C), which is a revised version of the language previously contained in subsection (e)(4). The adopted revision eliminates redundant regulatory language and reflects a change in the commission’s approval process for installations that use chlorine dioxide.

The commission adopts subsection (e)(3) to relocate the operator certification requirements for systems that buy all of their treated water from another public water system. Adopted subsection (e)(3)(A) contains only the portion of the previously existing rule that applies to purchased water systems; the portion of the existing subsection that applies to groundwater systems is relocated to subsection (e)(4)(A). The adopted amendment to subsection (e)(3)(B) merely merges the requirements that were previously contained in subsection (e)(1) and (3)(B).

The adopted amendment to subsection (e)(3)(C) merges the requirements that previously existed in subsection (e)(2), and revises the language to provide regulatory relief to some smaller purchased water systems that are not able to hire two full-time operators. The requirement previously contained in subsection (e)(3)(C) is relocated to subsection (e)(4)(B).

The commission adopts the proposed deletion of previously existing subsection (e)(3)(D) and (E) and incorporates these requirements into adopted subsection (e)(4) - (6).

The commission adopts the relocation of the operator certification requirements for systems that treat groundwater sources that are not under the influence of surface water to subsection (e)(4). As noted previously, the existing language in subsection (e)(4) is relocated to adopted subsection (e)(2)(C).

Adopted subsection (e)(4)(A) contains the portion of previously existing subsection (e)(3)(A) that applies to groundwater systems. Similarly, adopted subsection (e)(4)(B) merely merges the groundwater system requirements that were previously contained in subsection (e)(1) and (3)(C).

The adopted amendment to subsection (e)(4)(C) merges the requirements that currently exist in subsection (e)(2) and (3)(C), and revises the language to provide regulatory relief to some smaller groundwater systems that are not able to hire two full-time operators.

The commission adopts the proposed relocation of the operator certification requirements for systems that treat groundwater sources that are under the influence of surface water to subsection (e)(5). As noted previously, the existing language in subsection (e)(5) is relocated to proposed subsection (e)(2)(A).

Adopted subsection (e)(5)(A) addresses systems that serve no more than 1,000 connections and use cartridge or membrane filters to treat groundwater sources that are under the direct influence of surface water. The adoption merges the requirements that were previously contained in subsection (e)(1) and (3)(D)(i), extends the requirement to systems that use membrane technology, and incorporates additional training requirements for Surface Water Operators who operate a system with groundwater sources. The commission is aware that the operation of membrane technology requires a higher level of expertise than is necessary to operate cartridge filters. The commission is also aware that it requires systems using membranes to treat surface water to be operated by an individual who holds a Class "C" Surface Water license. However, both membranes and cartridge filters function as a physical barrier to the passage of pathogens and the concentration of pathogens in surface water is typically greater than that found in groundwater sources.

Adopted subsection (e)(5)(B) addresses systems that serve more than 1,000 connections and use cartridge or membrane filters to treat groundwater sources that are under the direct influence of surface water. The adopted subsection merges the requirements that are currently contained in subsection (e)(2)

and (3)(D)(i), and revises the language to provide regulatory relief for some smaller systems that are not able to hire two full-time operators.

Adopted subsection (e)(5)(C) addresses systems that serve no more than 1,000 connections and use coagulation and direct filtration to treat groundwater sources that are under the direct influence of surface water. The adoption merges the requirements that were previously contained in subsection (e)(1) with a revised version of the language previously contained in subsection (e)(3)(D)(ii) and requires systems to ensure that at least one of their operators has completed the new surface water training courses by January 1, 2007. The adopted revision to the language previously in subsection (e)(3)(D)(ii) reflects that Surface Water Operators require additional training if they operate a system with wells, and the fact that the 40-hour Surface Water Production course has been divided into two smaller segments, which may cumulatively require more than 40 hours to complete.

Adopted subsection (e)(5)(D) addresses systems that serve more than 1,000 connections and use coagulation and direct filtration to treat groundwater sources that are under the direct influence of surface water. The adopted subsection merges the requirements that were previously contained in subsection (e)(2) and (3)(D)(ii), requires systems to ensure that at least two of their operators have completed the new surface water training courses by January 1, 2007, and revises the language to provide regulatory relief for some smaller systems that are not able to hire two full-time operators.

Adopted subsection (e)(5)(E) and (F) addresses systems that utilize a conventional surface water treatment for groundwater sources that are under the direct influence of surface water and contains the same regulatory language that was previously contained in deleted subsection (e)(3)(D)(iii) and (iv).

The commission adopts subsection (e)(6) concerning the operator licensing requirements for systems that treat surface water sources. As noted previously, the existing language in subsection (e)(6) is relocated to adopted subsection (e)(2)(B).

The commission adopts new subsection (e)(6)(A) to address the operator licensing requirements at surface water systems serving fewer than 1,000 connections. This adopted subsection merges the requirements that were previously contained in subsection (e)(1) and (3)(E)(i), requires systems to ensure that at least one of their operators has completed the new surface water training courses by January 1, 2007, and provides regulatory relief for some smaller systems that are not able to hire an operator who holds a Class "B" Surface Water license on a full-time basis. Specifically, the adoption allows systems to use part-time Class "B" operators to meet the requirements of subparagraph (E) if the

operator is familiar with the design and operation of the plant and spends at least four consecutive hours at the plant at least once every 14 days and the system also employs an operator who holds a Class “C” or higher surface water license. In response to comment as explained later in this preamble, the phrase “Contract operators” has been replaced with “Part-time operators” and the word “contractor” has been replaced with “operator.”

The commission adopts subsection (e)(6)(B) to address the operator licensing requirements at surface water systems serving more than 1,000 connections. This adopted subsection contains analogous requirements to those previously contained in subsection (e)(2) and (3)(E)(i) and a revision to assure that at least two of the operators have completed the new surface water training courses by January 1, 2007. As noted in the discussion of adopted subsection (e)(3)(C), (4)(C), and (5)(B) and (D), this adoption provides regulatory relief for some smaller systems that are not able to hire two full-time operators. As the discussion of subsection (e)(6)(A) indicates, this adoption also provides regulatory relief for surface water systems that serve no more than 1,000 connections by allowing those systems to use a part-time operator to meet the requirements for a Class “B” operator.

Adopted subsection (e)(6)(C) and (D) contains the same regulatory language that was previously contained in deleted subsection (e)(3)(E)(ii) and (iii), respectively. As noted previously, the commission adopts the proposed deletion of previously existing subsection (e)(7) and relocates its provisions to adopted subsection (e)(1).

The commission adopts amended §290.46(f), which provides regulatory relief to some systems that are required to have at least two operators. Adopted subsection (f)(3)(A)(vii) is a “state-only” requirement for public water systems to maintain the records needed to determine compliance with §290.46(e). In response to comment as explained later in this preamble, the adopted rule has added “a daily record or” just prior to “a monthly summary” to reflect that either option for documenting the work performed and the number of hours worked by each of the part-time operators is acceptable.

The commission adopts subsection (f)(3)(C)(iii) to incorporate reporting and recordkeeping requirements contained in the federal Filter Backwash Recycling Rule.

The commission amends subsection (f)(4) to allow the executive director to require the submission of all routine reports at any time, even if they are required less frequently than once per quarter, and any other documents that are needed to determine compliance with commission requirements. The

requirements of this subsection and the remaining adopted changes under §290.46 are “state-only” or are different from the federal regulations.

The commission adopts amended §290.46(l) to require that dead-end mains be flushed once per month and that these lines, as well as looped mains, be flushed in the event of water quality complaints. This adopted amendment should help assure a more uniform water quality throughout a distribution system because, under the previously existing rule, there was no requirement to flush looped mains in the event of water quality complaints.

The adopted amendment to §290.46(m)(4) requires public water systems to repair leaks that occur in water treatment units such as clarifiers and filters in addition to the other water storage and distribution facilities. Similarly, adopted subsection (m)(6) requires public water systems to maintain their mechanical equipment in good working condition.

The commission adopts amended §290.46(s)(1) to apply it to the meters installed at public water systems that use groundwater sources and to require that well meters be calibrated once every three years. The commission adopts amended subsection (s)(2)(A)(iii) and (iv) to reduce the calibration requirements for on-line pH meters at surface water treatment plants. Several plants have started using on-line instruments that were originally installed only for process control to generate their compliance data. Some of these facilities reported that the “data drift phenomena” that was prevalent in earlier generations of instruments is no longer present and that their daily checks are extremely time-consuming and are revealing no need to calibrate. Consequently, the commission adopts the reduced calibration requirements.

The commission adopts amended §290.46(v) regarding the installation of electrical wiring so that systems may forgo the use of wiring conduit if local or national electrical codes permit. The commission asserts that the previously existing rule was too prescriptive, because it required a securely mounted conduit which is not necessary in each case to meet electrical code requirements.

Section 290.47, Appendices

The adopted “state-only” amendment to §290.47(i), Appendix I, Assessment of Hazard and Section of Assemblies, adds veterinary clinics to the item on hospitals, morgues, and other medical facilities due to the similarity of their potential impact on public health. The commission also adopts the addition of Private/Individual/Unmonitored wells to the list of facilities requiring premises isolation due to their potential for introducing untreated water into the public drinking water supply.

*Subchapter F, Drinking Water Standards Governing Drinking Water Quality and Reporting
Requirements for Public Water Systems*

Section 290.104, Summary of Maximum Contaminant Levels, Maximum Residual Disinfectant Levels, Treatment Techniques, and Action Levels

The commission adopts amended §290.104 to establish consistency between state and federal rules regarding MCLs and treatment technique requirements. The commission adopts the proposed deletion of certain language in subsection (d) because it already exists in §290.108. The commission adopts the proposed deletion of subsection (g)(1) because the new turbidity treatment technique has been effective since January 2002. The commission adopts new subsection (l) to incorporate treatment technique requirements that are consistent with the federal Filter Backwash Recycling Rule.

Section 290.106, Inorganic Compounds

The commission adopts amended §290.106(b)(1) to correct a typographical inconsistency between the state and federal MCLs for barium.

Section 290.107, Organic Compounds

The commission adopts amended §290.107(b)(2) to eliminate typographical inconsistencies between state and federal rules regarding MCLs for toluene and total xylenes and amended subsection (c)(1)(D)(vi) to add “polychlorinated biphenyls (PCBs).”

Section 290.111, Turbidity

The adopted amendment to §290.111 removes language relating to past compliance dates, consolidates existing requirements, incorporates several requirements of the federal Long Term 1 Enhanced Surface Water Treatment Rule, and modifies certain other requirements related to turbidity. The adopted amendment to subsection (b) reflects that certain provisions of subsection (b) are performance criteria rather than treatment technique requirements, by adding the phrase “and performance criteria” to the title of the subsection and the word “performance” prior to “criteria” at the end of the sentence in subsection (b).

The commission adopts amended subsection (b)(1) to add the title “Treatment technique requirements.” Additionally, adopted subsection (b)(1) merges requirements previously contained in subsection (b)(1) and (2). The language previously contained in subsection (b)(2) is relocated to subsection (b)(1), and the requirements previously contained in subsection (b)(2)(A) and its subsequent subparagraphs are relocated to subsection (b)(1)(A) and its subsequent subparagraphs. These changes are adopted in order

to streamline the rule and to eliminate a reference to a regulatory requirement that is no longer effective.

Adopted subsection (b)(1)(C) contains language similar to that previously contained in subsection (b)(2)(C) with the added condition that a public water system serving fewer than 10,000 people must use conventional media filters in order to qualify for an extension to the compliance date for providing a 2-log removal of *Cryptosporidium*. This change is adopted to reflect current agency administrative practices for granting the extension. A reformatted version of the language in previously existing subsection (b)(2)(C)(ii) is relocated to adopted subsection (b)(1)(C)(ii).

The commission adopts amended subsection (b)(2), which contains revised language from previously existing subsection (b)(3). Subsection (b)(2) is amended to add the title "Performance criteria for individual filters" to add language to reflect that the requirement will now apply to all systems instead of only to those that serve at least 10,000 people. The commission adopts amended subsection (b)(2)(A), which contains revised language from previously existing subsection (b)(3)(A). Subsection (b)(2)(A) contains language to state that this provision only applies to systems that serve at least 10,000 people. The commission adopts amended subsection (b)(2)(B), which contains revised language from previously existing subsection (b)(3)(B). Subsection (b)(2)(B) contains language to state that this provision applies to systems that serve at least 10,000 people. The commission adopts subsection (b)(2)(C) to incorporate requirements contained in the federal Long Term 1 Enhanced Surface Water Treatment Rule. As a result of these changes, the commission adopts the proposed deletion of previously existing subsection (b)(3).

In a change from proposal, the commission adopts conforming changes to subsection (c) concerning compliance dates that are required for this subsection to be in harmony with the adoption package. Under adopted subsection (c)(1), public water systems that serve fewer than 500 people must monitor the turbidity of the combined filter effluent in accordance with the following: 1) beginning January 1, 2005, public water systems that serve fewer than 500 people and continuously monitor the turbidity level of each individual filter must measure and record the turbidity level of the combined filter effluent at least once each day that the plant is in operation; 2) beginning January 1, 2005, public water systems that serve fewer than 500 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) shall continuously monitor the turbidity of the combined filter effluent and record the turbidity value every 15 minutes; and 3) through December 31, 2004, public water systems that serve fewer than 500 people must measure and record the turbidity level of the combined filter effluent at least once each day that the plant is in operation.

Under adopted subsection (c)(2), public water systems that serve 500 people or more must monitor the turbidity of the combined filter effluent, in accordance with the following: 1) beginning January 1, 2005, public water systems that serve at least 500 people and continuously monitor the turbidity level of each individual filter must measure and record the turbidity level of the combined filter effluent at least every four hours that the system serves water to the public; 2) beginning January 1, 2005, public water systems that serve at least 500 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) shall continuously monitor the turbidity of the combined filter effluent and record the turbidity value every 15 minutes; and 3) through December 31, 2004, public water systems that serve at least 500 people must measure and record the turbidity level of the combined filter effluent at least every four hours that the water system serves water to the public.

The commission adopts amended subsection (c)(3) to delete "Beginning January 1, 2002" to reflect that the effective date of this requirement has passed.

Under adopted subsection (c)(4), public water systems that serve fewer than 10,000 people must measure and record the filtered water turbidity level at the effluent of each individual filter, in accordance with the following: 1) beginning January 1, 2005, public water systems that serve fewer than 10,000 people and have individual filters that are equipped with on-line turbidimeters and recorders must continuously monitor the filtered water turbidity at the effluent of each individual filter and record the turbidity value every 15 minutes; 2) beginning January 1, 2005, public water systems that serve fewer than 10,000 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) shall measure and record the turbidity level at the effluent of each filter at least once each day the plant is in operation; and 3) through December 31, 2004, public water systems that serve at least 500 people must measure and record the turbidity level of the combined filter effluent at least every four hours that the water system serves water to the public.

Also under subsection (c)(4), the commission adopts the proposed deletion of the phrase "Beginning January 1, 2002" because the referenced date has passed.

In response to comment, changes have been adopted under §290.111(d)(3) and (4) which remove the requirement for a continuous recorder, and replace it with a requirement for recording every 15 minutes. These changes are made in order to conform to the EPA's regulation, which requires a device that records the turbidity reading at least once every 15 minutes. Thus, the commission adopts

amended subsection (d)(3) to replace the phrase “continuous recorder” with the phrase “device that records the turbidity reading at least once every 15 minutes.” The commission adopts amended subsection (d)(3)(A) to replace the last sentence concerning strip charts with the following sentence: “The recorder must be designed so that the operator can accurately determine the turbidity readings at 15-minute readings.” The same changes are adopted under subsection (d)(4) and (4)(A).

Previously existing §290.42(d)(11)(E)(ii) - (iv) required a filter to be equipped with an on-line turbidimeter if that filter: 1) has a capacity of at least 1.0 million gallons per day; 2) is located at a system that serves at least 10,000 people; or 3) was constructed after October 1, 2000. The federal Long Term 1 Enhanced Surface Water Treatment Rule requires an on-line turbidimeter to be installed on each filter that is located at a system which serves fewer than 10,000 people and has only one filter or has more than two filters. The federal rule also implies that a system with only two filters must continue to monitor the performance of individual filters if its two filters already have individual on-line turbidimeters.

The commission adopts amended subsection (c)(5) by deleting “Beginning January 1, 2002” to reflect that the effective date of the rule has passed and to make other minor revisions. Adopted subsection (c)(5)(A) updates the references to reflect the restructuring of subsection (b) and specifies that the filter profile, not the Filter Profile Report, must be prepared within seven days of an elevated filter effluent turbidity event. Adopted subsection (c)(5)(B) references the appropriate provisions of subsection (b) and provides that the filter assessment is not required until after the public water system has experienced the third of three events with elevated filter effluent turbidity levels. Similarly, adopted subsection (c)(5)(C) provides that the deadline for conducting a comprehensive performance evaluation is 90 days from the first filter effluent exceedance in the second of two consecutive months rather than from the first exceedance in the first of the two consecutive months. The commission adopts this revision to document its current administrative practice of establishing a deadline for completing a special study that is based on the final event in a series rather than the first.

The commission adopts amended subsection (c)(6) to require systems serving fewer than 10,000 people to conduct certain special filter studies if filter effluent turbidity levels exceed 1.0 Nephelometric Turbidity Unit (NTU), which is analogous to the requirement contained in the federal Long Term 1 Enhanced Surface Water Treatment Rule.

Adopted subsection (c)(6)(A) requires systems serving fewer than 10,000 people to identify the cause of each filter effluent turbidity exceedance or to prepare a filter profile. This requirement will help ensure

that the filter malfunctions at smaller plants will receive the same level of scrutiny as filter malfunctions at larger plants, to which this requirement already applies. Because filter malfunctions pose the same short-term health risk regardless of population served, the adopted rule assures that all of the citizens of Texas will receive the same level of protection against waterborne disease outbreaks, in this regard. This regulatory approach is even more important at smaller plants because these plants typically have fewer filters and, under these conditions, a single malfunctioning filter has a greater impact on the quality of the water consumed by the public. This aspect of the adopted rule is different from the federal regulations, which do not require systems serving fewer than 10,000 people to produce a filter profile even if they cannot identify the cause of the turbidity excursion.

Adopted subsection (c)(6)(B) requires systems that serve fewer than 10,000 people to conduct a filter assessment following the third of three separate filter effluent turbidity events that occur within any consecutive three-month period, which is a requirement that differs from the federal regulations. The federal regulations require the system to complete the assessment only after three consecutive months of exceedances regardless of how many times a filter exceeded performance criteria during the period. The commission asserts that elevated filter effluent turbidity levels pose a potential health threat and that this requirement will help ensure that the water system will identify the cause of repeated turbidity excursions in a timely manner. Furthermore, this requirement is consistent with the rules applicable to larger plants, to which this requirement already applies.

Adopted subsection (c)(6)(C) also differs from the federal regulations, in that it requires that each time the filtered water turbidity level for a specific filter or any combination of individual filters exceeds 2.0 NTU on two consecutive 15-minute readings during two consecutive months, the public water system must participate in a third-party comprehensive performance evaluation within 120 days of the first exceedance in the second month. The analogous federal regulation requires the system to participate in the comprehensive evaluation only if the same filter has two consecutive months of exceedances. The commission asserts that, because the comprehensive performance evaluation involves a comprehensive evaluation of the design, operation, maintenance, and administration of an entire treatment plant, the comprehensive performance evaluation requirement should be extended to address the performance of multiple filters in order to enhance the level of public health protection. Furthermore, the adoption is consistent with the requirements that the commission has previously adopted for systems serving 10,000 people or more.

To provide for combined filter effluent monitoring in lieu of individual filter effluent monitoring for systems that serve fewer than 10,000 people, adopted subsection (c)(7) which represents a change from

proposal has been added. The adopted new language provides that, beginning January 1, 2005, public water systems subject to the requirements of subsection (c)(7) that fail to meet the turbidity criteria in §290.111(b)(1)(A) must conduct additional monitoring, and provides that the executive director may waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director. The additional monitoring is as follows: 1) each time the combined filter effluent turbidity level exceeds 1.0 NTU for two consecutive 15-minute readings, the public water system must either identify the cause of the exceedance or complete a filter profile on the combined filter effluent within seven days of the exceedance; 2) each time the combined filter effluent turbidity level exceeds 1.0 NTU for two consecutive 15-minute reading on three separate occasions during any consecutive three-month period, the public water system must conduct a filter assessment on each filter within 14 days of the third exceedance; and 3) each time the combined filter effluent turbidity level exceeds 2.0 NTU on two consecutive 15-minute readings during two consecutive months, the public water system must participate in a third-party comprehensive performance evaluation within 120 days of the first exceedance in the second month.

In a change from proposal, language has been added to subsection (d)(2) to make these combined filter element provisions applicable to systems that are required to monitor the performance of individual filters with on-line turbidimeters and recording.

In another change from proposal, proposed subsection (d)(3) and (4) has been renumbered as subsection (d)(4) and (5) in order to accommodate the addition of new language under adopted subsection (d)(3). This adopted new language is needed in order to add provisions applicable to systems that serve fewer than 10,000 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii), and requires these systems to monitor the turbidity of the combined filter effluent with a continuous, on-line turbidimeter and a device that records the turbidity level reading at least once every 15 minutes. The new language further provides that: 1) continuous combined filter turbidity may be recorded electronically by a supervisory control and data acquisition system or on a strip chart and the recorder must be designed so that the operator can accurately determine the turbidity level readings at 15-minute intervals; and 2) if there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than 14 working days following the failure of the equipment. The commission adopts the deletion of the phrase "Beginning January 1, 2002," and adopts other changes regarding recorder requirements, as proposed under subsection (d)(3), which is now adopted subsection (d)(4).

Adopted subsection (d)(5) contains added language which is needed to conform with the rest of the adoption, excepting systems with only two filters that monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity. Adopted subsection (d)(6) is new language applicable to these systems, providing that beginning January 1, 2005, systems serving fewer than 10,000 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) must monitor the performance of individual filters using a bench-top turbidimeter. Subsection (d)(5) is adopted as proposed, except that it is renumbered as subsection (d)(7) to accommodate the addition of the previously discussed new subsection (d)(3) and (6).

The commission adopts amended subsection (e)(2) to reflect that the requirement to use the new Form 0102C has now been fully implemented. This is the current version of the Monthly Operating Report for Surface Water Treatment Plants, a report which has been required since the year 1978. The commission adopts a conforming change from proposal by adding new language under adopted subsection (e)(3), which requires that, beginning January 1, 2005, public water systems that use surface water sources or groundwater sources under the direct influence of surface water, serve fewer than 10,000 people, and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) must submit a Monthly Operating Report plus Addendum for Surface Water Treatment Plants (commission Form 0102D) each month. Proposed subsection (e)(3) - (5) is renumbered as subsection (e)(4) - (6) to accommodate the addition of new adopted subsection (e)(3) and the adoption incorporates the proposed additional reporting requirements imposed by the adopted revisions to the special filter effluent monitoring requirements for systems serving fewer than 10,000 people. In addition, adopted subsection (e)(5) and (6) contain the added references to subsection (c)(7)(B) and (C), respectively, to appropriately include these new adopted requirements, as discussed earlier in this preamble. Then, proposed subsection (e)(6) is renumbered as (e)(7).

The commission adopts amended subsection (f) to eliminate unnecessary provisions and to incorporate an additional compliance determination for systems that serve fewer than 10,000 people. These revisions are needed to maintain consistency with the requirements of the federal Long Term 1 Enhanced Surface Water Treatment Rule. Subsection (f)(3) is adopted to apply to all public water systems that are subject to the requirements of §290.111, and contains a cross-reference correction by changing proposed “subsection (e)(3) - (5)” to “subsection (e)(4) - (6).” The commission adopts the proposed deletion of the requirement contained in previously existing subsection (f)(5), and adopts other minor changes to the remainder of this subsection, including elimination of past compliance dates and reference corrections. Under adopted subsection (f)(6), “and paragraph (7)(C)” is added to account for the addition of new adopted subsection (c)(7)(C).

The commission adopts amended subsection (g)(2) to delete the reference to subsection (b)(2) because it is inapplicable following the amendment to §290.111(b).

Section 290.117, Regulation of Lead and Cooper

The commission adopts amended §290.117 to adhere to federal requirements, as noted by EPA Region 6 after reviewing the commission's Lead and Copper Program, and to make technical corrections.

The commission adopts amended subsection (e)(1) and (5) to comply with requirements of the federal Lead and Copper Rule Minor Revisions by providing that a public water system is eligible to receive reduced monitoring if the results of 12 consecutive months of sampling show that the 90th percentile level of lead or copper does not exceed the appropriate action level, rather than simply any two six-month rounds.

The commission adopts amended subsection (g)(2) to incorporate the provision of the federal Lead and Copper Rule Minor Revisions that allows waivers for lead and copper tap sampling to be extended to all public water systems that serve 3,300 or fewer people.

The commission adopts amended subsection (h)(1)(H) - (J) and (N) by deleting the word "large," thus ensuring that these provisions would be applied to all water systems regardless of size. The need for this change was noted by EPA Region 6 staff through review of the commission's set of previous rules intended to implement the federal Lead and Copper Rule Minor Revisions that were adopted by the commission on May 10, 2002. This change is adopted in order to conform with federal regulations because the commission must adopt rules that are at least as stringent as the EPA's in order to remain the primary authority with respect to drinking water regulations.

The commission adopts amended subsection (h)(2)(A) to require source water monitoring every six-month period in which a public water system has a lead or copper exceedance, in conformance with the federal Lead and Copper Rule Minor Revisions. This change is adopted in order to conform with federal regulations because the commission must adopt rules that are at least as stringent as the EPA's in order to remain the primary authority with respect to drinking water regulations. The commission adopts the deletion of the sentence "This requirement can be satisfied by normally scheduled inorganic chemical sampling in compliance with the monitoring under the SDWA." The commission also adopts the deletion of the language stating that if acceptable entry point water data is not available for large systems, the water lead level at the entry point shall be considered zero mg/L for purposes of determining whether a corrosion control study is required because this option is not allowable under the

federal Lead and Copper Rule Minor Revisions. Again, this change related to source water lead levels is adopted in order to conform with federal regulations because the commission must adopt rules that are at least as stringent as the EPA's in order to remain the primary authority with respect to drinking water regulations. Additionally, subsection (h)(2)(A) is amended to correct the reference to §290.106.

The commission adopts amended subsection (i)(2) to strike the size limitations for public education, because all water systems are subject to these requirements. Subsection (i)(2)(G) is amended to conform to the federal requirement that systems provide public education materials to their customers once every six months for as long as the system is in exceedance status. This change is adopted to conform with the provisions of the federal Lead and Copper Rule Minor Revisions related to public education.

The commission adopts amended subsection (j)(1) to provide that a system required to perform water quality parameter monitoring is out of compliance with its approved water quality parameter ranges if its water quality parameter values fall outside its approved water quality parameter range for any nine days, as opposed to nine consecutive days, in conformance with federal requirements. This change is adopted to conform with the provisions of the federal Lead and Copper Rule Minor Revisions related to measurement of water quality parameters at systems that have been required to set approved water quality parameter ranges.

The commission adopts amended subsection (j)(3) to apply the definition of systems deemed to have optimized corrosion control to all systems regardless of size, as noted by EPA Region 6 staff after review of the commission's set of previous rules intended to implement the federal Lead and Copper Rule Minor Revisions that were adopted by the commission on May 10, 2002. Additionally, this subsection is amended to incorporate the federal requirement that small and medium-sized systems perform corrosion control studies within 12 months of a confirmed lead or copper exceedance in order to conform with the EPA's Lead and Copper Rule Minor Revisions. The commission is required to adopt rules at least as stringent as the EPA's, or else the EPA will provide direct implementation of the Safe Drinking Water Act and its amendments in the State of Texas. The adopted rule will help mitigate any lead or copper exceedance because corrosion of certain pipes can lead to these exceedances, and the adopted rule will help the commission remain the primary authority with respect to drinking water regulations.

The commission adopts amended subsection (j)(4)(H) to ensure that systems address the copper action level as well as the lead action level through approval of a corrosion control study in order to conform

with the EPA's Lead and Copper Rule Minor Revisions. The amendment deletes the phrases "installed corrosion control treatment" and "installing corrosion control treatment" and replaces them with "received approval for a corrosion control study" and "receiving approval for a corrosion control study." As mentioned previously in the discussion of the rule requiring certain systems to perform corrosion control studies, the adopted rule will help mitigate any lead or copper exceedance because corrosion of certain pipes can lead to these exceedances. Furthermore, the adopted rule will help the commission remain the primary authority with respect to drinking water regulations.

The commission adopts the proposed deletion of the language in existing §290.117(k)(1) - (5) and inserts language which adopts the federal requirements for lead service line replacement by reference, which in this case provides better clarity for the regulated community. It should be noted that no public water systems in the State of Texas use lead pipes. Therefore, the commission asserts that it is better to adopt the required federal regulations by reference, thereby streamlining the rule, rather than to have several paragraphs of rule language which have no practical application in our state.

Section 290.121, Monitoring Plans

The commission adopts amended §290.121(b)(1)(A) to incorporate reporting and recordkeeping mandates contained in the federal Filter Backwash Recycling Rule. This adopted revision requires the plant schematic to show the origins of recycled streams and information regarding pretreatment and reintroduction of the recycled streams.

Section 290.122, Public Notification

The commission adopts amended §290.122 to incorporate changes needed to ensure consistency with federal rules, including needed revisions identified during review of the commission's public notification requirements. The commission adopts amended subsection (a) to reflect that there is also an acute violation notice required for any maximum residual disinfectant level violation. Adopted subsection (a)(2)(A) corrects an erroneous reference to a provision in §290.46. Subsection (a)(2)(C) and (D) and (3)(C) is amended by replacing the word "hand" with the word "direct" in order to incorporate the provision of the federal Public Notification Rule that allows mail delivery or hand delivery for acute violations. Adopted subsection (a)(2)(E) incorporates a new federal Public Notification Rule requirement. Subparagraph (E) requires that, if public notice is provided by posting, the posting must remain in place for as long as the violation exists or seven days, whichever is longer. Adopted subsection (a)(3)(C), in addition to the change to "hand" delivery, is amended to conform to the federal requirement that posted notices must remain in place for at least seven days.

The commission adopts amended subsection (b)(2)(A) to incorporate the provision of the federal Public Notification Rule that requires the initial notice for a non-acute violation to be performed by mail or hand delivery, and that requires systems to make a good faith effort to notify customers who might not be reached by mail or hand delivery. Adopted subsection (b)(2)(C) incorporates the federal requirement that public notices issued by posting must remain in place for at least seven days. The commission adopts the proposed deletion of subsection (b)(3)(A) because of redundancy. This provision previously inappropriately duplicated the provision for initial public notice contained in subsection (b)(2). Subsection (b)(3)(B) and (C) is renumbered to account for the deletion of subsection (b)(3)(A), with a change of the word “hand” to the word “direct.” Adopted subsection (b)(3)(C), in addition to being renumbered as subsection (b)(3)(B), is amended by incorporating the federal seven-day public notice requirement, and incorporating the provision of the federal Public Notification Rule that requires the initial notice for a non-acute violation to be performed by direct (i.e., mail or hand delivery) for noncommunity systems.

The commission adopts amended §290.122(c) to more accurately reflect the required monitoring requirements by replacing the phrase “these standards” with “this chapter.” This amendment is needed because the monitoring requirements for the federal Filter Backwash Recycling Rule are in §290.46(f)(3)(C)(iii) rather than in “these standards.” Adopted subsection (c)(1)(A) defines the acronym designation “SCL” as “secondary constituent levels.” Adopted subsection (c)(1)(E) incorporates provisions of the federal Public Notification Rule and Filter Backwash Recycling Rule.

Adopted subsection (c)(2)(A) and (B) is amended by replacing the word “hand” with the word “direct” in order to incorporate the provision of the federal Public Notification Rule that allows mail delivery or hand delivery for monitoring and reporting violations. Adopted subsection (c)(2)(C) incorporates the federal seven-day public notice requirement. Adopted subsection (c)(3)(B) is also amended to incorporate provisions of the federal Public Notification Rule. The word “hand” is replaced with the word “direct” in order to allow mail delivery or hand delivery for monitoring and reporting violations, and the requirement that postings remain in place for a minimum of seven days if added.

Adopted subsection (d)(3) is modified to correct the reference for notifications that require mandatory public health language. Subsection (d)(3)(A) is amended to correct the reference to the federal mandatory health effects language for MCLs and treatment technique requirements. The commission adopts the relettering of subsection (d)(3)(B) as subsection (d)(3)(C) and adopts new requirements in subsection (d)(3)(B) which reference the federal mandatory health effects language for secondary fluoride violations.

Adopted subsection (d)(9) incorporates a reference to the federal notification requirements for systems that have received a variance or exemption to one or more of the MCLs or treatment technique requirements.

Adopted subsection (g) incorporates the provision of the federal Public Notification Rule that systems provide notification of violations to their customers.

Adopted subsection (h) implements a provision in the federal Public Notification Rule that allows the executive director to notify the public directly of a violation as needed without relaxing the requirement that the system is responsible for notification.

Finally, the adoption also contains typographical error corrections and administrative revisions to conform to Texas Register requirements.

FINAL REGULATORY IMPACT ANALYSIS DETERMINATION

The commission has reviewed the adopted rules in light of the regulatory analysis requirements of Texas Government Code, §2001.0225, and determined that the rulemaking does not meet the definition of a “major environmental rule” as defined in that statute. A “major environmental rule” means a rule, the specific intent of which, is to protect the environment or reduce risks to human health from 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. Although the adopted amendments to Chapter 290 are intended in part to reduce risks to human health from unsafe drinking water in public water systems, the amendments would not adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or public health and safety of the state. The amendments would protect public health by improving the standards for public drinking water. The amendments would also, while providing an alternative approach to compliance from the federal rules, require public drinking water systems to meet the same regulatory standards set forth in the federal rules. Further, it is not anticipated that the cost of complying with the amendments will be significant with respect to the economy as a whole; therefore, they will not materially affect the economy, a sector of the economy, productivity, competition, or jobs.

Furthermore, the rulemaking does not meet any of the four applicability requirements listed in Texas Government Code, §2001.0225(a). This section 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 requirements because this rulemaking: 1) does not exceed any standard set by federal law for treatment of water utilized in public water systems and is adopted to be consistent with federal rules; 2) does not exceed the requirements of state law under Texas Health and Safety Code, Chapter 341, Subchapter C; 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 any state and federal program on treatment of water utilized in public water systems, but rather is adopted to be consistent with federal rules in order to allow the state to maintain its authority to implement the federal Safe Drinking Water Act; and 4) is not adopted solely under the general powers of the agency, but rather specifically under Texas Health and Safety Code, §341.031, which allows the commission to adopt and enforce rules to implement the federal Safe Drinking Water Act, as well as the other general powers of the agency.

TAKINGS IMPACT ASSESSMENT

The commission evaluated the adopted amendments to Chapter 290 and performed an assessment of whether it constitutes a takings under Texas Government Code, Chapter 2007. The primary purpose of the adopted amendments is to: 1) require public water systems, where needed, to institute changes to the return of recycle flows to a plant's treatment process that may otherwise compromise microbial control in response to the National Primary Drinking Water Regulations: Filter Backwash Recycling Rule published by the EPA in the June 8, 2001 issue of the *Federal Register* (66 FR 31086), codified in 40 CFR Parts 9, 141, and 142; 2) improve control of microbial pathogens, specifically the protozoan *Cryptosporidium*, in drinking water and address risk trade-offs with disinfection byproducts in response to the National Primary Drinking Water Regulations: Long Term 1 Enhanced Surface Water Treatment Rule published by the EPA in the January 14, 2002 issue of the *Federal Register* (67 FR 1812), codified in 40 CFR Parts 9, 141, and 142; and 3) technically revise state rules to enhance their consistency with minor revisions made by the EPA to the federal National Primary Drinking Water Regulations for Lead and Copper, also known as the federal Lead and Copper Rule Minor Revisions, published by the EPA in the January 12, 2000 issue of the *Federal Register* (65 FR 1950), codified in 40 CFR Parts 9, 141, and 142; and federal National Primary Drinking Water Regulations: Public Notification Rule published by the EPA in the May 4, 2000 issue of the *Federal Register* (65 FR 25982), codified in 40 CFR Part 9, *et al.* The purposes of the other adopted changes are to: 1) specify how the agency implements the minimum capacity requirements for public water systems; 2) provide

requirements for laboratories at surface water treatment plants; 3) describe air relief device requirements; 4) revise sanitary control easement, operator certification, security, maintenance, meter calibration, and electrical wiring requirements; 5) revise reporting requirements; 6) add items to “Appendix I, Assessment of Hazard and Selection of Assemblies;” 7) reorganize and modify source water, water treatment, and turbidity requirements; and 8) provide non-substantive revisions, including typographical error and formatting corrections, to conform with Texas Register requirements.

Promulgation and enforcement of the amendments would constitute neither a statutory nor a constitutional taking of private real property. There are no burdens imposed on private real property under this rulemaking because the amendments neither relate to, nor have any impact on the use or enjoyment of private real property, and there would be no reduction in value of property as a result of this rulemaking. The rulemaking requires community water systems to comply with drinking water standards protective of human health and the environment. The adopted amendments, while providing an alternative approach to compliance from the federal rules, require public drinking water systems to meet the same regulatory standards in federal rules.

CONSISTENCY WITH THE COASTAL MANAGEMENT PROGRAM

The commission has reviewed this rulemaking and found that the adoption is not a rulemaking subject to the Texas Coastal Management Program (CMP) because the rulemaking is neither identified in 31 TAC §505.11, nor will it affect any action or authorization identified in §505.11. Therefore, the rules are not subject to the CMP.

PUBLIC COMMENT

A public hearing on the proposal was scheduled to be held in Austin on September 3, 2003. No public comment was offered at the scheduled hearing, so a hearing was not held. The comment period for written comments ended at 5:00 p.m., September 8, 2003. Six commenters submitted written comments, as follows: Air Land Emergency Resource Team (ALERT); BP Products North America Inc. (BP); the City of Austin; ECO Resources, Inc.; the Lower Colorado River Authority (LCRA); and the Texas Rural Water Association (TRWA).

RESPONSE TO COMMENTS

TRWA commented on the “state-only” provision proposed under §290.39(n)(3) allowing the commission to require a public water system to provide as-built drawings and specifications for any public water system production, storage, and pressure maintenance facility that was constructed without the prior approval of the executive director. TRWA commented that as-built drawings and

specifications are unavailable for many older and smaller systems, and that paying a licensed professional engineer to develop these drawings and specifications would place an expense, easily amounting to several thousand dollars, on small public water systems. The commenter recommended that the proposed rule be changed at adoption to be limited to those circumstances where the agency determines that the drawings are necessary to remedy noncompliance with a capacity or quality requirement.

The commission agrees in part with this comment. The executive director asserts that there are adequate opportunities for enforcement against noncompliant systems without the proposed requirement being adopted. Under existing §290.39(e), certain planning material is required to be submitted, including engineering reports for new water systems and all surface water treatment plants. Also, specifications for construction of facilities must accompany all submitted plans. Under existing §290.39(h), no person may begin construction on a new public water system before written approval of plans and specifications and, if required, approval of a business plan from the executive director. Furthermore, §290.39(n) provides that the commission may require the owner or operator of a public drinking water supply system that was constructed without the approval of the executive director to: 1) provide the executive director with a business plan that demonstrates that the system has available the financial, managerial, and technical resources adequate to ensure future operation of the system in accordance with applicable laws and rules; and 2) provide adequate financial assurance of the ability to operate the system in accordance with applicable laws and rules. Finally, Texas Health and Safety Code, §341.035 provides that: 1) a person may not begin construction of a public drinking water supply system unless the executive director approves the plans and specifications for the system; and 2) the prospective owner or operator of the proposed system shall provide completed plans and specifications for review and approval in accordance with commission rules. In response to this comment, the commission adopts the deletion of proposed §290.39(n)(3) to remove the requirement for public water systems constructed without the prior approval of the executive director to submit copies of as-built engineering drawings and specifications.

The City of Austin commented, with regard to §290.42(d)(3)(A), that the commission should not dictate a practice or require a change in piping at a plant that delves into the details of how trained, certified operators perform their duties. The commenter further stated that certain anticipated federal regulations would require *Cryptosporidium* sampling of the raw water; therefore, many systems would not be able to return flows ahead of the raw water sampling tap and still obtain representative raw water results.

The commenter recommended that the proposed revision be changed to remove the raw water sample tap provision, to read as follows: “. . . shall be returned to pass through all treatment plant processes.”

The commission acknowledges that operators can collect and composite samples of raw water and any recycle stream for the purposes of jar testing, but does not agree with the commenter’s recommendation. The commission notes that the proposed rule would establish a design standard that would make such compositing activities unnecessary, reduce the potential for compositing errors, and ensure proper mixing of the raw and recycle streams before coagulant is applied. Furthermore, the proposal explicitly authorizes the executive director to approve other recycling locations. As the fiscal impact analysis indicates, the commission estimates that more than 90% of the treatment plants in the State of Texas already are designed in this manner and all but three of the remaining plants will be able to demonstrate that their alternative recycling location currently meets the proposed regulatory requirement to recycle in a manner which minimizes the interference with treatment processes.

The commission is also aware that the proposed Long Term (Stage 2) Enhanced Surface Water Treatment Rule would require that certain microbial source water samples be collected prior to any treatment and agrees that this proposed federal rule would subject each plant’s sampling protocol to the review and approval of the appropriate regulatory agency. The federal Filter Backwash Recycling Rule promulgation clearly indicates the EPA recognizes that recycling practices can impact the overall quality of raw water entering the treatment works. Although the Long Term (Stage 2) Enhanced Surface Water Treatment Rule proposes to allow microbial sampling to be conducted prior to the introduction of the recycle stream, the EPA is soliciting comments on how recycling practices should be addressed in the Long Term (Stage 2) Enhanced Surface Water Treatment rule.

The EPA’s 1989 Surface Water Treatment Rule does not establish, and the Long Term (Stage 2) Enhanced Surface Water Treatment Rule does not propose to establish an absolute minimum treatment technique requirement for clarification processes. However, these two federal promulgations acknowledge that a properly-operated clarification process allows a plant to achieve higher removal of both *Cryptosporidium* oocysts and *Giardia lamblia* cysts. The proposed rule establishes a nominal design standard which facilitates proper operation of the coagulation and, thereby, the clarification processes. In addition, the commission anticipates that the executive director will approve a site-specific request for alternate recycling locations provided that data indicates that the plant performance is not adversely impacted by poor operational practices.

After considering all of the relevant issues, the commission has decided to adopt the proposed rule without modification.

ECO Resources, Inc. commented on the provisions that differ from the federal regulations under proposed §290.42(d)(3)(A) regarding the recycling of decant water, which requires the liquids from sludge settling lagoons, spent backwash water tanks, dewatering facilities, and similar facilities to be returned to the raw waterline upstream of the raw water sample tap and coagulant feed point, unless the executive director has approved an alternate recycling location. The commenter stated that §290.112(c)(1) requires monitoring for total organic carbon (TOC) and alkalinity in the source water prior to any treatment, and asked if the commission is recognizing raw water and source water prior to process treatment to be one and the same.

The commission responds that the agency has traditionally used the terms “source water prior to any treatment” and “raw water” interchangeably. However, it may become necessary to define the terms more precisely due to the adoption of TOC treatment technique requirements, the implementation of the Source Water Assessment program, and the impending promulgation of the Long Term (Stage 2) Enhanced Surface Water Treatment Rule. For example, if a surface water treatment plant receives water from an intake located on the Rio Grande River via a series of irrigation canals, it may be appropriate to define the Rio Grande River as the source water and the water entering the plant grounds from the canal as the raw water. Similarly, if the plant is blending recycling decant water with the water from the canal prior to commencing treatment, it may be appropriate to identify the blended water stream as the raw water or it may be necessary to create a new term, such as “blended raw water.”

Regardless of the term used to define the blended raw water, it is essential to recognize that both TOC levels and pathogen concentrations of the water entering the treatment process can be affected by the quality of the recycle stream. Consequently, it would be appropriate to treat the blended raw water as “source water prior to treatment” unless one of its components has received chemical pretreatment prior to the sample point. (If prior treatment of either stream occurs, the blended raw water sample point would be excluded by the federal TOC rule as an acceptable source water sample point.)

The commission recognizes the potential need to resolve this terminology question and expects that the executive director will begin discussing this issue with affected stakeholders before the commission prepares to implement the Long Term (Stage 2) Enhanced Surface Water Treatment

Rule. Based on the outcome of these discussions, the commission may propose a technical correction in a future rulemaking. The commission adopts the rule as proposed.

LCRA commented that §290.42(d)(3)(B) appears to require equalization basins, variable speed pumps, or some other hardware even when hydraulic surges have not been observed to be a problem. The commenter recommended that the rule language be changed to read “The magnitude and impact of hydraulic surges during the recycling process shall be minimized.”

TRWA commented that §290.42(d)(3)(B) appears to require that facilities be constructed and operated in order to minimize the magnitude and impact of hydraulic surges that occur during the recycling process regardless of whether hydraulic surges have been documented to be a problem with the performance of the treatment process. The commenter recommended that this provision not be adopted or, in the alternative, that the proposed rule language be modified at adoption to provide: “The magnitude and impact of hydraulic surges shall be minimized as necessary to ensure adequate treatment.”

The commission agrees with these commenters, and notes that the commission did not intend for the proposed rule to require the installation of any additional facilities at treatment plants which are not experiencing hydraulic surges. The commission adopts the rule with revised language to omit the proposed references to specific technologies.

TRWA commented, with regard to §290.42(d)(11)(E)(ii), that the commission should adopt the requirements of the federal regulations, rather than requiring systems serving fewer than 10,000 people with only two filters to install a turbidimeter and recorder on each individual filter. The commenter stated that the requirement would cause operators at these small systems to take time away from other tasks that must be carefully attended, thereby posing the risk that the rule would burden small system operators to the detriment of their other functions in protecting the public health. The commenter further stated that no measurable additional public protection is achieved by foreclosing an option that the EPA clearly believes appropriate.

The commission agrees in part with the commenter.

Although the commission disagrees with the commenter that the proposed requirement would provide no measurable additional public protection, the commission has decided to adopt the rule in accordance with the federal regulation which allows systems with only two filters to use

combined filter effluent turbidity monitoring, in lieu of individual filter effluent filter turbidity monitoring.

LCRA commented that the requirement under proposed §290.42(d)(16) for each surface water treatment plant to be provided with a computer and software for recording performance data has been interpreted by the agency's regional inspectors to mean that the computer must be located at the water treatment plant. The commenter stated that, at many small plants, this is not feasible and that many such plants have no environmentally controlled buildings suitable for housing a computer, and that the commission should modify the language to clarify that a computer is necessary for recording data, maintaining records, and preparing reports, but it is up to the water system to determine the best location for that computer.

TRWA commented that under proposed §290.42(d)(16), each surface water treatment plant, rather than each surface water treatment system, must be provided with a computer and software. The commenter stated that the proposed language could be interpreted to mean that the computer and software must be located and maintained at the actual plant, and that this is simply infeasible at many small systems. The commenter recommended that the proposed rule be revised to clarify that the computer and appropriate software that is required for each system should be maintained at a suitable on-site or off-site location, as determined by the system.

The commission does not concur with these comments. The commission asserts that the computer must be readily accessible at the plant so that the operator can enter monitoring results and prepare routine reports. In addition, the presence of a computer at the plant site assures that the compliance data and other pertinent plant records will be available during inspections by commission staff. The purpose of the proposed revision was to specify that the plant computer does not have to be maintained in the plant laboratory as currently specified in §290.42(d)(15).

The commission recognizes that it may be appropriate for some systems to maintain the plant computer at a remote site. However, the commission asserts that the computer must be readily accessible to plant personnel so that monitoring results can be entered on a real-time basis and that the operator can prepare routine reports at any time. The commission further asserts that the computer must be located at a site that will ensure that compliance data and other pertinent plant records are available during inspections by agency staff. Consequently, the commission does not agree that public water systems should have unlimited flexibility in determining where the plant computer should be installed. Nevertheless, the commission adopts the amendment that

allows the executive director to approve a computer location other than the treatment plant provided that the aforementioned objectives can be achieved using a remote computer.

LCRA commented that the requirement under proposed §290.42(i) to obtain a commission permit for discharging wastes from water treatment processes has been interpreted by agency staff to require a waste discharge permit to irrigate on-site plant landscape areas with settled filter backwash decant water. The commenter recommended that the following sentence be added, noting that it is similar to existing commission requirements under 30 TAC Chapter 210 that allow irrigation with treated effluent on wastewater treatment plant sites: “Settled filter backwash water may be used to irrigate landscaped areas within the plant boundary so long as no runoff from the irrigation leaves the plant site and no nuisances result from the irrigation practice.”

The commission disagrees with the commenter. Both the proposed rule and the equivalent regulation currently contained in §290.42(d)(3) are intended to assure that engineers and public water systems are aware of the need to comply with state and federal requirements when disposing of plant wastes. The proposed rule imposes no additional permitting requirements on plants which do not require a permit to dispose of their wastes. The commission adopts the rule as proposed.

ECO Resources, Inc. commented on the language of §290.42(m), which states that “The gates shall be locked during periods of darkness and when the plant is unattended.” The commenter questioned whether the “and” should be changed to “or.”

The commission asserts that the requirement is grammatically correct and the rule is adopted as proposed. In order to assure a reasonable level of security, plant gates should be locked whenever the plant is unattended and during periods of darkness even if an operator is present.

TRWA commented that proposed §290.45(a)(5) represents an unreasonable infringement on the minutiae of a public water system’s management, and asserted that there are times (e.g., during the winter months) when peak system capacity can be suspended for routine maintenance activities with no compromise to public health or service. The commenter stated that many systems temporarily shut down (i.e., “winterize”) wells that are used only for peak demand production during the summer months, and that the proposed rule needlessly substitutes regulatory second-guessing for the management judgment calls of public water systems. The commenter recommended against adoption of this portion of the rulemaking.

The City of Austin commented that proposed §290.45(a)(5) should be removed from the rules at adoption, primarily due to concerns that it could be interpreted that storage tanks, sedimentation basins, and filters that are out of service for winter maintenance could not be included in capacity compliance determinations because they are routinely out of service for more than 60 days. The commenter recommended that, if proposed §290.45(a)(5) is not deleted at adoption, the following language be added: “This does not apply to facilities out of service for repair or routine maintenance, and such facilities must be operational by the time the public water system determines they are necessary to meet demands.”

The commission agrees in part with these commenters, in that the language in the proposal might, under certain circumstances, establish an unrealistic performance standard regarding routine repair and maintenance of certain public water system facilities. However, the commission asserts that the rules existing before this adoption did not adequately address inoperative facilities and that it would be inappropriate to promulgate a rule that essentially allows a public water system to determine which of its inoperative facilities should be included when the agency evaluates compliance with regulatory requirements. Consequently, the commission is adopting a rule which establishes a more realistic performance standard and allows the executive director some additional flexibility when interpreting and enforcing the commission’s minimum capacity requirements. The adopted rule language is as follows: “The executive director may exclude the capacity of facilities that have been inoperative for the past 120 days and will not be returned to an operative condition within the next 30 days when determining compliance with the requirements of this section.”

ECO Resources, Inc. commented on §290.46(e), stating that the word “employee” exists in the current regulations, and requesting that the commission confirm that “employee” relates to individuals and contract operating firms equally under the proposed rules. The commenter also stated that the proposal, under §290.46(e)(3)(C), (4)(C), (5)(D), and (6)(B), allows a system to gain relief from hiring two full-time operators by allowing for two part-time operators based on a minimum number of hours per month worked at the system. The commenter asked whether it is the commission’s intent that these minimum hours apply only to those systems employing part-time operators and not full-time contract operating firms. This commenter also questioned whether contract operating firms are obligated to provide 24-hour service, full-time operators. Finally, the commenter requested that, under proposed §290.46(e)(6)(A), the term “contract operators” be changed to “part-time operators.”

The commission agrees in part with this commenter. The commission notes that the proposal did not distinguish between the operators who are employees of the public water system and those who are employees of a contract firm that operates the public water system's facilities. Consequently, the commission does not concur that the proposed provisions would limit the obligation of a system to be operated at all times under the direct supervision of an appropriately licensed water works operator. The commission has concluded that an operator must have a certain familiarity with the public water system facilities before the agency recognizes that individual as one of the water system's operators. This principle applies whether the operator is a part-time employee of the system or a contract operator whose employee only works at the system part-time. In essence, the term "part-time operator" describes any licensed individual who does not work at least 40 hours per week in the production, treatment, or distribution facilities of a particular water system.

The proposal did not include provisions which would preclude the system or its contractor from hiring or utilizing additional operators as needed to assure supervision at all times. The proposed provisions also did not indicate that the minimum hours per month are sufficient to assure adequate coverage. The purpose of these proposed provisions was to assure that there are at least two primary operators with sufficient familiarity with the public water system facilities to achieve a continuity of coverage, knowledge, and experience in the event that one of the primary operators leaves.

The commission concurs that the isolated use of the term "contract operators" in §290.46(e)(6)(A) is confusing and adopts the recommended revision to the rule.

TRWA commented that the proposal, under §290.46(e)(3)(C), (4)(C), (5)(B) and (D), and (6)(A), requiring various public water systems to allocate a minimum number of hours per operator represents an unjustified intrusion by the commission into the minutiae of a public water system's scheduling of its operators, and recommended that the commission not include the minimum number of hours each operator must work at the water system plant. The commenter stated that it should be sufficient to specify the number of operators, for the minimum time in attendance at the water system's production, treatment, or distribution facilities, and that scheduling the individual operators should be left to the discretion of the public water system managers.

The commission agrees with the commenter that the scheduling of operators should be left to the discretion of the public water system. However, at systems which are required to have more than

one operator, it is essential that the operators used to meet minimum requirements are sufficiently familiar with the public water system facilities to achieve a continuity of coverage, knowledge, and experience in the event that one of the operators leaves. The proposed rule would achieve this requirement without requiring a system to hire two full-time operators.

In the case of §290.46(e)(6)(A), the commission proposed a similar requirement for small systems with surface water treatment plants and the same principles apply. However, in this case, the Class B operator may serve principally as a technical consultant rather than as one of the system's primary operators. Nevertheless, to function efficiently and effectively in this role, the Class B operator must remain sufficiently familiar with the knowledge and skill levels of the system's Class C operator, the current condition of the plant facilities, the plant's current operational practices, and recent raw water quality conditions. The commission does not believe that this level of familiarity can be achieved during a single eight-hour visit per month or by frequent one-hour visits. The commission asserts that the proposed provision properly balances the flexibility issues raised by the commenter and the commission's need to assure that a Class B operator has a working knowledge of the plant and its staff. The commission adopts the proposed rule with no change in response to this commenter.

LCRA commented that the proposed requirement under §290.46(f)(3)(A)(vii) for a monthly summary of the work performed by each of the part-time operators if full-time operators are not employed is not necessary, and that entry into a daily log should be sufficient. TRWA also commented that entry into a daily log should be sufficient to verify compliance.

The commission agrees with the commenter, and notes that it did not intend to require a system to maintain a monthly record of operator activities if it maintains daily records. The commission concurs that a daily record will be acceptable if it contains the information needed to assure that the part-time operator is performing operational duties at the public water system. The commission adopts a revision to the proposed regulatory requirement that allows the use of a daily record.

The City of Austin commented that proposed §290.46(f)(3)(C)(iii) does not specify the format or frequency for reporting, and suggested that the adopted rule require a one-time report to the agency of recycling practices, and once it is accepted, there are no further reporting requirements unless changes are made to the recycling practices.

The commission agrees in part with the commenter, and notes that it concurs that most public water systems will only have to submit one Recycling Practices Report. The commission also agrees that a revised report must be submitted each time the plant makes a significant change to its recycling practices. For example, a revised report would be needed if the plant relocated its recycling point, installed or discontinued the use of pretreatment facilities for recycle streams, or began recycling decant water from a new waste stream.

In addition to the Recycle Practices Report, the commission plans to have systems that use an alternate recycle location to compile performance data for a specified period to obtain final approval for the alternate location. The precise nature of this data and the duration of the reporting period will be determined on a site-specific basis following discussions with plant staff. Again, the commission expects this to be a one-time report in most cases.

However, in addition to requiring submission of information contained in the Recycle Practices Report to the commission, the federal Filter Backwash Recycling Rule requires plants that recycle to compile and retain specific additional information on recycling practices and to retain this information for review by agency staff. Consequently, the commission does not agree with the commenter that the rule should stipulate that the recycling data collection will be a one-time report and adopts the rule as proposed.

BP commented that it supports the proposed rule, and requested that the commission consider a change under §290.46(h) to allow the use of sodium hypochlorite, as well as calcium hypochlorite.

The commission appreciates the support offered by BP, but does not concur that a change to the referenced rule is required to specifically allow the use of sodium hypochlorite (bleach). Calcium hypochlorite ($\text{Ca}(\text{OCl})_2$) is specified for technical reasons. These reasons include the fact that $\text{Ca}(\text{OCl})_2$ is much more stable than bleach, so it can be stored for longer periods of time; it is a solid that will sink in water before dissolving; it is five to 15 times more concentrated than bleach, so less is required to achieve the same level of disinfection; it is easy to distribute in long pipelines during the construction phase because it can be added when connecting pipes; and when a liquid is needed, it can be dissolved in water prior to application. The commission also notes that, while the existing rule does require systems to have some $\text{Ca}(\text{OCl})_2$ on hand for those situations when it is needed, it does not prohibit the use of bleach when making repairs or installing new facilities. The commission adopts the rule with no change.

The City of Austin commented that it supports proposed §290.46(s)(2)(A)(iii) and (iv), which reduces the frequency of calibration of on-line pH meters at surface water treatment plants, and provided graphs demonstrating stable and close comparisons between pH grab samples and on-line pH results at its three water treatment plants.

The commission appreciates the support and adopts the rule as proposed.

The City of Austin commented that §290.46(s)(2)(C), proposed as “No change,” should be revised under clause (ii) to address certain calibration problems, and recommended the following wording: “Continuous disinfectant residual analyzers shall be calibrated at least once every 90 days with the manufacturer’s method of using chlorine solutions of known concentration. If such a method is not available from the manufacturer, or as an alternate method, the analyzer shall be calibrated once a week by comparing the results from the on-line analyzer with the results of approved benchtop amperometric, spectrophotometric, or titration methods.”

The commission has become aware that the current rule requiring on-line disinfectant residual monitors to be calibrated on a quarterly basis is an excessively onerous requirement for some systems. However, no changes to the portion of the rule cited by the commenter were proposed and the commission has decided to delay amendment until it has an opportunity to consult with various stakeholders. The commission will retain the recommended language submitted by the commenter for consideration in future rulemaking. Until that process is complete, the commission encourages the City of Austin to submit a request for an exception under the provisions of §290.39(l).

ALERT commented on the commission’s intended meaning of the phrase “15-minute reading” under §290.111(c)(4)(B), noting that during any period over which the reading is taken (e.g., three minutes), one could possibly use the maximum, minimum, median, or “RMS” value. The commenter stated that the proposed rule is not clear on this point as to what value or values should be recorded as a 15-minute reading.

The rule referenced in the comment addresses the monitoring requirements of systems serving more than 10,000 people in the event that the continuous monitoring equipment fails and states that four-hour grab samples are allowed for up to five working days. Since the comment was received from a system serving fewer than 10,000 people, the commission believes that the comment was likely to have been intended to address the proposed requirements contained in

§290.111(d)(4) and (4)(A), which would require each filter to be equipped with a continuous turbidimeter and continuous recorder.

The federal rule specifies that the turbidimeter must continuously monitor the turbidity produced by the filter, but only requires that the turbidity level be recorded at least once every 15 minutes. The commission adopts amended §290.111(d)(4) and (4)(A) to coincide with the federal description of a continuous on-line turbidimeter and recorder and to specify the intent of the rule regarding strip chart recorders.

Since the comment also applies to the language contained in §290.111(d)(3) and (3)(A), the commission also adopts revisions to these provisions to specify the intent of the existing regulatory language.

ALERT commented on the requirement to monitor individual filters continuously for systems serving fewer than 10,000 people (§290.111(d)(4)). The commenter expressed the belief that a single turbidimeter and recording device can adequately monitor both filters to protect public health and reveal degradation in one of the filters should it occur, and requested that the rule language be changed to allow for using a single turbidimeter and recording device on two filters for these systems. The commenter stated that such monitoring could be accomplished by providing a continuous flow of water from each of the two filters to the single turbidimeter and diverting water to the turbidimeter as needed using solenoid valves, and that a sampling cycle would consist of 4.5 minutes of flushing and three minutes of recorded monitoring for each filter monitoring cycle.

The rule referenced in the comment addresses the monitoring requirements at systems serving more than 10,000 people in the event that the continuous monitoring equipment fails and states that four-hour grab samples are allowed for up to five working days. The commission believes that the comment was intended to address the proposed requirements contained in §290.111(c)(6) which contain the phrase “15-minute readings” in several locations.

In §290.111(c)(4)(B), the commission specifies that turbidity data from individual filters must be recorded at 15-minute intervals. Although the rule anticipates that the discrete reading at the 15-minute mark will be reported, other methods may be used with the approval of the executive director. For systems that record multiple data points within a 15-minute period, the commission will allow plants to report an arithmetic average of all readings occurring within the 15-minute

period, the maximum value that recorded during the 15-minute period, or the discrete value that was recorded at the 15-minute mark. The commission is adopting the provisions as proposed.

TRWA commented that proposed §290.122(g) should be modified at adoption to limit the public notification requirement to those purchasing systems that perform no additional treatment or inadequate additional treatment prior to distribution to that system's retail customers.

The commission does not concur that a revision is needed to address the situation described in the comment. The proposed rule would require a subsequent system to notify its own customers of the violation only if it is affected by the violation.

A subsequent system that installs supplemental treatment facilities is required to monitor the performance of those treatment facilities. If the sample results reveal that the downstream public water system is complying with minimum water quality requirements, the system will not be required to notify its own customers of the upstream violation because its customers are not affected by that violation.

The commission adopts the rule as proposed.

**SUBCHAPTER D: RULES AND REGULATIONS
FOR PUBLIC WATER SYSTEMS
§§290.38, 290.39, 290.41 - 290.47**

STATUTORY AUTHORITY

These amendments are adopted under Texas Water Code, §5.102, which establishes the commission's general authority necessary to carry out its jurisdiction; §5.103, which establishes the commission's general authority to adopt rules; §5.105, which establishes the commission's authority to set policy by rule; and Texas Health and Safety Code, §341.031, which allows the commission to adopt rules to implement the federal Safe Drinking Water Act, 42 United States Code, §§300f to 300j-26.

§290.38. Definitions.

The following words and terms, when used in this chapter shall have the following meanings, unless the context clearly indicates otherwise. If a word or term used in this chapter is not contained in the following list, its definition shall be as shown in Title 40 Code of Federal Regulations (CFR) §141.2. Other technical terms used shall have the meanings or definitions listed in the latest edition of *The Drinking Water Dictionary*, prepared by the American Water Works Association.

(1) **Air gap** -- The unobstructed vertical distance through the free atmosphere between the lowest opening from any pipe or faucet conveying water to a tank, fixture, receptor, sink, or other assembly and the flood level rim of the receptacle. The vertical, physical separation must be at least twice the diameter of the water supply outlet, but never less than 1.0 inch.

(2) **ANSI standards** -- The standards of the American National Standards Institute, Inc., 1430 Broadway, New York, New York 10018.

(3) **Approved laboratory** -- A laboratory certified and approved by the commission to analyze water samples to determine their compliance with maximum allowable constituent levels.

(4) **ASME standards** -- The standards of the American Society of Mechanical Engineers, 346 East 47th Street, New York, New York 10017.

(5) **ASTM standards** -- The standards of the American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19102.

(6) **Auxiliary power** -- Either mechanical power or electric generators which can enable the system to provide water under pressure to the distribution system in the event of a local power failure. With the approval of the executive director, dual primary electric service may be considered as auxiliary power in areas which are not subject to large scale power outages due to natural disasters.

(7) **AWWA standards** -- The latest edition of the applicable standards as approved and published by the American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.

(8) **Certified laboratory** -- A laboratory certified by the commission to analyze water samples to determine their compliance with maximum allowable constituent levels.

(9) **Community water system** -- A public water system which has a potential to serve at least 15 residential service connections on a year-round basis or serves at least 25 residents on a year-round basis.

(10) **Connection** -- A single family residential unit or each commercial or industrial establishment to which drinking water is supplied from the system. As an example, the number of service connections in an apartment complex would be equal to the number of individual apartment units. When enough data is not available to accurately determine the number of connections to be served or being served, the population served divided by three will be used as the number of connections for calculating system capacity requirements. Conversely, if only the number of connections is known, the connection total multiplied by three will be the number used for population served. For the purposes of this definition, a dwelling or business which is connected to a system that delivers water by a constructed conveyance other than a pipe shall not be considered a connection if:

(A) the water is used exclusively for purposes other than those defined as human consumption (see human consumption);

(B) the executive director determines that alternative water to achieve the equivalent level of public health protection provided by the drinking water standards is provided for residential or similar human consumption, including, but not limited to, drinking and cooking; or

(C) the executive director determines that the water provided for residential or similar human consumption is centrally treated or is treated at the point of entry by a provider, a pass through entity, or the user to achieve the equivalent level of protection provided by the drinking water standards.

(11) **Contamination** -- The presence of any foreign substance (organic, inorganic, radiological or biological) in water which tends to degrade its quality so as to constitute a health hazard or impair the usefulness of the water.

(12) **Cross-connection** -- A physical connection between a public water system and either another supply of unknown or questionable quality, any source which may contain contaminating or polluting substances, or any source of water treated to a lesser degree in the treatment process.

(13) **Disinfectant** -- Any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines, and ozone added to the water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms.

(14) **Disinfection** -- A process which inactivates pathogenic organisms in the water by chemical oxidants or equivalent agents.

(15) **Distribution system** -- A system of pipes that conveys potable water from a treatment plant to the consumers. The term includes pump stations, ground and elevated storage tanks, potable water mains, and potable water service lines and all associated valves, fittings, and meters, but excludes potable water customer service lines.

(16) **Drinking water** -- All water distributed by any agency or individual, public or private, for the purpose of human consumption or which may be used in the preparation of foods or beverages or for the cleaning of any utensil or article used in the course of preparation or consumption of food or beverages for human beings. The term "Drinking Water" shall also include all water supplied for human consumption or used by any institution catering to the public.

(17) **Drinking water standards** -- The commission rules covering drinking water standards in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems).

(18) **Elevated storage capacity** -- That portion of water which can be stored at least 80 feet above the highest service connection in the pressure plane served by the storage tank.

(19) **Emergency power** -- Either mechanical power or electric generators which can enable the system to provide water under pressure to the distribution system in the event of a local power failure. With the approval of the executive director, dual primary electric service may be considered as emergency power in areas which are not subject to large scale power outages due to natural disasters.

(20) **Groundwater** -- Any water that is located beneath the surface of the ground and is not under the direct influence of surface water.

(21) **Groundwater under the direct influence of surface water** -- Any water beneath the surface of the ground with:

(A) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*;

(B) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions.

(22) **Health hazard** -- A cross-connection, potential contamination hazard, or other situation involving any substance that can cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.

(23) **Human consumption** -- Uses by humans in which water can be ingested into or absorbed by the human body. Examples of these uses include, but are not limited to drinking, cooking, brushing teeth, bathing, washing hands, washing dishes, and preparing foods.

(24) **Interconnection** -- A physical connection between two public water supply systems.

(25) **Intruder-resistant fence** -- A fence six feet or greater in height, constructed of wood, concrete, masonry, or metal with three strands of barbed wire extending outward from the top of

the fence at a 45 degree angle with the smooth side of the fence on the outside wall. In lieu of the barbed wire, the fence must be eight feet in height. The fence must be in good repair and close enough to surface grade to prevent intruder passage.

(26) **L/d ratio** -- The dimensionless value that is obtained by dividing the length (depth) of a granular media filter bed by the weighted effective diameter "d" of the filter media. The weighted effective diameter of the media is calculated based on the percentage of the total bed depth contributed by each media layer.

(27) **Licensed professional engineer** -- An engineer who maintains a current license through the Texas Board of Professional Engineers in accordance with its requirements for professional practice.

(28) **Maximum daily demand** -- In the absence of verified historical data or in cases where a public water system has imposed mandatory water use restrictions within the past 36 months, maximum daily demand means 2.4 times the average daily demand of the system.

(29) **Maximum contaminant level (MCL)** -- The MCL for a specific contaminant is defined in the section relating to that contaminant.

(30) **Milligrams per liter (mg/L)** -- A measure of concentration, equivalent to and replacing parts per million in the case of dilute solutions.

(31) **Monthly reports of water works operations** -- The daily record of data relating to the operation of the system facilities compiled in a monthly report.

(32) **National Fire Protection Association (NFPA) standards** -- The standards of the NFPA 1 Batterymarch Park, Quincy, Massachusetts, 02269-9101.

(33) **National Sanitation Foundation (NSF)** -- The NSF or reference to the listings developed by the foundation, P.O. Box 1468, Ann Arbor, Michigan 48106.

(34) **Noncommunity water system** -- Any public water system which is not a community system.

(35) **Nonhealth hazard** -- A cross-connection, potential contamination hazard, or other situation involving any substance that generally will not be a health hazard, but will constitute a nuisance, or be aesthetically objectionable, if introduced into the public water supply.

(36) **Nontransient noncommunity water system** -- A public water system that is not a community water system and regularly serves at least 25 of the same persons at least six months out of the year.

(37) **psi** -- Pounds per square inch.

(38) **Peak hourly demand** -- In the absence of verified historical data, peak hourly demand means 1.25 times the maximum daily demand (prorated to an hourly rate) if a public water supply meets the commission's minimum requirements for elevated storage capacity and 1.85 times the maximum daily demand (prorated to an hourly rate) if the system uses pressure tanks or fails to meet the commission's minimum elevated storage capacity requirement.

(39) **Plumbing inspector** -- Any person employed by a political subdivision for the purpose of inspecting plumbing work and installations in connection with health and safety laws and ordinances, who has no financial or advisory interest in any plumbing company, and who has successfully fulfilled the examinations and requirements of the Texas State Board of Plumbing Examiners.

(40) **Plumbing ordinance** -- A set of rules governing plumbing practices which is at least as stringent and comprehensive as one of the following nationally recognized codes:

(A) the International Plumbing Code; or

(B) the Uniform Plumbing Code.

(41) **Potable water customer service line** -- The sections of potable water pipe between the customer's meter and the customer's point of use.

(42) **Potable water service line** -- The section of pipe between the potable water main to the customer's side of the water meter. In cases where no customer water meter exists, it is the section of pipe that is under the ownership and control of the public water system.

(43) **Potable water main** -- A pipe or enclosed constructed conveyance operated by a public water system which is used for the transmission or distribution of drinking water to a potable water service line.

(44) **Potential contamination hazard** -- A condition which, by its location, piping or configuration, has a reasonable probability of being used incorrectly, through carelessness, ignorance, or negligence, to create or cause to be created a backflow condition by which contamination can be introduced into the water supply. Examples of potential contamination hazards are:

- (A) bypass arrangements;
- (B) jumper connections;
- (C) removable sections or spools; and
- (D) swivel or changeover assemblies.

(45) **Public drinking water program** -- Agency staff designated by the executive director to administer the Safe Drinking Water Act and state statutes related to the regulation of public drinking water. Any report required to be submitted in this chapter to the executive director must be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(46) **Public health engineering practices** -- Requirements in this subchapter or guidelines promulgated by the executive director.

(47) **Public water system** -- A system for the provision to the public of water for human consumption through pipes or other constructed conveyances, which includes all uses described under the definition for drinking water. Such a system must have at least 15 service connections or serve at least 25 individuals at least 60 days out of the year. This term includes; any collection, treatment, storage, and distribution facilities under the control of the operator of such system and used primarily in connection with such system, and any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. Two or more systems with each having a potential to serve less than 15 connections or less than 25 individuals but owned by the same person, firm, or corporation and located on adjacent land will be considered a public water system

when the total potential service connections in the combined systems are 15 or greater or if the total number of individuals served by the combined systems total 25 or greater at least 60 days out of the year. Without excluding other meanings of the terms "individual" or "served," an individual shall be deemed to be served by a water system if he lives in, uses as his place of employment, or works in a place to which drinking water is supplied from the system.

(48) **Sanitary control easement** -- A legally binding document securing all land, within 150 feet of a public water supply well location, from pollution hazards. This document must fully describe the location of the well and surrounding lands and must be filed in the county records to be legally binding.

(49) **Sanitary survey** -- An onsite review of the water source, facilities, equipment, operation and maintenance of a public water system, for the purpose of evaluating the adequacy for producing and distributing safe drinking water.

(50) **Service line** -- A pipe connecting the utility service provider's main and the water meter, or for wastewater, connecting the main and the point at which the customer's service line is connected, generally at the customer's property line.

(51) **Service pump** -- Any pump that takes treated water from storage and discharges to the distribution system.

(52) **Transfer pump** -- Any pump which conveys water from one point to another within the treatment process or which conveys water to storage facilities prior to distribution.

(53) **Transient noncommunity water system** -- A public water system that is not a community water system and serves at least 25 persons at least 60 days out of the year, yet by its characteristics, does not meet the definition of a nontransient noncommunity water system.

(54) **Uniform Fire Code** -- The standards of the International Conference of Building Officials, 5360 Workman Mill Road, Whittier, California, 90601-2298.

(55) **Wastewater lateral** -- Any pipe or constructed conveyance carrying wastewater, running laterally down a street, alley, or easement, and receiving flow only from the abutting properties.

(56) **Wastewater main** -- Any pipe or constructed conveyance which receives flow from one or more wastewater laterals.

§290.39. General Provisions.

(a) Authority for requirements. Texas Health and Safety Code (THSC), Chapter 341, Subchapter C prescribes the duties of the commission relating to the regulation and control of public drinking water systems in the state. The statute requires that the commission ensure that public water systems: supply safe drinking water in adequate quantities, are financially stable and technically sound, promote use of regional and area-wide drinking water systems, and review completed plans and specifications and business plans for all contemplated public water systems not exempted by THSC, §341.035(d). The statute also requires the commission be notified of any subsequent material changes, improvements, additions, or alterations in existing systems and, consider compliance history in approving new or modified public water systems.

(b) Reason for this subchapter and minimum criteria. This subchapter has been adopted to ensure regionalization and area-wide options are fully considered, the inclusion of all data essential for comprehensive consideration of the contemplated project, or improvements, additions, alterations, or changes thereto and to establish minimum standardized public health design criteria in compliance with existing state statutes and in accordance with good public health engineering practices. In addition, minimum acceptable financial, managerial, technical, and operating practices must be specified to ensure that facilities are properly operated to produce and distribute a safe, potable water.

(c) Required actions and approvals prior to construction. A person may not begin construction of a public drinking water supply system unless the executive director determines the following requirements have been satisfied and approves construction of the proposed system.

(1) A person proposing to install a public drinking water system within the extraterritorial jurisdiction of a municipality; or within 1/2-mile of the corporate boundaries of a district, or other political subdivision providing the same service; or within 1/2-mile of a certificated service area boundary of any other water service provider shall provide to the executive director evidence that:

(A) written application for service was made to that provider; and

(B) all application requirements of the service provider were satisfied, including the payment of related fees.

(2) A person may submit a request for an exception to the requirements of paragraph (1) of this subsection if the application fees will create a hardship on the person. The request must be accompanied by evidence documenting the financial hardship.

(3) A person who is not required to complete the steps in paragraph (1) of this subsection, or who completes the steps in paragraph (1) of this subsection and is denied service or determines that the existing provider's cost estimate is not feasible for the development to be served, shall submit to the executive director:

(A) plans and specifications for the system; and

(B) a business plan for the system.

(d) Submission of plans.

(1) Plans, specifications, and related documents will not be considered unless they have been prepared under the direction of a licensed professional engineer. All engineering documents must have engineering seals, signatures, and dates affixed in accordance with the rules of the Texas Board of Professional Engineers.

(2) Detailed plans must be submitted for examination at least 30 days prior to the time that approval, comments or recommendations are desired. From this, it is not to be inferred that final action will be forthcoming within the time mentioned.

(3) The limits of approval are as follows.

(A) The commission's public drinking water program furnishes consultation services as a reviewing body only, and its licensed professional engineers may neither act as design engineers nor furnish detailed estimates.

(B) The commission's public drinking water program does not examine plans and specifications in regard to the structural features of design, such as strength of concrete or adequacy of reinforcing. Only the features covered by this subchapter will be reviewed.

(C) The consulting engineer and/or owner must provide surveillance adequate to assure that facilities will be constructed according to approved plans and must notify the executive director in writing upon completion of all work. Planning materials shall be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC 153, P.O. Box 13087, Austin, Texas 78711-3087.

(e) Submission of planning material. In general, the planning material submitted shall conform to the following requirements.

(1) Engineering reports are required for new water systems and all surface water treatment plants. Engineering reports are also required when design or capacity deficiencies are identified in an existing system. The engineering report shall include, at least, coverage of the following items:

- (A) statement of the problem or problems;
- (B) present and future areas to be served, with population data;
- (C) the source, with quantity and quality of water available;
- (D) present and estimated future maximum and minimum water quantity demands;
- (E) description of proposed site and surroundings for the water works facilities;
- (F) type of treatment, equipment, and capacity of facilities;
- (G) basic design data, including pumping capacities, water storage and flexibility of system operation under normal and emergency conditions; and

(H) the adequacy of the facilities with regard to delivery capacity and pressure throughout the system.

(2) All plans and drawings submitted may be printed on any of the various papers which give distinct lines. All prints must be clear, legible and assembled to facilitate review.

(A) The relative location of all facilities which are pertinent to the specific project shall be shown.

(B) The location of all abandoned or inactive wells within 1/4-mile of a proposed well site shall be shown or reported.

(C) If staged construction is anticipated, the overall plan shall be presented, even though a portion of the construction may be deferred.

(D) A general map or plan of the municipality, water district, or area to be served shall accompany each proposal for a new water supply system.

(3) Specifications for construction of facilities shall accompany all plans. If a process or equipment which may be subject to probationary acceptance because of limited application or use in Texas is proposed, the executive director may give limited approval. In such a case, the owner must be given a bonded guarantee from the manufacturer covering acceptable performance. The specifications shall include a statement that such a bonded guarantee will be provided to the owner and shall also specify those conditions under which the bond will be forfeited. Such a bond will be transferrable. The bond shall be retained by the owner and transferred when a change in ownership occurs.

(4) A copy of each fully executed sanitary control easement and any other documentation demonstrating compliance with §290.41(c)(1)(F) of this title (relating to Water Sources) shall be provided to the executive director prior to placing the well into service. Each original easement document, if obtained, must be recorded in the deed records at the county courthouse. Section 290.47(c) of this title (relating to Appendices) includes a suggested form.

(5) Construction features and siting of all facilities for new water systems and for major improvements to existing water systems must be in conformity with applicable commission rules.

(f) Submission of business plans. The prospective owner of the system or the person responsible for managing and operating the system must submit a business plan to the executive director that demonstrates that the owner or operator of the system has available the financial, managerial, and technical capability to ensure future operation of the system in accordance with applicable laws and rules. The executive director may order the prospective owner or operator to demonstrate financial assurance to operate the system in accordance with applicable laws and rules as specified in Chapter 37, Subchapter O of this title (relating to Financial Assurance for Public Drinking Water Systems and Utilities), or as specified by commission rule, unless the executive director finds that the business plan demonstrates adequate financial capability. A business plan shall include the information and be presented in a format prescribed by the executive director. For community water systems, the business plan shall contain, at a minimum, the following elements:

- (1) description of areas and population to be served by the potential system;
- (2) description of drinking water supply systems within a two-mile radius of the proposed system, copies of written requests seeking to obtain service from each of those drinking water supply systems, and copies of the responses to the written requests;
- (3) time line for construction of the system and commencement of operations;
- (4) identification of and costs of alternative sources of supply;
- (5) selection of the alternative to be used and the basis for that selection;
- (6) identification of the person or entity which owns or will own the drinking water system and any identifiable future owners of the drinking water system;
- (7) identification of any other businesses and public drinking water system(s) owned or operated by the applicant, owner(s), parent organization, and affiliated organization(s);
- (8) an operations and maintenance plan which includes sufficient detail to support the budget estimate for operation and maintenance of the facilities;

(9) assurances that the commitments and resources needed for proper operation and maintenance of the system are, and will continue to be, available, including the qualifications of the organization and each individual associated with the proposed system;

(10) for retail public utilities as defined by Texas Water Code (TWC), §13.002:

(A) projected rate revenue from residential, commercial, and industrial customers; and

(B) pro forma income, expense, and cash flow statements;

(11) identification of any appropriate financial assurance, including those being offered to capital providers;

(12) a notarized statement signed by the owner or responsible person that the business plan has been prepared under his direction and that he is responsible for the accuracy of the information; and

(13) other information required by the executive director to determine the adequacy of the business plan or financial assurance.

(g) Business plans not required. A person is not required to file a business plan if the person:

(1) is a county;

(2) is a retail public utility as defined by TWC, §13.002, unless that person is a utility as defined by that section;

(3) has executed an agreement with a political subdivision to transfer the ownership and operation of the water supply system to the political subdivision; or

(4) is a noncommunity nontransient water system and the person has demonstrated financial assurance under THSC, Chapter 361 or 382 or TWC, Chapter 26.

(h) Beginning and completion of work.

(1) No person may begin construction on a new public water system before receiving written approval of plans and specifications and, if required, approval of a business plan from the executive director. No person may begin construction of modifications to a public water system without providing notification to the executive director and submitting and receiving approval of plans and specifications if requested in accordance with subsection (j) of this section.

(2) The executive director shall be notified in writing by the design engineer or the owner before construction is started.

(3) Upon completion of the water works project, the engineer or owner shall notify the executive director in writing as to its completion and attest to the fact that the completed work is substantially in accordance with the plans and change orders on file with the commission.

(i) Changes in plans and specifications. Any addenda or change orders which may involve a health hazard or relocation of facilities, such as wells, treatment units, and storage tanks, shall be submitted to the executive director for review and approval.

(j) Changes in existing systems or supplies. Public water systems shall notify the executive director prior to making any significant change or addition to the system's production, treatment, storage, pressure maintenance, or distribution facilities. Public water systems shall submit plans and specifications for the proposed changes upon request. Changes to an existing disinfection process at a treatment plant that treats surface water or groundwater that is under the direct influence of surface water shall not be instituted without the prior approval of the executive director.

(1) The following changes are considered to be significant:

(A) proposed changes to existing systems which result in an increase or decrease in production, treatment, storage, or pressure maintenance capacity;

(B) proposed changes to the disinfection process used at plants that treat surface water or groundwater that is under the direct influence of surface water including changes involving the disinfectants used, the disinfectant application points, or the disinfectant monitoring points;

(C) proposed changes to the type of disinfectant used to maintain a disinfectant residual in the distribution system;

(D) proposed changes in existing distribution systems when the change is greater than 10% of the existing distribution capacity or 250 connections, whichever is smaller, or results in the water system's inability to comply with any of the applicable capacity requirements of §290.45 of this title (relating to Minimum Water System Capacity Requirements); and

(E) any other material changes specified by the executive director.

(2) The executive director shall determine whether engineering plans and specifications will be required after reviewing the initial notification regarding the nature and extent of the modifications.

(A) Upon request of the executive director, the water system shall submit plans and specifications in accordance with the requirements of subsection (d) of this section.

(B) Unless plans and specifications are required by Chapter 293 of this title (relating to Water Districts), the executive director will not require another state agency or a political subdivision to submit planning material on distribution line improvements if the entity has its own internal review staff and complies with all of the following criteria:

(i) the internal review staff includes one or more licensed professional engineers that are employed by the political subdivision and must be separate from, and not subject to the review or supervision of, the engineering staff or firm charged with the design of the distribution extension under review;

(ii) a licensed professional engineer on the internal review staff determines and certifies in writing that the proposed distribution system changes comply with the requirements of §290.44 of this title (relating to Water Distribution) and will not result in a violation of any provision of §290.45 of this title;

(iii) the state agency or political subdivision includes a copy of the written certification described in this subparagraph with the initial notice that is submitted to the executive director.

(C) Unless plans and specifications are required by Chapter 293 of this title, the executive director will not require planning material on distribution line improvements from any public water system that is required to submit planning material to another state agency or political subdivision that complies with the requirements of subparagraph (B) of this paragraph. The notice to the executive director must include a statement that a state statute or local ordinance requires the planning materials to be submitted to the other state agency or political subdivision and a copy of the written certification that is required in subparagraph (B) of this paragraph.

(3) If a certificate of convenience and necessity (CCN) is required or must be amended, the CCN application must be included with the notice to the executive director.

(k) Planning material acceptance. Planning material for improvements to an existing system which does not meet the requirements of all sections of this subchapter will not be considered unless the necessary modifications for correcting the deficiencies are included in the proposed improvements, or unless the executive director determines that reasonable progress is being made toward correcting the deficiencies and no immediate health hazard will be caused by the delay.

(l) Exceptions. Requests for exceptions to one or more of the requirements in this subchapter shall be considered on an individual basis. Any water system which requests an exception must demonstrate to the satisfaction of the executive director that the exception will not compromise the public health or result in a degradation of service or water quality.

(1) The exception must be requested in writing and must be substantiated by carefully documented data. The request for an exception shall precede the submission of engineering plans and specifications for a proposed project for which an exception is being requested.

(2) Any exception granted by the commission is subject to revocation.

(3) Any request for an exception which is not approved by the commission in writing is denied.

(m) Notification of system startup or reactivation. The owner or responsible official must provide written notification to the commission of the startup of a new public water supply system or reactivation of an existing public water supply system. This notification must be made immediately

upon meeting the definition of a public water system as defined in §290.38 of this title (relating to Definitions).

(n) The commission may require the owner or operator of a public drinking water supply system that was constructed without the approval required by (THSC), §341.035, that has a history of noncompliance with (THSC), Chapter 341, Subchapter C or commission rules, or that is subject to a commission enforcement action to take the following action:

(1) provide the executive director with a business plan that demonstrates that the system has available the financial, managerial, and technical resources adequate to ensure future operation of the system in accordance with applicable laws and rules. The business plan must fulfill all the requirements for a business plan as set forth in subsection (f) of this section; and

(2) provide adequate financial assurance of the ability to operate the system in accordance with applicable laws and rules. The executive director will set the amount of the financial assurance, after the business plan has been reviewed and approved by the executive director.

(A) The amount of the financial assurance will equal the difference between the amount of projected system revenues and the projected cash needs for the period of time prescribed by the executive director.

(B) The form of the financial assurance will be as specified in Chapter 37, Subchapter O of this title and will be as specified by the executive director.

(C) If the executive director relies on rate increases or customer surcharges as the form of financial assurance, such funds shall be deposited in an escrow account as specified in Chapter 37, Subchapter O of this title and released only with the approval of the executive director.

§290.41. Water Sources.

(a) Water quality. The quality of water to be supplied must meet the quality criteria prescribed by the commission's drinking water standards contained in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems).

(b) Water quantity. Sources of supply, both ground and surface, shall have a safe yield capable of supplying the maximum daily demands of the distribution system during extended periods of peak usage and critical hydrologic conditions. The pipelines and pumping capacities to treatment plants or distribution systems shall be adequate for such water delivery. Minimum capacities required are specified in §290.45 of this title (relating to Minimum Water System Capacity Requirements).

(c) Groundwater sources and development.

(1) Groundwater sources shall be located so that there will be no danger of pollution from flooding or from insanitary surroundings, such as privies, sewage, sewage treatment plants, livestock and animal pens, solid waste disposal sites or underground petroleum and chemical storage tanks and liquid transmission pipelines, or abandoned and improperly sealed wells.

(A) No well site which is within 50 feet of a tile or concrete sanitary sewer, sewerage appurtenance, septic tank, storm sewer, or cemetery; or which is within 150 feet of a septic tank perforated drainfield, areas irrigated by low dosage, low angle spray on-site sewage facilities, absorption bed, evapotranspiration bed, improperly constructed water well, or underground petroleum and chemical storage tank or liquid transmission pipeline will be acceptable for use as a public drinking water supply. Sanitary or storm sewers constructed of ductile iron or polyvinyl chloride (PVC) pipe meeting American Water Works Association (AWWA) standards, having a minimum working pressure of 150 pounds per square inch (psi) or greater, and equipped with pressure type joints may be located at distances of less than 50 feet from a proposed well site, but in no case shall the distance be less than ten feet.

(B) No well site shall be located within 500 feet of a sewage treatment plant or within 300 feet of a sewage wet well, sewage pumping station, or a drainage ditch which contains industrial waste discharges or the wastes from sewage treatment systems.

(C) No water wells shall be located within 500 feet of animal feed lots, solid waste disposal sites, lands on which sewage plant or septic tank sludge is applied, or lands irrigated by sewage plant effluent.

(D) Livestock in pastures shall not be allowed within 50 feet of water supply wells.

(E) All known abandoned or inoperative wells (unused wells that have not been plugged) within 1/4-mile of a proposed well site shall be reported to the commission along with existing or potential pollution hazards. These reports are required for community and nontransient, noncommunity groundwater sources. Examples of existing or potential pollution hazards which may affect groundwater quality include, but are not limited to: landfill and dump sites, animal feedlots, military facilities, industrial facilities, wood-treatment facilities, liquid petroleum and petrochemical production, storage, and transmission facilities, Class 1, 2, 3, and 4 injection wells, and pesticide storage and mixing facilities. This information must be submitted prior to construction or as required by the executive director.

(F) A sanitary control easement or sanitary control easements covering land within 150 feet of the well, or executive director approval for a substitute authorized by this subsection, shall be obtained.

(i) The sanitary control easement(s) secured shall provide that none of the pollution hazards covered in subparagraphs (A) - (E) of this paragraph, or any facilities that might create a danger of pollution to the water to be produced from the well, will be located thereon.

(ii) For the purpose of a sanitary control easement, an improperly constructed water well is one which fails to meet the surface and subsurface construction standards for public water supply wells. Residential type wells within a sanitary control easement must be constructed to public water well standards.

(iii) A copy of the recorded sanitary control easement(s) shall be included with plans and specifications submitted to the executive director for review.

(iv) With the approval of the executive director, the public water system may submit any of the following as a substitute for obtaining, recording, and submitting a copy of the recorded sanitary control easement(s) covering land within 150 feet of the well:

(I) a copy of the recorded deed and map demonstrating that the public water system owns all real property within 150 feet of the well;

(II) a copy of the recorded deed and map demonstrating that the public water system owns a portion of real property within 150 feet of the well, and a copy of the

sanitary control easement(s) that the public water system has obtained, recorded, and submitted to the executive director applicable to the remaining portion of real property within 150 feet of the well not owned by the public water system; or

(III) for a political subdivision, a copy of an ordinance or land use restriction adopted and enforced by the political subdivision which provides an equivalent or higher level of sanitary protection to the well as a sanitary control easement.

(v) If the executive director approves a sanitary control easement substitute identified in clause (iv)(I) or (iv)(II) of this subparagraph for a public water system and the public water system conveys the property it owns within 150 feet of the well to another person or persons, the public water system must at that time obtain, record, and submit to the executive director a copy of the recorded sanitary control easement(s) applicable to the conveyed portion of the property within 150 feet of the well, unless the executive director approves a substitute identified in clause (iv) of this subparagraph.

(2) The premises, materials, tools, and drilling equipment shall be maintained so as to minimize contamination of the groundwater during drilling operation.

(A) Water used in any drilling operation shall be of safe sanitary quality. Water used in the mixing of drilling fluids or mud shall contain a chlorine residual of at least 0.5 milligrams per liter (mg/L).

(B) The slush pit shall be constructed and maintained so as to minimize contamination of the drilling mud.

(C) No temporary toilet facilities shall be maintained within 150 feet of the well being constructed unless they are of a sealed, leakproof type.

(3) The construction, disinfection, protection, and testing of a well to be used as a public water supply source must meet the following conditions.

(A) Before placing the well into service, a public water system shall furnish a copy of the well completion data, which includes the following items: the Driller's Log (geological log and material setting report); a cementing certificate; the results of a 36-hour pump test; the results of

the microbiological and chemical analyses required by subparagraphs (F) and (G) of this paragraph; a legible copy of the recorded deed or deeds for all real property within 150 feet of the well; a legible copy of the sanitary control easement(s) or other documentation demonstrating compliance with paragraph (1)(F) of this subsection; an original or legible copy of a United States Geological Survey 7.5-minute topographic quadrangle showing the accurate well location to the executive director; and a map demonstrating the well location in relation to surrounding property boundaries. All the documents listed in this paragraph must be approved by the executive director before final approval is granted for the use of the well.

(B) The casing material used in the construction of wells for public use shall be new carbon steel, high-strength low-alloy steel, stainless steel or plastic. The material shall conform to AWWA standards. The casing shall extend a minimum of 18 inches above the elevation of the finished floor of the pump room or natural ground surface and a minimum of one inch above the sealing block or pump motor foundation block when provided. The casing shall extend at least to the depth of the shallowest water formation to be developed and deeper, if necessary, in order to eliminate all undesirable water-bearing strata. Well construction materials containing more than 8.0% lead are prohibited.

(C) The space between the casing and drill hole shall be sealed by using enough cement under pressure to completely fill and seal the annular space between the casing and the drill hole. The well casing shall be cemented in this manner from the top of the shallowest formation to be developed to the earth's surface. The driller shall utilize a pressure cementation method in accordance with the AWWA Standard for Water Wells (A100-97), Appendix C: Section C.3 (Positive Displacement Exterior Method); Section C.4 (Interior Method Without Plug); Section C.5 (Positive Placement, Interior Method, Drillable Plug); and Section C.6 (Placement Through Float Shoe Attached to Bottom of Casing). Cementation methods other than those listed in this subparagraph may be used on a site-specific basis with the prior written approval of the executive director. A cement bonding log, as well as any other documentation deemed necessary, may be required by the executive director to assure complete sealing of the annular space.

(D) When a gravel packed well is constructed, all gravel shall be of selected and graded quality and shall be thoroughly disinfected with a 50 mg/L chlorine solution as it is added to the well cavity.

(E) Safeguards shall be taken to prevent possible contamination of the water or damage by trespassers following the completion of the well and prior to installation of permanent pumping equipment.

(F) Upon well completion, or after an existing well has been reworked, the well shall be disinfected in accordance with current AWWA standards for well disinfection except that the disinfectant shall remain in the well for at least six hours.

(i) Before placing the well in service, the water containing the disinfectant shall be flushed from the well and then samples of water shall be collected and submitted for microbiological analysis until three successive daily raw water samples are free of coliform organisms. The analysis of these samples must be conducted by a laboratory approved by the Texas Department of Health.

(ii) Appropriate facilities for treatment of the water shall be provided where a satisfactory microbiological record cannot be established after repeated disinfection. The extent of water treatment required will be determined on the basis of geological data, well construction features, nearby sources of contamination and, perhaps, on the basis of quantitative microbiological analyses.

(G) A complete physical and chemical analysis of the water produced from a new well shall be made after 36 hours of continuous pumping at the design withdrawal rate. Shorter pump test periods can be accepted for large capacity wells producing from areas of known groundwater production and quality so as to prevent wasting of water. Samples must be submitted to a certified laboratory for chemical analyses. Tentative approval may be given on the basis of tests performed by in-plant or private laboratories, but final acceptance by the commission shall be on the basis of results from the certified laboratory. Appropriate treatment shall be provided if the analyses reveal that the water from the well fails to meet the water quality criteria as prescribed by the drinking water standards. These criteria include turbidity, color and threshold odor limitations, and excessive hydrogen sulfide, carbon dioxide, or other constituents or minerals which make the water undesirable or unsuited for domestic use. Additional chemical and microbiological tests may be required after the executive director conducts a vulnerability assessment of the well.

(H) Below ground-level pump rooms and pump pits will not be allowed in connection with water supply installations.

(I) The well site shall be fine graded so that the site is free from depressions, reverse grades, or areas too rough for proper ground maintenance so as to ensure that surface water will drain away from the well. In all cases, arrangements shall be made to convey well pump drainage, packing gland leakage, and floor drainage away from the wellhead. Suitable drain pipes located at the outer edge of the concrete floor shall be provided to collect this water and prevent its ponding or collecting around the wellhead. This wastewater shall be disposed of in a manner that will not cause any nuisance from mosquito breeding or stagnation. Drains shall not be directly connected to storm or sanitary sewers.

(J) In all cases, a concrete sealing block extending at least three feet from the well casing in all directions, with a minimum thickness of six inches and sloped to drain away at not less than 0.25 inches per foot shall be provided around the wellhead.

(K) Wellheads and pump bases shall be sealed by a gasket or sealing compound and properly vented to prevent the possibility of contaminating the well water. A well casing vent shall be provided with an opening that is covered with 16-mesh or finer corrosion-resistant screen, facing downward, elevated and located so as to minimize the drawing of contaminants into the well. Wellheads and well vents shall be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.

(L) If a well blow-off line is provided, its discharge shall terminate in a downward direction and at a point which will not be submerged by flood waters.

(M) A suitable sampling cock shall be provided on the discharge pipe of each well pump prior to any treatment.

(N) Flow measuring devices shall be provided for each well to measure production yields and provide for the accumulation of water production data. These devices shall be located to facilitate daily reading.

(O) All completed well units shall be protected by intruder-resistant fences, the gates of which are provided with locks or shall be enclosed in locked, ventilated well houses to exclude possible contamination or damage to the facilities by trespassers. The gates or wellhouses shall be locked during periods of darkness and when the plant is unattended.

(P) An all-weather access road shall be provided to each well site.

(Q) If an air release device is provided on the discharge piping, it shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer, corrosion-resistant screening material or an acceptable equivalent.

(4) Pitless units may be desirable in areas subject to vandalism or extended periods of subfreezing weather.

(A) Pitless units shall be shop fabricated from the point of connection with the well casing to the unit cap or cover, be threaded or welded to the well casing, be of watertight construction throughout, and be of materials and weight at least equivalent and compatible to the casing. The units must have a field connection to the lateral discharge from the pitless unit of threaded, flanged, or mechanical joint connection.

(B) The design of the pitless unit shall make provisions for an access to disinfect the well, a properly designed casing vent, a cover at the upper terminal of the well that will prevent the entrance of contamination, a sealed entrance connection for electrical cable, and at least one check valve within the well casing. The unit shall have an inside diameter as great as that of the well casing up to and including casing diameters of 12 inches.

(C) If the connection to the casing is by field weld, the shop-assembled unit must be designed specifically for field welding to the casing. The only field welding permitted will be that needed to connect a pitless unit to the well casing.

(D) With the exception of the fact that the well was constructed using a pitless unit, the well must otherwise meet all of the requirements of paragraph (3) of this subsection.

(d) Springs and other water sources.

(1) Springs and other similar sources of flowing artesian water shall be protected from potential contaminant sources in accordance with the requirements of subsection (c)(1) of this section.

(2) Before placing the spring or similar source into service, completion data similar to that required by subsection (c)(3)(A) of this section must be submitted to the executive director for review and approval to the Texas Commission on Environmental Quality, Water Supply Division, MC 153, P.O. Box 13087, Austin, Texas 78711-3987.

(3) Springs and similar sources shall be constructed in a manner which will preclude the entrance of surface water and debris.

(A) The site shall be fine graded so that it is free from depressions, reverse grades, or areas too rough for proper ground maintenance in order to ensure that surface water will drain away from the source.

(B) The spring or similar source shall be encased in an open-bottomed, watertight basin which intercepts the flowing water below the surface of the ground. The basin shall extend at least 18 inches above ground level. The top of the basin shall also be at least two feet above the highest known watermark or 100-year flood elevation, if available, or adequately protected from possible flood damage by levees.

(C) In all cases, a concrete sealing block shall be provided which extends at least three feet from the encasement in all directions. The sealing block shall be at least six inches thick and be sloped to drain away from the encasement at not less than 0.25 inches per foot.

(D) The top of the encasement shall be provided with a sloped, watertight roof which prevents the ponding of water and precludes the entrance of animals, insects, and other sources of contamination.

(E) The roof of the encasement shall be provided with a hatch that is not less than 30 inches in diameter. The hatch shall have a raised curbing at least four inches in height with a lockable cover that overlaps the curbing at least two inches in a downward direction. Where necessary, a gasket shall be used to make a positive seal when the hatch is closed. All hatches shall remain locked except during inspections and maintenance.

(F) The encasement shall be provided with a gooseneck vent or roof ventilator which is equipped with approved screens to prevent entry of animals, birds, insects, and heavy air

contaminants. Screens shall be fabricated of corrosion-resistant material and shall be 16-mesh or finer. Screens shall be securely clamped in place with stainless or galvanized bands or wires.

(G) The encasement shall be provided with an overflow which is designed to prevent the entry of animals, birds, insects, and debris. The discharge opening of the overflow shall be above the surface of the ground and shall not be subject to submergence.

(4) Springs and similar sources must be provided with the appurtenances required by subsection (c)(3)(L) - (Q) of this section.

(e) Surface water sources and development.

(1) To determine the degree of pollution from all sources within the watershed, an evaluation shall be made of the surface water source in the area of diversion and its tributary streams. The area where surface water sources are diverted for drinking water use shall be evaluated and protected from sources of contamination.

(A) Where surface water sources are subject to continuous or intermittent contamination by municipal, agricultural, or industrial wastes and/or treated effluent, the adverse effects of the contamination on the quality of the raw water reaching the treatment plant shall be determined by site evaluations and laboratory procedures.

(B) The disposal of all liquid or solid wastes from any source on the watershed must be in conformity with applicable regulations and state statutes.

(C) Shore installations, marinas, boats and all habitations on the watershed shall be provided with satisfactory sewage disposal facilities. Septic tanks and soil absorption fields, tile or concrete sanitary sewers, sewer manholes, or other approved toilet facilities shall not be located in an area within 75 feet horizontally from the lake water surface at the uncontrolled spillway elevation of the lake or 75 feet horizontally from the 50-year flood elevation, whichever is lower.

(D) Disposal of wastes from boats or any other watercraft shall be in accordance with the Texas Water Code, §§321.1 - 321.18.

(E) Pesticides or herbicides which are used within the watershed shall be applied in strict accordance with the product label restrictions.

(F) Before approval of a new surface water source, the system shall provide the executive director with information regarding specific water quality parameters of the potential source water. These parameters are pH, total coliform, *E. coli*, turbidity, alkalinity, hardness, bromide, total organic carbon, temperature, color, taste and odor, regulated volatile organic compounds, regulated synthetic organic compounds, regulated inorganic compounds, and possible sources of contamination. If data on the incidence of *Giardia* cysts and *Cryptosporidium* oocysts has been collected, the information shall be provided to the executive director. This data shall be provided to the executive director as part of the approval process for a new surface water source.

(2) Intakes shall be located and constructed in a manner which will secure raw water of the best quality available from the source.

(A) Intakes shall not be located in areas subject to excessive siltation or in areas subject to receiving immediate runoff from wooded sloughs or swamps.

(B) Raw water intakes shall not be located within 1,000 feet of boat launching ramps, marinas, docks, or floating fishing piers which are accessible by the public.

(C) A restricted zone of 200 feet radius from the raw water intake works shall be established and all recreational activities and trespassing shall be prohibited in this area. Regulations governing this zone shall be in the city ordinances or the rules and regulations promulgated by a water district or similar regulatory agency. The restricted zone shall be designated with signs recounting these restrictions. The signs shall be maintained in plain view of the public and shall be visible from all parts of the restricted area. In addition, special buoys may be required as deemed necessary by the executive director. Provisions shall be made for the strict enforcement of such ordinances or regulations.

(D) Commission staff shall make an on-site evaluation of any proposed raw water intake location. The evaluation must be requested prior to final design and must be supported by preliminary design drawings. Once the final intake location has been selected, the executive director shall be furnished with an original or legible copy of a United States Geological Survey 7.5-minute topographic quadrangle showing the accurate intake location.

(E) Intakes shall be located and constructed in a manner which will allow raw water to be taken from a variety of depths and which will permit withdrawal of water when reservoir levels are very low. Fixed level intakes are acceptable if water quality data is available to establish that the effect on raw water quality will be minimal.

(F) Water intake works shall be provided with screens or grates to minimize the amount of debris entering the plant.

(G) Intakes shall not be located within 500 feet of a sewage treatment plant or lands irrigated with sewage effluent.

(3) The raw water pump station shall be located in a well-drained area and shall be designed to remain in operation during flood events.

(4) An all weather road shall be provided to the raw water pump station.

(5) The raw water pump station and all appurtenances must be installed in a lockable building that is designed to prevent intruder access or enclosed by an intruder-resistant fence with lockable gates.

§290.42. Water Treatment.

(a) Capacity and location.

(1) Based on current acceptable design standards, the total capacity of the public water system's treatment facilities must always be greater than its anticipated maximum daily demand.

(2) The water treatment plant and all pumping units shall be located in well-drained areas not subject to flooding and away from seepage areas or where the underground water table is near the surface.

(A) Water treatment plants shall not be located within 500 feet of a sewage treatment plant or lands irrigated with sewage effluent. A minimum distance of 150 feet must be maintained between any septic tank drainfield line and any underground treatment or storage unit. Any sanitary sewers located within 50 feet of any underground treatment or storage unit shall be constructed

of ductile iron or polyvinyl chloride (PVC) pipe with a minimum pressure rating of 150 pounds per square inch (psi) and have watertight joints.

(B) Plant site selection shall also take into consideration the need for disposition of all plant wastes in accordance with all applicable regulations and state statutes, including both liquid and solid waste or by-product material from operation and/or maintenance.

(3) Each water treatment plant shall be located at a site that is accessible by an all-weather road.

(b) Groundwater.

(1) Disinfection facilities shall be provided for all groundwater supplies for the purpose of microbiological control and distribution protection and shall be in conformity with applicable disinfection requirements in subsection (e) of this section.

(2) Treatment facilities shall be provided for groundwater if the water does not meet the drinking water standards. The facilities provided shall be in conformance with established and proven methods.

(A) Filters provided for turbidity and microbiological quality control shall be preceded by coagulant addition and shall conform to the requirements of subsection (d)(10) of this section. Filtration rates for iron and manganese removal, regardless of the media or type of filter, shall be based on a maximum rate of five gallons per square foot per minute.

(B) The removal of iron and manganese may not be required if it can be demonstrated that these metals can be sequestered so that the discoloration problems they cause do not exist in the distribution system.

(C) All processes involving exposure of the water to atmospheric contamination shall provide for subsequent disinfection of the water ahead of ground storage tanks. Likewise, all exposure of water to atmospheric contamination shall be accomplished in a manner such that insects, birds, and other foreign materials will be excluded from the water. Aerators and all other such openings shall be screened with 16-mesh or finer corrosion-resistant screen.

(3) Any proposed change in the extent of water treatment required will be determined on the basis of geological data, well construction features, nearby sources of contamination, and on qualitative and quantitative microbiological and chemical analyses.

(4) Appropriate laboratory facilities shall be provided for controls as well as to check the effectiveness of disinfection or any other treatment processes employed.

(5) All plant piping shall be constructed to minimize leakage.

(6) All groundwater systems shall provide sampling taps for raw water, treated water, and at a point representing water entering the distribution system at every entry point.

(7) Air release devices shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer corrosion-resistant screening material or an equivalent acceptable to the executive director.

(c) Springs and other water sources.

(1) Water obtained from springs, infiltration galleries, wells in fissured areas, wells in carbonate rock formations, or wells that do not penetrate an impermeable strata or any other source subject to surface or near surface contamination of recent origin shall be evaluated for the provision of treatment facilities. Minimum treatment shall consist of coagulation with direct filtration and adequate disinfection. In all cases, the treatment process shall be designed to achieve at least a 2-log removal of *Cryptosporidium* oocysts, a 3-log removal or inactivation of *Giardia* cysts, and a 4-log removal or inactivation of viruses before the water is supplied to any consumer. The executive director may require additional levels of treatment in cases of poor source water quality.

(A) Filters provided for turbidity and microbiological quality control shall conform to the requirements of subsection (d)(11) of this section.

(B) All processes involving exposure of the water to atmospheric contamination shall provide for subsequent disinfection of the water ahead of ground storage tanks. Likewise, all exposure of water to atmospheric contamination shall be accomplished in a manner such

that insects, birds, and other foreign materials will be excluded from the water. Aerators and all other such openings shall be screened with 16-mesh or finer corrosion-resistant screen.

(2) Any proposed change in the extent of water treatment required will be determined on the basis of geological data, well construction features, nearby sources of contamination, and qualitative and quantitative microbiological and chemical analyses.

(3) Appropriate laboratory facilities shall be provided for controls as well as for checking the effectiveness of disinfection or any other treatment processes employed.

(4) All plant piping shall be constructed to minimize leakage. No cross-connection or interconnection shall be permitted to exist between a conduit carrying potable water and another conduit carrying raw water or water in a prior stage of treatment.

(5) All systems using springs and other water sources shall provide sampling taps for raw water, treated water, and at a point representing water entering the distribution system at every entry point.

(6) Return of the decanted water or sludge to the treatment process shall be adequately controlled so that there will be a minimum of interference with the treatment process and shall conform to the applicable requirements of subsection (d)(3) of this section. Beginning July 1, 2004, systems that do not comply with the provisions of subsection (d)(3) of this section commit a treatment technique violation and must notify their customers in accordance with the requirements of §290.122(b) of this title (relating to Public Notice).

(7) Air release devices on treated waterlines shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer corrosion-resistant screening material or an equivalent acceptable to the executive director.

(d) Surface water.

(1) All water secured from surface sources shall be given complete treatment at a plant which provides facilities for pretreatment disinfection, taste and odor control, continuous coagulation, sedimentation, filtration, covered clearwell storage, and terminal disinfection of the water with chlorine

or suitable chlorine compounds. In all cases, the treatment process shall be designed to achieve at least a 2-log removal of *Cryptosporidium* oocysts, a 3-log removal or inactivation of *Giardia* cysts, and a 4-log removal or inactivation of viruses before the water is supplied to any consumer. The executive director may require additional levels of treatment in cases of poor source water quality.

(2) All plant piping shall be constructed so as to be thoroughly tight against leakage. No cross-connection or interconnection shall be permitted to exist in a filtration plant between a conduit carrying filtered or post-chlorinated water and another conduit carrying raw water or water in any prior stage of treatment.

(A) Vacuum breakers must be provided on each hose bibb within the plant facility.

(B) No conduit or basin containing raw water or any water in a prior stage of treatment shall be located directly above, or be permitted to have a single common partition wall with another conduit or basin containing finished water.

(C) Make-up water supply lines to chemical feeder solution mixing chambers shall be provided with an air gap or other acceptable backflow prevention device.

(D) Filters shall be located so that common walls will not exist between them and aerators, mixing and sedimentation basins or clearwells. This rule is not strictly applicable, however, to partitions open to view and readily accessible for inspection and repair.

(E) Filter-to-waste connections, if included, shall be provided with an air gap connection to waste.

(F) Air release devices on treated waterlines shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer corrosion-resistant screening material or an equivalent acceptable to the executive director.

(3) Return of the decanted water or solids to the treatment process shall be adequately controlled so that there will be a minimum of interference with the treatment process. Beginning July 1, 2004, systems that do not comply with the provisions of this paragraph commit a treatment technique

violation and must notify their customers in accordance with the requirements of §290.122(b) of this title.

(A) Unless the executive director has approved an alternate recycling location, spent backwash water and the liquids from sludge settling lagoons, spent backwash water tanks, sludge thickeners, and similar dewatering facilities shall be returned to the raw waterline upstream of the raw water sample tap and coagulant feed point. The blended recycled liquids shall pass through all of the major unit processes at the plant.

(B) Recycle facilities shall be designed to minimize the magnitude and impact of hydraulic surges that occur during the recycling process.

(C) Solids produced by dewatering facilities such as sludge lagoons, sludge thickeners, centrifuges, mechanical presses, and similar devices shall not be returned to the treatment plant without the prior approval of the executive director.

(4) Reservoirs for pretreatment or selective quality control shall be provided where complete treatment facilities fail to operate satisfactorily at times of maximum turbidities or other abnormal raw water quality conditions exist. Recreational activities at such reservoirs shall be prohibited.

(5) Flow measuring devices shall be provided to measure the raw water supplied to the plant, the recycled decant water, the treated water used to backwash the filters, and the treated water discharged from the plant. Additional metering devices shall be provided as appropriate to monitor the flow rate through specific treatment processes. Metering devices shall be located to facilitate use and to assist in the determination of chemical dosages, the accumulation of water production data, and the operation of plant facilities.

(6) Chemical storage facilities shall comply with applicable requirements in subsection (f)(1) of this section.

(7) Chemical feed facilities shall comply with the applicable requirements in subsection (f)(2) of this section.

(8) Flash mixing equipment shall be provided.

(A) Plants with a design capacity greater than 3.0 million gallons per day must provide at least one hydraulic mixing unit or at least two sets of mechanical flash mixing equipment designed to operate in parallel. Public water systems with other surface water treatment plants, interconnections with other systems, or wells that can meet the system's average daily demand are exempt from the requirement for redundant mechanical flash mixing equipment.

(B) Flash mixing equipment shall have sufficient flexibility to ensure adequate dispersion and mixing of coagulants and other chemicals under varying raw water characteristics and raw water flow rates.

(9) Flocculation equipment shall be provided.

(A) Plants with a design capacity greater than 3.0 million gallons per day must provide at least two sets of flocculation equipment which are designed to operate in parallel. Public water systems with other surface water treatment plants, interconnections with other systems, or wells that can meet the system's average daily demand are exempt from the requirement for redundant flocculation equipment.

(B) Flocculation facilities shall be designed to provide adequate time and mixing intensity to produce a settleable floc under varying raw water characteristics and raw water flow rates.

(i) Flocculation facilities for straight-flow and up-flow sedimentation basins shall provide a minimum theoretical detention time of at least 20 minutes when operated at their design capacity. Flocculation facilities constructed prior to October 1, 2000 are exempt from this requirement if the settled water turbidity of each sedimentation basin remains below 10.0 Nephelometric Turbidity Unit (NTU) and the treatment plant meets with turbidity requirements of §290.111 of this title (relating to Turbidity).

(ii) The mixing intensity in multiple-stage flocculators shall decrease as the coagulated water passes from one stage to the next.

(C) Coagulated water or water from flocculators shall flow to sedimentation basins in such a manner as to prevent destruction of floc. Piping, flumes, and troughs shall be designed

to provide a flow velocity of 0.5 to 1.5 feet per second. Gates, ports, and valves shall be designed at a maximum flow velocity of 4.0 feet per second in the transfer of water between units.

(10) Clarification facilities shall be provided.

(A) Plants with a design capacity greater than 3.0 million gallons per day must provide at least two sedimentation basins or clarification units which are designed to operate in parallel. Public water systems with other surface water treatment plants, interconnections with other systems, or wells that can meet the system's average daily demand are exempt from the requirement for redundant sedimentation basins or clarification units.

(B) The inlet and outlet of clarification facilities shall be designed to prevent short-circuiting of flow or the destruction of floc.

(C) Clarification facilities shall be designed to remove flocculated particles effectively.

(i) When operated at their design capacity, basins for straight-flow or up-flow sedimentation of coagulated waters shall provide either a theoretical detention time of at least six hours in the flocculation and sedimentation chambers or a maximum surface overflow rate of 0.6 gallons per minute per square foot of surface area in the sedimentation chamber.

(ii) When operated at their design capacity, basins for straight-flow or up-flow sedimentation of softened waters shall provide either a theoretical detention time of at least 4.5 hours in the flocculation and sedimentation chambers or a maximum surface overflow rate of 1.0 gallons per minute per square foot of surface area in the sedimentation chamber.

(iii) When operated at their design capacity, sludge-blanket and solids-recirculation clarifiers shall provide either a theoretical detention time of at least two hours in the flocculation and sedimentation chambers or a maximum surface overflow rate of 1.0 gallons per minute per square foot in the settling chamber.

(iv) A side wall water depth of at least 12 feet shall be provided in clarification basins that are not equipped with mechanical sludge removal facilities.

(v) The effective length of a straight-flow sedimentation basin shall be at least twice its effective width.

(D) Clarification facilities shall be designed to prevent the accumulation of settled solids.

(i) At treatment plants with a single clarification basin, facilities shall be provided to drain the basin within six hours. In the event that the plant site topography is such that gravity draining cannot be realized, a permanently installed electric-powered pump station shall be provided to dewater the basin. Public water systems with other potable water sources that can meet the system's average daily demand are exempt from this requirement.

(ii) Facilities for sludge removal shall be provided by mechanical means or by hopper-bottomed basins with valves capable of complete draining of the units.

(11) Gravity or pressure type filters shall be provided.

(A) The use of pressure filters shall be limited to installations with a treatment capacity of less than 0.50 million gallons per day.

(B) Filtration facilities shall be designed to operate at filtration rates which assure effective filtration at all times.

(i) The design capacity of gravity rapid sand filters shall not exceed a maximum filtration rate of 2.0 gallons per square foot per minute. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 3.0 gallons per square foot per minute is allowed.

(ii) Where high-rate gravity filters are used, the design capacity shall not exceed a maximum filtration rate of 5.0 gallons per square foot per minute. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 6.5 gallons per square foot per minute is allowed.

(iii) The design capacity of pressure filters shall not exceed a maximum filtration rate of 2.0 gallons per square foot per minute with the largest filter off-line.

(iv) Except as provided in clause (vi) of this subparagraph, any surface water treatment plant that provides, or is being designed to provide, less than 7.5 million gallons per day must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with all filters on-line.

(v) Any surface water treatment plant that provides, or is being designed to provide, 7.5 million gallons per day or more must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with the largest filter off-line.

(vi) Any surface water treatment plant that uses pressure filters must be able to meet either the maximum daily demand or the minimum required 0.6 gallons per minute per connection, whichever is larger, with the largest filter off-line.

(C) The depth and condition of the media and support material shall be sufficient to provide effective filtration.

(i) The filtering material shall conform to American Water Works Association (AWWA) standards and be free from clay, dirt, organic matter, and other impurities.

(ii) The grain size distribution of the filtering material shall be as prescribed by AWWA standards.

(iii) The depth of filter sand, anthracite, granular activated carbon, or other filtering materials shall be 24 inches or greater and provide an L/d ratio of at least 1,000.

(I) Rapid sand filters typically contain a minimum of eight inches of fine sand with an effective size of 0.35 to 0.45 millimeter (mm), eight inches of medium sand with an effective size of 0.45 to 0.55 mm, and eight inches of coarse sand with an effective size of 0.55 to 0.65 mm. The uniformity coefficient of each size range should not exceed 1.6.

(II) High-rate dual media filters typically contain a minimum of 12 inches of sand with an effective size of 0.45 to 0.55 mm and 24 inches of anthracite with an effective size of 0.9 to 1.1 mm. The uniformity coefficient of each material should not exceed 1.6.

(III) High-rate multi-media filters typically contain a minimum of three inches of garnet media with an effective size of 0.2 to 0.3 mm, nine inches of sand with an effective size of 0.5 to 0.6 mm, and 24 inches of anthracite with an effective size of 0.9 to 1.1 mm. The uniformity coefficient of each size range should not exceed 1.6.

(IV) High-rate mono-media anthracite or granular activated carbon filters typically contain a minimum of 48 inches of anthracite or granular activated carbon with an effective size of 1.0 to 1.2 mm. The uniformity coefficient of each size range should not exceed 1.6.

(iv) Under the filtering material, at least 12 inches of support gravel shall be placed varying in size from 1/16 inch to 2.5 inches. The gravel may be arranged in three to five layers such that each layer contains material about twice the size of the material above it. Other support material may be approved on an individual basis.

(D) The filter shall be provided with facilities to regulate the filtration rate.

(i) With the exception of declining rate filters, each filter unit shall be equipped with a manually adjustable rate-of-flow controller with rate-of-flow indication or flow control valves with indicators.

(ii) Each declining rate filter shall be equipped with a rate-of-flow limiting device or an adjustable flow control valve with a rate-of-flow indicator.

(iii) The effluent line of each filter installed after January 1, 1996, must be equipped with a slow opening valve or another means of automatically preventing flow surges when the filter begins operation.

(E) The filters shall be provided with facilities to monitor the performance of the filter. Monitoring devices shall be designed to provide the ability to measure and record turbidity as required by §290.111 of this title.

(i) Each filter shall be equipped with a sampling tap so that the effluent turbidity of the filter can be individually monitored.

(ii) Beginning January 1, 2005, each filter operated by a public water system that serves fewer than 10,000 people shall be equipped with an on-line turbidimeter and recorder which will allow the operator to measure and record the turbidity at 15-minute intervals. The executive director may allow combined filter effluent monitoring in lieu of individual filter effluent monitoring under the following conditions:

(I) The public water system has only two filters that were installed prior to October 1, 2000 and were never equipped with individual on-line turbidimeters and recorders; and

(II) The plant is equipped with an on-line turbidimeter and recorder which will allow the operator to measure and record the turbidity level of the combined filter effluent at a location prior to clearwell storage at 15-minute intervals.

(iii) Each filter operated by a public water system that serves at least 10,000 people shall be equipped with an on-line turbidimeter and recorder which will allow the operator to measure and record the turbidity at 15-minute intervals.

(iv) Each filter installed after October 1, 2000 shall be equipped with an on-line turbidimeter and recorder which will allow the operator to determine the turbidity at 15-minute intervals.

(v) Each filter unit that is not equipped with an on-line turbidimeter and recorder shall be equipped with a device to indicate loss of head through the filter. In lieu of loss-of-head indicators, declining rate filter units may be equipped with rate-of-flow indicators.

(F) Filters shall be designed to ensure adequate cleaning during the backwash cycle.

(i) Only filtered water shall be used to backwash the filters. This water may be supplied by elevated wash water tanks, by the effluent of other filters, or by pumps which take suction from the clearwell and are provided for backwashing filters only. For installations having a treatment capacity no greater than 150,000 gallons per day, water for backwashing may be secured directly from the distribution system if proper controls and rate-of-flow limiters are provided.

(ii) The rate of filter backwashing shall be regulated by a rate-of-flow controller or flow control valve.

(iii) The rate of flow of backwash water shall not be less than 20 inches vertical rise per minute (12.5 gallons per minute per square foot) and usually not more than 35 inches vertical rise per minute (21.8 gallons per minute per square foot).

(iv) The backwash facilities shall be capable of expanding the filtering bed during the backwash cycle.

(I) For facilities equipped with air scour, the backwash facilities shall be capable of expanding the filtering bed at least 15% during the backwash cycle.

(II) For mixed-media filters without air scour, the backwash facilities shall be capable of expanding the filtering bed at least 25% during the backwash cycle.

(III) For mono-media sand filters without air scour, the backwash facilities shall be capable of expanding the filtering bed at least 40% during the backwash cycle.

(v) The filter freeboard in inches shall exceed the wash rate in inches of vertical rise per minute.

(vi) When used, surface filter wash systems shall be installed with an atmospheric vacuum breaker or a reduced pressure principle backflow assembly in the supply line. If an atmospheric vacuum breaker is used it shall be installed in a section of the supply line through which all the water passes and which is located above the overflow level of the filter.

(vii) Gravity filters installed after January 1, 1996 shall be equipped with air scour backwash or surface wash facilities.

(G) Each filter installed after October 1, 2000 shall be equipped with facilities that allow the filter to be completely drained without removing other filters from service.

(12) Pipe galleries shall provide ample working room, good lighting, and good drainage provided by sloping floors, gutters, and sumps. Adequate ventilation to prevent condensation and to provide humidity control is also required.

(13) The identification of influent, effluent, waste backwash, and chemical feed lines shall be accomplished by the use of labels or various colors of paint. Where labels are used, they shall be placed along the pipe at no greater than five-foot intervals. Color coding must be by solid color or banding. If bands are used, they shall be placed along the pipe at no greater than five-foot intervals.

(A) A plant that is built or repainted after October 1, 2000 must use the following color code. The color code to be used in labeling pipes is as follows:

Figure: 30 TAC §290.42(d)(13)(A)

LETTERS	COLOR OF PIPE
Potable Water	Light Blue
Compressed Air	Light Green
Instrument Air	Light Green with Dark Green Bands
Chlorine (gas, liquid, or vent)	Yellow
Chlorine (solution)	Yellow with Red Bands
Liquid Alum	Yellow with Orange Bands
Alum (solution)	Yellow with Green Bands
Ammonia	Yellow with Brown Bands
Chlorine Dioxide (solution)	Yellow with Blue Bands
Ferric chloride	Brown with Red Bands
Ferric sulfate	Brown with Yellow Bands
Polymers	White with Green Bands
Liquid caustic	White with Red Bands
Caustic (solution)	White with Orange Bands
Fluoride	White with Yellow Bands

Ozone	Stainless Steel with White Bands
Settled Water	Green
Filter Effluent	Light Blue
Backwash Supply	Light Blue
Backwash Waste	Dark Grey
Drain	Dark Grey
Raw Water	Tan

(B) A plant that was repainted before October 1, 2000 may use an alternate color code. The alternate color code must provide clear visual distinction between process streams.

(C) The system must maintain clear, current documentation of its color code in a location easily accessed by all personnel.

(14) All surface water treatment plants shall provide sampling taps for raw, settled, individual filter effluent, and clearwell discharge. Additional sampling taps shall be provided as appropriate to monitor specific treatment processes.

(15) An adequately equipped laboratory shall be available locally so that daily microbiological and chemical tests can be conducted.

(A) For plants serving 25,000 persons or more, the local laboratory used to conduct the required daily microbiological analyses must be certified by the executive director to conduct coliform analyses.

(B) For plants serving populations of less than 25,000, the facilities for making microbiological tests may be omitted if the required microbiological samples can be submitted to a laboratory certified by the executive director on a timely basis.

(C) All surface water treatment plants shall be provided with equipment for making at least the following determinations:

- (i) pH;
- (ii) temperature;
- (iii) disinfectant residual;
- (iv) alkalinity;
- (v) turbidity;
- (vi) jar tests for determining the optimum coagulant dose; and
- (vii) other tests deemed necessary to monitor specific water quality problems or to evaluate specific water treatment processes.

(D) An amperometric titrator with platinum-platinum electrodes shall be provided at all surface water treatment plants that use chlorine dioxide.

(E) Each surface water treatment plant that uses sludge-blanket clarifiers shall be equipped with facilities to monitor the depth of the sludge blanket.

(F) Each surface water treatment plant that uses solids-recirculation clarifiers shall be equipped with facilities to monitor the solids concentration in the slurry.

(16) Each surface water treatment plant shall be provided with a computer and software for recording performance data, maintaining records, and submitting reports to the executive director. The executive director may allow a water system to locate the computer at a site other than the water treatment plant only if performance data can be reliably transmitted to the remote location on a real-time basis, the plant operator has access to the computer at all times, and performance data is readily accessible to agency staff during routine and special investigations.

(e) Disinfection.

(1) All water obtained from surface sources or groundwater sources that are under the direct influence of surface water must be disinfected in a manner consistent with the requirements of §290.110 of this title (relating to Disinfectant Residuals).

(2) All groundwater must be disinfected prior to distribution. The point of application must be ahead of the water storage tank(s) if storage is provided prior to distribution. Permission to use alternate disinfectant application points must be obtained in writing from the executive director.

(3) Disinfection equipment shall be selected and installed so that continuous and effective disinfection can be secured under all conditions.

(A) Disinfection equipment shall have a capacity at least 50% greater than the highest expected dosage to be applied at any time. It shall be capable of satisfactory operation under every prevailing hydraulic condition.

(B) Automatic proportioning of the disinfectant dosage to the flow rate of the water being treated shall be provided at plants where the treatment rate varies automatically, and at all plants where the treatment rate varies more than 50% above or below the average flow. Manual control shall be permissible at surface water treatment plants or plants treating groundwater under the direct influence of surface water only if an operator is always on hand to make adjustments promptly.

(C) All disinfecting equipment in surface water treatment plants shall include at least one functional standby unit of each capacity for ensuring uninterrupted operation. Common standby units are permissible but, generally, more than one standby unit must be provided because of the differences in feed rates or the physical state in which the disinfectants are being fed (solid, liquid, or gas).

(D) Facilities shall be provided for determining the amount of disinfectant used daily as well as the amount of disinfectant remaining for use.

(E) When used, solutions of calcium hypochlorite shall be prepared in a separate mixing tank and allowed to settle so that only a clear supernatant liquid is transferred to the hypochlorinator container.

(F) Provisions shall be made for both pretreatment disinfection and post-disinfection in all surface water treatment plants. Additional application points shall be installed if they are required to adequately control the quality of the treated water.

(G) The use of disinfectants other than chlorine will be considered on a case-by-case basis under the exception guidelines of §290.39(l) of this title (relating to General Provisions).

(4) Systems that use chlorine gas must ensure that the risks associated with its use are limited as follows.

(A) When chlorine gas is used, a full-face self-contained breathing apparatus or supplied air respirator that meets Occupational Safety and Health Administration (OSHA) standards for construction and operation, and a small bottle of fresh ammonia solution (or approved equal) for testing for chlorine leakage shall be readily accessible outside the chlorinator room and immediately available to the operator in the event of an emergency.

(B) Housing for gas chlorination equipment and cylinders of chlorine shall be in separate buildings or separate rooms with impervious walls or partitions separating all mechanical and electrical equipment from the chlorine facilities. Housing shall be located above ground level as a measure of safety. Equipment and cylinders may be installed on the outside of the buildings when protected from adverse weather conditions and vandalism.

(C) Adequate ventilation, which includes both high level and floor level screened vents, shall be provided for all enclosures in which gas chlorine is being stored or fed. Enclosures containing more than one operating 150-pound cylinder of chlorine shall also provide forced air ventilation which includes: screened and louvered floor level and high level vents; a fan which is located at and draws air in through the top vent and discharges to the outside atmosphere through the floor level vent; and a fan switch located outside the enclosure. Alternately, systems may install negative pressure ventilation as long as the facilities also have gas containment and treatment as prescribed by the current Uniform Fire Code (UFC).

(5) Hypochlorination solution containers and pumps must be housed in a secure enclosure to protect them from adverse weather conditions and vandalism. The solution container top must be completely covered to prevent the entrance of dust, insects, and other contaminants.

(6) Where anhydrous ammonia feed equipment is utilized, it must be housed in a separate enclosure equipped with both high and low level ventilation to the outside atmosphere. The enclosure must be provided with forced air ventilation which includes: screened and louvered floor level and high level vents; a fan which is located at and draws air in through the floor vent and discharges through the top vent; and a fan switch located outside the enclosure. Alternately, systems may install negative pressure ventilation as long as the facilities also have gas containment and treatment as prescribed by the current UFC.

(f) Surface water treatment plant chemical storage and feed facilities.

(1) Chemical storage facilities shall be designed to ensure a reliable supply of chemicals to the feeders, minimize the possibility and impact of accidental spills, and facilitate good housekeeping.

(A) Bulk storage facilities at the plant shall be adequate to store at least a 15-day supply of all chemicals needed to comply with minimum treatment technique and maximum contaminant level (MCL) requirements. The capacity of these bulk storage facilities shall be based on the design capacity of the treatment plant. However, the executive director may require a larger stock of chemicals based on local resupply ability.

(B) Day tanks shall be provided to minimize the possibility of severely overfeeding liquid chemicals. Day tanks will not be required if adequate process control instrumentation and procedures are employed to prevent chemical overfeed incidents.

(C) Every chemical bulk storage facility and day tank shall have a label that identifies the facility's or tank's contents and a device that indicates the amount of chemical remaining in the facility or tank.

(D) Dry chemicals shall be stored off the floor in a dry room that is located above ground and protected against flooding or wetting from floors, walls, and ceilings.

(E) Bulk storage facilities and day tanks must be designed to minimize the possibility of leaks and spills.

(i) The materials used to construct bulk storage and day tanks must be compatible with the chemicals being stored and resistant to corrosion.

(ii) Except as provided in this clause, adequate containment facilities shall be provided for all liquid chemical storage tanks.

(I) Containment facilities for a single container or for multiple interconnected containers must be large enough to hold the maximum amount of chemical that can be stored with a minimum freeboard of six vertical inches or to hold 110% of the total volume of the container(s), whichever is less.

(II) Common containment for multiple containers that are not interconnected must be large enough to hold the volume of the largest container with a minimum freeboard of six vertical inches or to hold 110% of the total volume of the container(s), whichever is less.

(III) The materials used to construct containment structures must be compatible with the chemicals stored in the tanks.

(IV) Incompatible chemicals shall not be stored within the same containment structure.

(V) No containment facilities are required for hypochlorite solution containers that have a capacity of 35 gallons or less.

(VI) On a site-specific basis, the executive director may approve the use of double-walled tanks in lieu of separate containment facilities.

(F) Chemical transfer pumps and control systems must be designed to minimize the possibility of leaks and spills.

(G) Piping, pumps, and valves used for chemical storage and transfer must be compatible with the chemical being fed.

(2) Chemical feed and metering facilities shall be designed so that chemicals shall be applied in a manner which will maximize reliability, facilitate maintenance, and ensure optimal finished water quality.

(A) Each chemical feeder that is needed to comply with a treatment technique or MCL requirement shall have a standby or reserve unit. Common standby feeders are permissible, but generally, more than one standby feeder must be provided due to the incompatibility of chemicals or the state in which they are being fed (solid, liquid, or gas).

(B) Chemical feed equipment shall be sized to provide proper dosage under all operating conditions.

(i) Devices designed for determining the chemical feed rate shall be provided for all chemical feeders.

(ii) The capacity of the chemical feeders shall be such that accurate control of the dosage can be achieved at the full range of feed rates expected to occur at the facility.

(iii) Chemical feeders shall be provided with tanks for chemical dissolution when applicable.

(C) Chemical feeders, valves, and piping must be compatible with the chemical being fed.

(D) Chemical feed systems shall be designed to minimize the possibility of leaks and spills and provide protection against backpressure and siphoning.

(E) If enclosed feed lines are used, they shall be designed and installed so as to prevent clogging and be easily maintained.

(F) Dry chemical feeders shall be located in a separate room that is provided with facilities for dust control.

(G) Coagulant feed systems shall be designed so that coagulants are applied to the water prior to or within the mixing basins or chambers so as to permit their complete mixing with the water.

(i) Coagulant feed points shall be located downstream of the raw water sampling tap.

(ii) Coagulants shall be applied continuously during treatment plant operation.

(H) Chlorine feed units, ammonia feed units, and storage facilities shall be separated by solid, sealed walls.

(I) Chemical application points shall be provided to achieve acceptable finished water quality, adequate taste and odor control, corrosion control, and disinfection.

(g) Other treatment processes. The adjustment of fluoride ion content, special treatment for iron and manganese reduction, special methods for taste and odor control, demineralization, corrosion control processes, and other proposals covering other treatment processes will be considered on an individual basis, in accordance with §290.39(1) of this title. Package-type treatment systems and their components shall be subject to all applicable design criteria in this section. Where innovative/alternate treatment systems are proposed, the licensed professional engineer must provide pilot test data or data collected at similar full-scale operations demonstrating that the system will produce water that meets the requirements of Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems). Pilot test data must be representative of the actual operating conditions which can be expected over the course of the year. The executive director may require proof of a one-year manufacturer's performance warranty or guarantee assuring that the plant will produce treated water which meets minimum state and federal standards for drinking water quality.

(h) Sanitary facilities for water works installations. Toilet and hand washing facilities provided in accordance with established standards of good public health engineering practices shall be available at all installations requiring frequent visits by operating personnel.

(i) Permits for waste discharges. Any discharge of wastewater and other plant wastes shall be in accordance with all applicable state and federal statutes and regulations. Permits for discharging wastes from water treatment processes shall be obtained from the commission, if necessary.

(j) Treatment chemicals and media. All chemicals and any additional or replacement process media used in treatment of water supplied by public water systems must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 60 for direct additives and ANSI/NSF Standard 61 for indirect additives. Conformance with these standards must be obtained by certification of the product by an organization accredited by ANSI.

(k) Safety.

(1) Safety equipment for all chemicals used in water treatment shall meet applicable standards established by the OSHA or Texas Hazard Communication Act, Texas Health and Safety Code, Title 6, Chapter 502.

(2) Systems must comply with United States Environmental Protection Agency (EPA) requirements for Risk Management Plans.

(l) Plant operations manual. A thorough plant operations manual must be compiled and kept up-to-date for operator review and reference. This manual should be of sufficient detail to provide the operator with routine maintenance and repair procedures, with protocols to be utilized in the event of a natural or man-made catastrophe, as well as provide telephone numbers of water system personnel, system officials, and local/state/federal agencies to be contacted in the event of an emergency.

(m) Security. Each water treatment plant and all appurtenances thereof shall be enclosed by an intruder-resistant fence. The gates shall be locked during periods of darkness and when the plant is unattended. A locked building in the fence line may satisfy this requirement or serve as a gate.

§290.43. Water Storage.

(a) Capacity. The minimum clearwell, storage tank, and pressure maintenance capacity shall be governed by the requirements in §290.45 of this title (relating to Minimum Water System Capacity Requirements).

(b) Location of clearwells, standpipes, and ground storage and elevated tanks.

(1) No public water supply elevated storage or ground storage tank shall be located within 500 feet of any municipal or industrial sewage treatment plant or any land which is spray irrigated with treated sewage effluent or sludge disposal.

(2) Insofar as possible, clearwells or treated water tanks shall not be located under any part of any buildings and, when possible, shall be constructed partially or wholly above ground.

(3) No storage tank or clearwell located below ground level is allowed within 50 feet of a sanitary sewer or septic tank. However, if the sanitary sewers are constructed of 150 pounds per square inch (psi) pressure-rated pipe with pressure-tested, watertight joints as used in water main construction, the minimum separation distance is ten feet.

(4) No storage tank or clearwell located below ground level is allowed within 150 feet of a septic tank soil absorption system.

(c) Design and construction of clearwells, standpipes, ground storage tanks, and elevated tanks. All facilities for potable water storage shall be covered and designed, fabricated, erected, tested, and disinfected in strict accordance with current American Water Works Association (AWWA) standards and shall be provided with the minimum number, size and type of roof vents, man ways, drains, sample connections, access ladders, overflows, liquid level indicators, and other appurtenances as specified in these rules. Bolted tanks shall be designed, fabricated, erected, and tested in strict accordance with current AWWA Standard D103. The roof of all tanks shall be designed and erected so that no water ponds at any point on the roof and, in addition, no area of the roof shall have a slope of less than 0.75 inch per foot.

(1) Roof vents shall be gooseneck or roof ventilator and be designed by the engineer based on the maximum outflow from the tank. Vents shall be installed in strict accordance with current AWWA standards and shall be equipped with approved screens to prevent entry of animals, birds, insects and heavy air contaminants. Screens shall be fabricated of corrosion-resistant material and shall be 16-mesh or finer. Screens shall be securely clamped in place with stainless or galvanized bands or wires and shall be designed to withstand winds of not less than tank design criteria (unless specified otherwise by the engineer).

(2) All roof openings shall be designed in accordance with current AWWA standards. If an alternate 30 inch diameter access opening is not provided in a storage tank, the primary roof access opening shall not be less than 30 inches in diameter. Other roof openings required only for ventilating purposes during cleaning, repairing or painting operations shall be not less than 24 inches in diameter or as specified by the licensed professional engineer. An existing tank without a 30-inch in diameter access opening must be modified to meet this requirement when major repair or maintenance is performed on the tank. Each access opening shall have a raised curbing at least four inches in height with a lockable cover that overlaps the curbing at least two inches in a downward direction. Where necessary, a gasket shall be used to make a positive seal when the hatch is closed. All hatches shall remain locked except during inspections and maintenance.

(3) Overflows shall be designed in strict accordance with current AWWA standards and shall terminate with a gravity-hinged and weighted cover. The cover shall fit tightly with no gap over 1/16 inch. If the overflow terminates at any point other than the ground level, it shall be located near enough and at a position accessible from a ladder or the balcony for inspection purposes. The overflow(s) shall be sized to handle the maximum possible fill rate without exceeding the capacity of the overflow(s). The discharge opening of the overflow(s) shall be above the surface of the ground and shall not be subject to submergence.

(4) All clearwells and water storage tanks shall have a liquid level indicator located at the tank site. The indicator can be a float with a moving target, an ultrasonic level indicator, or a pressure gauge calibrated in feet of water. If an elevated tank or standpipe has a float with moving target indicator, it must also have a pressure indicator located at ground level. Pressure gauges must not be less than three inches in diameter and calibrated at not more than two-foot intervals. Remote reading gauges at the owner's treatment plant or pumping station will not eliminate the requirement for a gauge at the tank site unless the tank is located at the plant or station.

(5) Inlet and outlet connections shall be located so as to prevent short-circuiting or stagnation of water. Clearwells used for disinfectant contact time shall be appropriately baffled.

(6) Clearwells and potable water storage tanks shall be thoroughly tight against leakage, shall be located above the groundwater table, and shall have no walls in common with any other plant units containing water in the process of treatment. All associated appurtenances including valves, pipes, and fittings shall be tight against leakage.

(7) Each clearwell or potable water storage tank shall be provided with a means of removing accumulated silt and deposits at all low points in the bottom of the tank. Drains shall not be connected to any waste or sewage disposal system and shall be constructed so that they are not a potential agent in the contamination of the stored water.

(8) All clearwells, ground storage tanks, standpipes, and elevated tanks shall be painted, disinfected, and maintained in strict accordance with current AWWA standards. However, no temporary coatings, wax grease coatings, or coating materials containing lead will be allowed. No other coatings will be allowed which are not approved for use (as a contact surface with potable water) by the EPA, National Sanitation Foundation (NSF), or United States Food and Drug Administration (FDA). All newly installed coatings must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.

(9) No tanks or containers shall be used to store potable water that have previously been used for any non-potable purpose. Where a used tank is proposed for use, a letter from the previous owner or owners must be submitted to the Commission which states the use of the tank.

(10) Access manways in the riser pipe, shell area, access tube, bowl area or any other location opening directly into the water compartment shall be located in strict accordance with current AWWA standards. These openings shall not be less than 24 inches in diameter. However, in the case of a riser pipe or access tube of 36 inches in diameter or smaller, the access manway may be 18 inches times 24 inches with the vertical dimension not less than 24 inches. The primary access manway in the lower ring or section of a ground storage tank shall be not less than 30 inches in diameter. Where necessary, for any access manway which allows direct access to the water compartment, a gasket shall be used to make a positive seal when the access manway is closed.

(d) Design and construction of pressure (hydropneumatic) tanks. All hydropneumatic tanks must be located wholly above grade and must be of steel construction with welded seams except as provided in paragraph (8) of this subsection.

(1) Metal thickness for pressure tanks shall be sufficient to withstand the highest expected working pressures with a four to one factor of safety. Tanks of 1,000 gallons capacity or larger must meet the standards of the American Society of Mechanical Engineers (ASME) Section VIII, Division 1 Codes and Construction Regulations and must have an access port for periodic inspections.

An ASME name plate must be permanently attached to those tanks. Tanks installed before July 1, 1988, are exempt from the ASME coding requirement, but all new installations must meet this regulation. Exempt tanks can be relocated within a system but cannot be relocated to another system.

(2) All pressure tanks shall be provided with a pressure release device and an easily readable pressure gauge.

(3) Facilities shall be provided for maintaining the air-water-volume at the design water level and working pressure. Air injection lines must be equipped with filters or other devices to prevent compressor lubricants and other contaminants from entering the pressure tank. A device to readily determine air-water-volume must be provided for all tanks greater than 1,000 gallon capacity. Galvanized tanks which are not provided with the necessary fittings and which were installed before July 1, 1988 shall be exempt from this requirement.

(4) Protective paint or coating shall be applied to the inside portion of any pressure tank. The coating shall be as specified in subsection (c)(8) of this section.

(5) No pressure tank that has been used to store any material other than potable water may be used in a public water system. A letter from the previous owner or owners must be provided as specified in subsection (c)(9) of this section.

(6) Pressure tank installations should be equipped with slow closing valves and time delay pump controls to eliminate water hammer and reduce the chance of tank failure.

(7) All associated appurtenances including valves, pipes and fittings connected to pressure tanks shall be thoroughly tight against leakage.

(8) Where seamless fiberglass tanks are utilized, they shall not exceed 300 gallons in capacity.

(9) No more than three pressure tanks shall be installed at any one site without the prior approval of the executive director.

(e) Facility security. All potable water storage tanks and pressure maintenance facilities must be installed in a lockable building that is designed to prevent intruder access or enclosed by an intruder-

resistant fence with lockable gates. Pedestal-type elevated storage tanks with lockable doors and without external ladders are exempt from this requirement. The gates and doors must be kept locked whenever the facility is unattended.

(f) Service pumps. Service pump installations taking suction from storage tanks shall provide automatic low water level cutoff devices to prevent damage to the pumps. The service pump circuitry shall also resume pumping automatically once the minimum water level is reached in the tank.

§290.44. Water Distribution.

(a) Design and standards. All potable water distribution systems including pump stations, mains, and both ground and elevated storage tanks, shall be designed, installed, and constructed in accordance with current American Water Works Association (AWWA) standards with reference to materials to be used and construction procedures to be followed. In the absence of AWWA standards, commission review may be based upon the standards of the American Society for Testing and Materials (ASTM), commercial, and other recognized standards utilized by licensed professional engineers.

(1) All newly installed pipes and related products must conform to American National Standards Institute/National Sanitation Foundation (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.

(2) All plastic pipe for use in public water systems must also bear the National Sanitation Foundation Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 psi or a standard dimension ratio of 26 or less.

(3) No pipe which has been used for any purpose other than the conveyance of drinking water shall be accepted or relocated for use in any public drinking water supply.

(4) Water transmission and distribution lines must be installed in accordance with the manufacturer's instructions. However, the top of the waterline must be located below the frost line and in no case shall the top of the waterline be less than 24 inches below ground surface.

(5) The hydrostatic leakage rate shall not exceed the amount allowed or recommended by AWWA formulas.

(b) Lead ban. The following provisions apply to the use of lead in plumbing.

(1) The use of pipes and pipe fittings that contain more than 8.0% lead or solders and flux that contains more than 0.2% lead is prohibited in the following circumstances:

(A) for installation or repair of any public water supply; and

(B) for installation or repair of any plumbing in a residential or nonresidential facility providing water for human consumption and connected to a public drinking water supply system.

(2) This requirement will be waived for lead joints that are necessary for repairs to cast iron pipe.

(c) Minimum waterline sizes. The minimum waterline sizes are for domestic flows only and do not consider fire flows. Larger pipe sizes shall be used when the licensed professional engineer deems it necessary. It should be noted that the required sizes are based strictly on the number of customers to be served and not on the distances between connections or differences in elevation or the type of pipe. No new waterline under two inches in diameter will be allowed to be installed in a public water system distribution system. These minimum line sizes do not apply to individual customer service lines.

Figure: 30 TAC §290.44(c)

Maximum Number of Connections	Minimum Line Size (inches)
10	2
25	2.5
50	3
100	4
150	5
250	6
>250	8 and larger

(d) Minimum pressure requirement. The system must be designed to maintain a minimum pressure of 35 psi at all points within the distribution network at flow rates of at least 1.5 gallons per minute per connection. When the system is intended to provide fire fighting capability, it must also be designed to maintain a minimum pressure of 20 psi under combined fire and drinking water flow conditions.

(1) Air release devices shall be installed in the distribution system at all points where topography or other factors may create air locks in the lines. Air release devices shall be installed in such a manner as to preclude the possibility of submergence or possible entrance of contaminants. In this respect, all openings to the atmosphere shall be covered with 16-mesh or finer, corrosion-resistant screening material or an acceptable equivalent.

(2) When service is to be provided to more than one pressure plane or when distribution system conditions and demands are such that low pressures develop, the method of providing increased pressure shall be by means of booster pumps taking suction from storage tanks. If an exception to this requirement is desired, the designing engineer must furnish for the executive director's review all planning material for booster pumps taking suction from other than a storage tank. The planning material must contain a full description of the supply to the point of suction, maximum demands on this part of the system, location of pressure recorders, safety controls, and other pertinent information. Where booster pumps are installed to take suction directly from the distribution system, a minimum residual pressure of 20 psi must be maintained on the suction line at all times. Such installations must be equipped with automatic pressure cut-off devices so that the pumping units become inoperative at a suction pressure of less than 20 psi. In addition, a continuous pressure recording device may be required at a predetermined suspected critical pressure point on the suction line in order to record the hydraulic conditions in the line at all times. If such a record indicates critical minimum pressures (less than 20 psi), adequate storage facilities must be installed with the booster pumps taking suction from the storage facility. Fire pumps used to maintain pressure on automatic sprinkler systems only for fire protection purposes are not considered as in-line booster pumps.

(3) Service connections that require booster pumps taking suction from the public water system lines must be equipped with automatic pressure cut-off devices so that the pumping units become inoperative at a suction pressure of less than 20 psi. Where these types of installations are necessary, the preferred method of pressure maintenance consists of an air gapped connection with a storage tank and subsequent repressurization facilities.

(4) Each community public water system shall provide accurate metering devices at each residential, commercial, or industrial service connection for the accumulation of water usage data. A water system that furnishes the services or commodity only to itself or its employees when that service or commodity is not resold to or used by others is exempt from this requirement.

(5) The system shall be provided with sufficient valves and blowoffs so that necessary repairs can be made without undue interruption of service over any considerable area and for flushing the system when required. The engineering report shall establish criteria for this design.

(6) The system shall be designed to afford effective circulation of water with a minimum of dead ends. All dead-end mains shall be provided with acceptable flush valves and discharge piping. All dead-end lines less than two inches in diameter will not require flush valves if they end at a customer service. Where dead ends are necessary as a stage in the growth of the system, they shall be located and arranged to ultimately connect the ends to provide circulation.

(e) Location of waterlines. The following rules apply to installations of waterlines, wastewater mains or laterals, and other conveyances/appurtenances identified as potential sources of contamination. Furthermore, all ratings specified shall be defined by ASTM or AWWA standards unless stated otherwise. New mains, service lines, or laterals are those that are installed where no main, service line, or lateral previously existed, or where existing mains, service lines, or laterals are replaced with pipes of different size or material.

(1) When new potable water distribution lines are constructed, they shall be installed no closer than nine feet in all directions to wastewater collection facilities. All separation distances shall be measured from the outside surface of each of the respective pieces.

(2) Potable water distribution lines and wastewater mains or laterals that form parallel utility lines shall be installed in separate trenches.

(3) No physical connection shall be made between a drinking water supply and a sewer line. Any appurtenance shall be designed and constructed so as to prevent any possibility of sewage entering the drinking water system.

(4) Where the nine-foot separation distance cannot be achieved, the following criteria shall apply.

(A) New waterline installation - parallel lines.

(i) Where a new potable waterline parallels an existing, non-pressure or pressure rated wastewater main or lateral and the licensed professional engineer licensed in the State of Texas is able to determine that the existing wastewater main or lateral is not leaking, the new potable waterline shall be located at least two feet above the existing wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the existing wastewater main or lateral. Every effort shall be exerted not to disturb the bedding and backfill of the existing wastewater main or lateral.

(ii) Where a new potable waterline parallels an existing pressure rated wastewater main or lateral and it cannot be determined by the licensed professional engineer if the existing line is leaking, the existing wastewater main or lateral shall be replaced with at least 150 psi pressure rated pipe. The new potable waterline shall be located at least two feet above the new wastewater line, measured vertically, and at least four feet away, measured horizontally, from the replaced wastewater main or lateral.

(iii) Where a new potable waterline parallels a new wastewater main, the wastewater main or lateral shall be constructed of at least 150 psi pressure rated pipe. The new potable waterline shall be located at least two feet above the wastewater main or lateral, measured vertically, and at least four feet away, measured horizontally, from the wastewater main or lateral.

(B) New waterline installation - crossing lines.

(i) Where a new potable waterline crosses an existing, non-pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. If the existing wastewater main or lateral is disturbed or shows signs of leaking, it shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure rated pipe.

(ii) Where a new potable waterline crosses an existing, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater

main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. If the existing wastewater main or lateral shows signs of leaking, it shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure rated pipe.

(iii) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral and the standard pipe segment length of the wastewater main or lateral is at least 18 feet, one segment of the waterline pipe shall be centered over the wastewater main or lateral such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the centerline of the wastewater main or lateral. The potable waterline shall be at least two feet above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (vi) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

(iv) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral and a standard length of the wastewater pipe is less than 18 feet in length, the potable water pipe segment shall be centered over the wastewater line. The materials and method of installation shall conform with one of the following options.

(I) Within nine feet horizontally of either side of the waterline, the wastewater pipe and joints shall be constructed with pipe material having a minimum pressure rating of at least 150 psi. An absolute minimum vertical separation distance of two feet shall be provided. The wastewater main or lateral shall be located below the waterline.

(II) All sections of wastewater main or lateral within nine feet horizontally of the waterline shall be encased in an 18-foot (or longer) section of pipe. Flexible encasing pipe shall have a minimum pipe stiffness of 115 psi at 5.0% deflection. The encasing pipe shall be centered on the waterline and shall be at least two nominal pipe diameters larger than the wastewater main or lateral. The space around the carrier pipe shall be supported at five-foot (or less) intervals with spacers or be filled to the springline with washed sand. Each end of the casing shall be sealed with watertight non-shrink cement grout or a manufactured watertight seal. An absolute

minimum separation distance of six inches between the encasement pipe and the waterline shall be provided. The wastewater line shall be located below the waterline.

(III) When a new waterline crosses under a wastewater main or lateral, the waterline shall be encased as described for wastewater mains or laterals in subclause (II) of this clause or constructed of ductile iron or steel pipe with mechanical or welded joints as appropriate. An absolute minimum separation distance of one foot between the waterline and the wastewater main or lateral shall be provided. Both the waterline and wastewater main or lateral must pass a pressure and leakage test as specified in AWWA C600 standards.

(v) Where a new potable waterline crosses a new, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over the wastewater line such that the joints of the waterline pipe are equidistant and at least nine feet horizontally from the center line of the wastewater main or lateral. The potable waterline shall be at least six inches above the wastewater main or lateral. Whenever possible, the crossing shall be centered between the joints of the wastewater main or lateral. The wastewater pipe shall have a minimum pressure rating of at least 150 psi. The wastewater main or lateral shall be embedded in cement stabilized sand (see clause (vi) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

(vi) Where cement stabilized sand bedding is required, the cement stabilized sand shall have a minimum of 10% cement per cubic yard of cement stabilized sand mixture, based on loose dry weight volume (at least 2.5 bags of cement per cubic yard of mixture). The cement stabilized sand bedding shall be a minimum of six inches above and four inches below the wastewater main or lateral. The use of brown coloring in cement stabilized sand for wastewater main or lateral bedding is recommended for the identification of pressure rated wastewater mains during future construction.

(5) Waterline and wastewater main or lateral manhole or cleanout separation. The separation distance from a potable waterline to a wastewater main or lateral manhole or cleanout shall be a minimum of nine feet. Where the nine-foot separation distance cannot be achieved, the potable waterline shall be encased in a joint of at least 150 psi pressure class pipe at least 18 feet long and two nominal sizes larger than the new conveyance. The space around the carrier pipe shall be supported at five-foot intervals with spacers or be filled to the springline with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured sealant.

(6) Location of fire hydrants. Fire hydrants shall not be installed within nine feet vertically or horizontally of any wastewater main, wastewater lateral, or wastewater service line regardless of construction.

(7) Location of potable or raw water supply or suction lines. Suction mains to pumping equipment shall not cross wastewater mains, wastewater laterals, or wastewater service lines. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater main, wastewater lateral, or wastewater service line.

(8) Proximity of septic tank drainfields. Waterlines shall not be installed closer than ten feet to septic tank drainfields.

(f) Sanitary precautions and disinfection. Sanitary precautions, flushing, disinfection procedures, and microbiological sampling as prescribed in AWWA standards for disinfecting water mains shall be followed in laying waterlines.

(1) Pipe shall not be laid in water or placed where it can be flooded with water or sewage during its storage or installation.

(2) Special precautions must be taken when waterlines are laid under any flowing or intermittent stream or semipermanent body of water such as marsh, bay, or estuary. In these cases, the water main shall be installed in a separate watertight pipe encasement and valves must be provided on each side of the crossing with facilities to allow the underwater portion of the system to be isolated and tested to determine that there are no leaks in the underwater line. Alternately, and with the permission of the executive director, the watertight pipe encasement may be omitted.

(3) New mains shall be thoroughly disinfected in accordance with AWWA Standard C651 and then flushed and sampled before being placed in service. Samples shall be collected for microbiological analysis to check the effectiveness of the disinfection procedure. Sampling shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed waterline will be required or at the next available sampling point beyond 1,000 feet as designated by the design engineer.

(g) Interconnections.

(1) Each proposal for a direct connection between public drinking water systems under separate administrative authority will be considered on an individual basis.

(A) Documents covering the responsibility for sanitary control shall accompany the submitted planning material.

(B) Each water supply shall be of a safe, potable quality.

(2) Where an interconnection between systems is proposed to provide a second source of supply for one or both systems, the system being utilized as a second source of supply must be capable of supplying a minimum of 0.35 gallons per minute per connection for the total number of connections in the combined distribution systems.

(h) Backflow, siphonage.

(1) No water connection from any public drinking water supply system shall be allowed to any residence or establishment where an actual or potential contamination hazard exists unless the public water facilities are protected from contamination.

(A) At any residence or establishment where an actual or potential contamination hazard exists, additional protection shall be required at the meter in the form of an air gap or backflow prevention assembly. The type of backflow prevention assembly required shall be determined by the specific potential hazard identified in §290.47(i) of this title (relating to Appendices).

(B) At any residence or establishment where an actual or potential contamination hazard exists and an adequate internal cross-connection control program is in effect, backflow protection at the water service entrance or meter is not required.

(i) An adequate internal cross-connection control program shall include an annual inspection and testing by a certified backflow prevention assembly tester on all backflow prevention assemblies used for health hazard protection.

(ii) Copies of all such inspection and test reports must be obtained and kept on file by the water purveyor.

(iii) It will be the responsibility of the water purveyor to ensure that these requirements are met.

(2) No water connection from any public drinking water supply system shall be connected to any condensing, cooling, or industrial process or any other system of nonpotable usage over which the public water supply system officials do not have sanitary control, unless the said connection is made in accordance with the requirements of paragraph (1) of this subsection. Water from such systems cannot be returned to the potable water supply.

(3) Overhead bulk water dispensing stations must be provided with an air gap between the filling outlet hose and the receiving tank to protect against back siphonage and cross-contamination.

(4) All backflow prevention assemblies that are required according to this section and associated table located in §290.47(i) of this title shall be tested upon installation by a recognized backflow prevention assembly tester and certified to be operating within specifications. Backflow prevention assemblies which are installed to provide protection against health hazards must also be tested and certified to be operating within specifications at least annually by a recognized backflow prevention assembly tester.

(A) Recognized backflow prevention assembly testers shall have completed an executive director approved course on cross-connection control and backflow prevention assembly testing, pass an examination administered by the executive director, and hold current professional certification as a backflow prevention assembly tester.

(i) Backflow prevention assembly testers are qualified to test and repair assemblies on any domestic, commercial, industrial, or irrigation service.

(ii) Backflow prevention assembly testers may test and repair assemblies on firelines only if they are permanently employed by an Approved Fireline Contractor. The State Fire Marshall's office requires that any person performing maintenance on firelines must be employed by an Approved Fireline Contractor.

(B) Gauges used in the testing of backflow prevention assemblies shall be tested for accuracy annually in accordance with the University of Southern California's Manual of

Cross-Connection Control or the American Water Works Association Recommended Practice for Backflow Prevention and Cross-Connection Control (Manual M14). Public water systems shall require testers to include test gauge serial numbers on "Test and Maintenance" report forms and ensure testers have gauges tested for accuracy.

(C) A test report must be completed by the recognized backflow prevention assembly tester for each assembly tested. The signed and dated original must be submitted to the public water supplier for recordkeeping purposes. Any form which varies from the format specified in Appendix F located in §290.47(f) of this title must be approved by the executive director prior to being placed in use.

(5) The use of a backflow prevention assembly at the service connection shall be considered as additional backflow protection and shall not negate the use of backflow protection on internal hazards as outlined and enforced by local plumbing codes.

(6) At any residence or establishment where there is no actual or potential contamination hazard, a backflow prevention assembly is not required.

(i) Water hauling. When drinking water is distributed by tank truck or trailer, it must be accomplished in the following manner.

(1) Water shall be obtained from an approved source.

(2) The equipment used to haul the water must be approved by the executive director and must be constructed as follows.

(A) The tank truck or trailer shall be used for transporting drinking water only and shall be labeled "Drinking Water." Tanks which have been used previously for purposes other than transporting potable liquids shall not be used for hauling drinking water.

(B) The tank shall be watertight and of an approved material which is impervious and easily cleaned and disinfected. Any paint or coating and any plastic or fiberglass materials used as contact surfaces must be approved by the United States Environmental Protection Agency, the United States Food and Drug Administration, or the NSF. Effective January 1, 1993, any

newly installed surfaces shall conform to ANSI/NSF Standard 61 and must be certified by an organization accredited by ANSI.

(C) The tank shall have a manhole and a manhole cover which overlaps the raised manhole opening by a minimum of two inches and terminates in a downward direction. The cover shall fit firmly on the manhole opening and shall be kept locked.

(D) The tank shall have a vent which is faced downward and located to minimize the possibility of drawing contaminants into the stored water. The vent must be screened with 16-mesh or finer corrosion-resistant material.

(E) Connections for filling and emptying the tank shall be properly protected to prevent the possible entrance of contamination. These openings must be provided with caps and keeper chains.

(F) A drain shall be provided which will completely empty the tank for cleaning or repairs.

(G) When a pump is used to transfer the water from the tank, the pump shall be permanently mounted with a permanent connection to the tank. The discharge side of the pump shall be properly protected between uses by a protective cap and keeper chain.

(H) Hoses used for the transfer of drinking water to and from the tank shall be used only for that purpose and labeled for drinking water only. The hoses shall conform to ANSI/NSF Standard 61 and must be certified by an entity recognized by the commission. Hoses and related appurtenances must be cleaned and disinfected on a regular basis during prolonged use or before start-up during intermittent use. Hoses must be properly stored between uses and must be provided with caps and keeper chains or have the ends connected together.

(I) The tank shall be disinfected monthly and at any time that contamination is suspected.

(J) At least one sample per month from each tank shall be collected and submitted for microbiological analysis to one of the commission's approved laboratories for each month of operation.

(K) A minimum free chlorine residual of 0.5 mg/L or, if chloramines are used as the primary disinfectant, a chloramine residual of 1.0 mg/L (measured as total chlorine) shall be maintained in the water being hauled. Chlorine or chlorine containing compounds may be added on a "batch" basis to maintain the required residual.

(L) Operational records detailing the amount of water hauled, purchases, microbiological sampling results, chlorine residual readings, dates of disinfection, and source of water shall be maintained.

§290.45. Minimum Water System Capacity Requirements.

(a) General provisions.

(1) The requirements contained in this section are to be used in evaluating both the total capacities for public water systems and the capacities at individual pump stations and pressure planes which serve portions of the system that are hydraulically separated from, or incapable of being served by, other pump stations or pressure planes. The capacities specified in this section are minimum requirements only.

(2) The executive director will require additional supply, storage, service pumping, and pressure maintenance facilities if a normal operating pressure of 35 pounds per square inch (psi) cannot be maintained throughout the system, or if the system's maximum daily demand exceeds its total production and treatment capacity. The executive director will also require additional capacities if the system is unable to maintain a minimum pressure of 20 psi during fire fighting, line flushing, and other unusual conditions.

(3) The executive director may establish additional capacity requirements for a public water system using the method of calculation described in subsection (g)(2) of this section if there are repeated customer complaints regarding inadequate pressure or if the executive director receives a request for a capacity evaluation from customers of the system.

(4) Throughout this section, total storage capacity does not include pressure tank capacity.

(5) The executive director may exclude the capacity of facilities that have been inoperative for the past 120 days and will not be returned to an operative condition within the next 30 days when determining compliance with the requirements of this section.

(6) The capacity of the treatment facilities shall not be less than the required raw water or groundwater production rate or the anticipated maximum daily demand of the system.

(b) Community water systems.

(1) Groundwater supplies must meet the following requirements.

(A) If fewer than 50 connections without ground storage, the system must meet the following requirements:

(i) a well capacity of 1.5 gallons per minute (gpm) per connection; and

(ii) a pressure tank capacity of 50 gallons per connection.

(B) If fewer than 50 connections with ground storage, the system must meet the following requirements:

(i) a well capacity of 0.6 gpm per connection;

(ii) a total storage capacity of 200 gallons per connection;

(iii) two or more service pumps having a total capacity of 2.0 gpm per connection; and

(iv) a pressure tank capacity of 20 gallons per connection.

(C) For 50 to 250 connections, the system must meet the following requirements:

(i) a well capacity of 0.6 gpm per connection;

(ii) a total storage capacity of 200 gallons per connection;

(iii) two or more pumps having a total capacity of 2.0 gpm per connection at each pump station or pressure plane. For systems which provide an elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gpm per connection are required at each pump station or pressure plane. If only wells and elevated storage are provided, service pumps are not required; and

(iv) an elevated storage capacity of 100 gallons per connection or a pressure tank capacity of 20 gallons per connection.

(D) For more than 250 connections, the system must meet the following requirements:

(i) two or more wells having a total capacity of 0.6 gpm per connection. Where an interconnection is provided with another acceptable water system capable of supplying at least 0.35 gpm for each connection in the combined system under emergency conditions, an additional well will not be required as long as the 0.6 gpm per connection requirement is met for each system on an individual basis. Each water system must still meet the storage and pressure maintenance requirements on an individual basis unless the interconnection is permanently open. In this case, the systems' capacities will be rated as though a single system existed;

(ii) a total storage capacity of 200 gallons per connection;

(iii) two or more pumps that have a total capacity of 2.0 gpm per connection or that have a total capacity of at least 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service, whichever is less, at each pump station or pressure plane. For systems which provide an elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gpm per connection are required at each pump station or pressure plane. If only wells and elevated storage are provided, service pumps are not required;

(iv) an elevated storage capacity of 100 gallons per connection or a pressure tank capacity of 20 gallons per connection. If pressure tanks are used, a maximum capacity of 30,000 gallons is sufficient for up to 2,500 connections. An elevated storage capacity of 100 gallons

per connection is required for systems with more than 2,500 connections. Alternate methods of pressure maintenance may be proposed and will be approved if the criteria contained in subsection (g)(5) of this section are met; and

(v) emergency power for systems which serve more than 250 connections and do not meet the elevated storage requirement. Sufficient emergency power must be provided to deliver a minimum of 0.35 gpm per connection to the distribution system in the event of the loss of normal power supply. Alternately, an emergency interconnection can be provided with another public water system that has emergency power and is able to supply at least 0.35 gpm for each connection in the combined system. Emergency power facilities in systems serving 1,000 connections or greater must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current National Fire Protection Association (NFPA) 110 standards. Although not required, compliance with NFPA 110 standards is highly recommended for systems serving less than 1,000 connections. Logs of all emergency power use and maintenance must be maintained and kept on file for a period of not less than three years. These records must be made available, upon request, for executive director review.

(E) Mobile home parks with a density of eight or more units per acre and apartment complexes which supply fewer than 100 connections without ground storage must meet the following requirements:

(i) a well capacity of 1.0 gpm per connection; and

(ii) a pressure tank capacity of 50 gallons per connection with a maximum of 2,500 gallons required.

(F) Mobile home parks and apartment complexes which supply 100 connections or greater, or fewer than 100 connections and utilize ground storage must meet the following requirements:

(i) a well capacity of 0.6 gpm per connection. Systems with 250 or more connections must have either two wells or an approved interconnection which is capable of supplying at least 0.35 gpm for each connection in the combined system;

(ii) a total storage of 200 gallons per connection;

(iii) at least two service pumps with a total capacity of 2.0 gpm per connection; and

(iv) a pressure tank capacity of 20 gallons per connection.

(2) Surface water supplies must meet the following requirements:

(A) a raw water pump capacity of 0.6 gpm per connection with the largest pump out of service;

(B) a treatment plant capacity of 0.6 gpm per connection under normal rated design flow;

(C) transfer pumps (where applicable) with a capacity of 0.6 gpm per connection with the largest pump out of service;

(D) a covered clearwell storage capacity at the treatment plant of 50 gallons per connection or, for systems serving more than 250 connections, 5.0% of daily plant capacity;

(E) a total storage capacity of 200 gallons per connection;

(F) a service pump capacity that provides each pump station or pressure plane with two or more pumps that have a total capacity of 2.0 gpm per connection or that have a total capacity of at least 1,000 gpm and the ability to meet peak hourly demands with the largest pump out of service, whichever is less. For systems which provide an elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gpm per connection are required at each pump station or pressure plane;

(G) an elevated storage capacity of 100 gallons per connection or a pressure tank capacity of 20 gallons per connection. If pressure tanks are used, a maximum capacity of 30,000 gallons is sufficient for systems of up to 2,500 connections. An elevated storage capacity of 100 gallons per connection is required for systems with more than 2,500 connections. Alternate methods of pressure maintenance may be proposed and will be approved if the criteria contained in subsection (g)(5) of this section are met; and

(H) emergency power for systems which serve more than 250 connections and do not meet the elevated storage requirement. Sufficient emergency power must be provided to deliver a minimum of 0.35 gpm per connection to the distribution system in the event of the loss of normal power supply. Alternately, an emergency interconnection can be provided with another public water system that has emergency power and is able to supply at least 0.35 gpm for each connection in the combined system. Emergency power facilities in systems serving 1,000 connections or greater must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards. Although not required, compliance with NFPA 110 standards is highly recommended for systems serving less than 1,000 connections. Logs of all emergency power use and maintenance must be maintained and kept on file for a period of not less than three years. These records must be made available, upon request, for executive director review.

(c) Noncommunity water systems serving transient accommodation units. The following water capacity requirements apply to noncommunity water systems serving accommodation units such as hotel rooms, motel rooms, travel trailer spaces, campsites, and similar accommodations.

(1) Groundwater supplies must meet the following requirements.

(A) If fewer than 100 accommodation units without ground storage, the system must meet the following requirements:

- (i) a well capacity of 1.0 gpm per unit; and
- (ii) a pressure tank capacity of ten gallons per unit with a minimum of 220 gallons.

(B) For systems serving fewer than 100 accommodation units with ground storage or serving 100 or more accommodation units, the system must meet the following requirements:

- (i) a well capacity of 0.6 gpm per unit;
- (ii) a ground storage capacity of 35 gpm;
- (iii) two or more service pumps which have a total capacity of 1.0 gpm per unit; and

(iv) a pressure tank capacity of ten gallons per unit.

(2) Surface water supplies, regardless of size, must meet the following requirements:

(A) a raw water pump capacity of 0.6 gpm per unit with the largest pump out of service;

(B) a treatment plant capacity of 0.6 gpm per unit;

(C) a transfer pump capacity (where applicable) of 0.6 gpm per unit with the largest pump out of service;

(D) a ground storage capacity of 35 gallons per unit with a minimum of 1,000 gallons as clearwell capacity;

(E) two or more service pumps with a total capacity of 1.0 gpm per unit; and

(F) a pressure tank capacity of ten gallons per unit with a minimum requirement of 220 gallons.

(d) Noncommunity water systems serving other than transient accommodation units.

(1) The following table is applicable to paragraphs (2) and (3) of this subsection and shall be used to determine the maximum daily demand for the various types of facilities listed.

Figure: 30 TAC §290.45(d)(1)

Table A

Type of Establishment	Gallons/Person
Restaurants	18
Schools without cafeterias, gymnasiums, or showers	18
Schools with cafeterias, but no gymnasiums or showers	24
Schools with cafeterias, gymnasiums, and showers	30
Youth camps without flush toilets, showers, or dining halls	6

Youth camps with flush toilets, but no showers or dining halls	24
Youth camps with flush toilets, showers, and dining halls	42
Office buildings	18
Hospitals (based on number of beds)	720
Institutions, other than hospitals	240
Factories (exclusive of industrial processes)	24
Parks	6
Swimming pools	12
Country clubs	120
Airports (per passenger)	6
Self-service laundries	60
Service stations/stores	12

It should be noted that this table is used to determine minimum capacities only and that the overriding criteria will be the ability of the system to maintain a minimum pressure of 35 psi under normal operating conditions. Minimum distribution pressure shall not be less than 20 psi at any time.

(2) Groundwater supplies must meet the following requirements.

(A) Subject to the requirements of subparagraph (B) of this paragraph, if fewer than 300 persons per day are served, the system must meet the following requirements:

(i) a well capacity which meets or exceeds the maximum daily demand of the system during the hours of operation; and

(ii) a minimum pressure tank capacity of 220 gallons with additional capacity, if necessary, based on a sanitary survey conducted by the executive director.

(B) Systems which serve 300 or more persons per day or serve fewer than 300 persons per day and provide ground storage must meet the following requirements:

(i) a well capacity which meets or exceeds the maximum daily demand;

(ii) a ground storage capacity which is equal to 50% of the maximum daily demand;

(iii) if the maximum daily demand is less than 15 gpm, at least one service pump with a capacity of three times the maximum daily demand;

(iv) if the maximum daily demand is 15 gpm or more, at least two service pumps with a total capacity of three times the maximum daily demand; and

(v) a minimum pressure tank capacity of 220 gallons with additional capacity, if necessary, based on a sanitary survey conducted by the executive director.

(3) Each surface water supply or groundwater supply that is under the direct influence of surface water, regardless of size, must meet the following requirements:

(A) a raw water pump capacity which meets or exceeds the maximum daily demand of the system with the largest pump out of service;

(B) a treatment plant capacity which meets or exceeds the system's maximum daily demand;

(C) a transfer pump capacity (where applicable) sufficient to meet the maximum daily demand with the largest pump out of service;

(D) a clearwell capacity which is equal to 50% of the maximum daily demand;

(E) two or more service pumps with a total capacity of three times the maximum daily demand; and

(F) a minimum pressure tank capacity of 220 gallons with additional capacity, if necessary, based on a sanitary survey conducted by the executive director.

(e) Water wholesalers. The following additional requirements apply to systems which supply wholesale treated water to other public water supplies.

(1) All wholesalers must provide enough production, treatment, and service pumping capacity to meet or exceed the combined maximum daily commitments specified in their various contractual obligations.

(2) For wholesale water suppliers, minimum water system capacity requirements shall be determined by calculating the requirements based upon the number of retail customer service connections of that wholesale water supplier, if any, and adding that amount to the maximum amount of water obligated or pledged under all wholesale contracts.

(3) Emergency power is required for each portion of the system which supplies more than 250 connections under direct pressure and does not provide an elevated storage capacity of at least 100 gallons per connection. If emergency power is required, it must be sufficient to deliver 20% of the minimum required service pump capacity in the event of the loss of normal power supply. When the wholesaler provides water through an air gap into the purchaser's storage facilities it will be the purchaser's responsibility to meet all minimum water system capacity requirements including emergency power.

(f) Purchased water systems. The following requirements apply only to systems which purchase treated water to meet all or part of their production, storage, service pump, or pressure maintenance capacity requirements.

(1) The water purchase contract must be available to the executive director in order that production, storage, service pump, or pressure maintenance capacity may be properly evaluated. For purposes of this section, a contract may be defined as a signed written document of specific terms agreeable to the water purchaser and the water wholesaler, or in its absence, a memorandum or letter of understanding between the water purchaser and the water wholesaler.

(2) The contract shall authorize the purchase of enough water to meet the monthly or annual needs of the purchaser.

(3) The contract shall also establish the maximum rate at which water may be drafted on a daily and hourly basis. In the absence of specific maximum daily or maximum hourly rates in the contract, a uniform purchase rate for the contract period will be used.

(4) The maximum authorized daily purchase rate specified in the contract, or a uniform purchase rate in the absence of a specified daily purchase rate, plus the actual production capacity of the system must be at least 0.6 gpm per connection.

(5) For systems which purchase water under direct pressure, the maximum hourly purchase authorized by the contract plus the actual service pump capacity of the system must be at least 2.0 gpm per connection or provide at least 1,000 gpm and be able to meet peak hourly demands, whichever is less.

(6) The purchaser is responsible for meeting all production requirements. If additional capacity to meet increased demands cannot be attained from the wholesaler through a new or amended contract, additional capacity must be obtained from water purchase contracts with other entities, new wells, or surface water treatment facilities. However, if the water purchase contract prohibits the purchaser from securing water from sources other than the wholesaler, the wholesaler is responsible for meeting all production requirements.

(7) All other minimum capacity requirements specified in this section shall apply.

(g) Alternative capacity requirements. Public water systems may request approval to meet alternative capacity requirements in lieu of the minimum capacity requirements specified in this section. Any water system requesting to use an alternative capacity requirement must demonstrate to the satisfaction of the executive director that approving the request will not compromise the public health or result in a degradation of service or water quality. Alternative capacity requirements are unavailable for groundwater systems serving fewer than 50 connections without total storage as specified in subsection (b)(1) of this section or for noncommunity water systems as specified in subsections (c) and (d) of this section.

(1) Alternative capacity requirements for public water systems may be granted upon request to and approval by the executive director. The request to use an alternative capacity requirement must include:

(A) a detailed inventory of the major production, pressurization, and storage facilities utilized by the system;

(B) records kept by the water system that document the daily production of the system. The period reviewed shall not be less than three years. The applicant may not use a calculated peak daily demand;

(C) data acquired during the last drought period in the region, if required by the executive director;

(D) the actual number of active connections for each month during the three years of production data;

(E) description of any unusual demands on the system such as fire flows or major main breaks that will invalidate unusual peak demands experienced in the study period;

(F) any other relevant data needed to determine that the proposed alternative capacity requirement will provide at least 35 psi in the public water system except during line repair or during fire fighting when it cannot be less than 20 psi; and

(G) a copy of all data relied upon for making the proposed determination.

(2) Alternative capacity requirements for existing public water systems must be based upon the maximum daily demand for the system, unless the request is submitted by a licensed professional engineer in accordance with the requirements of paragraph (3) of this subsection. The maximum daily demand must be determined based upon the daily usage data contained in monthly operating reports for the system during a 36 consecutive month period. The 36 consecutive month period must end within 90 days of the date of submission to ensure the data is as current as possible.

(A) Maximum daily demand is the greatest number of gallons, including groundwater, surface water, and purchased water delivered by the system during any single day during the review period. Maximum daily demand excludes unusual demands on the system such as fire flows or major main breaks.

(B) For the purpose of calculating alternative capacity requirements, an equivalency ratio must be established. This equivalency ratio must be calculated by multiplying the maximum daily demand, expressed in gpm per connection, by a fixed safety factor and dividing the result by 0.6 gpm per connection. The safety factor shall be 1.15 unless it is documented that the

existing system capacity is adequate for the next five years. In this case, the safety factor may be reduced to 1.05. The conditions in §291.93(3) of this title (relating to Adequacy of Water Utility Service) concerning the 85% rule shall continue to apply to public water systems that are also retail public utilities.

(C) To calculate the alternative capacity requirements, the equivalency ratio must be multiplied by the appropriate minimum capacity requirements specified in subsection (b) of this section. Standard rounding methods are used to round calculated alternative production capacity requirement values to the nearest one-hundredth.

(3) Alternative capacity requirements which are proposed and submitted by licensed professional engineers for review are subject to the following additional requirements.

(A) A signed and sealed statement by the licensed professional engineer must be provided which certifies that the proposed alternative capacity requirements have been determined in accordance with the requirements of this subsection.

(B) If the system is new or at least 36 consecutive months of data is not available, maximum daily demand may be based upon at least 36 consecutive months of data from a comparable public water system. A licensed professional engineer must certify that the data from another public water system is comparable based on consideration of the following factors: prevailing land use patterns (rural versus urban); number of connections; density of service populations; fire flow obligations; and socio-economic, climatic, geographic, and topographic considerations as well as other factors as may be relevant. The comparable public water system shall not exhibit any of the conditions listed in paragraph (6)(A) of this subsection.

(4) The executive director shall consider requests for alternative capacity requirements in accordance with the following requirements.

(A) For those requests submitted under the seal of a licensed professional engineer, the executive director must mail written acceptance or denial of the proposed alternative capacity requirements to the public water system within 90 days from the date of submission. If the executive director fails to mail written notification within 90 days, the alternative capacity requirements submitted by a licensed professional engineer automatically become the alternative capacity requirements for the public water system.

(B) If the executive director denies the request:

(i) the executive director shall mail written notice to the public water system identifying the specific reason or reasons for denial and allow 45 days for the public water system to respond to the reason(s) for denial;

(ii) the denial is final if no response from the public water system is received within 45 days of the written notice being mailed; and

(iii) the executive director must mail a final written approval or denial within 60 days from the receipt of any response timely submitted by the public water system.

(5) Although elevated storage is the preferred method of pressure maintenance for systems of over 2,500 connections, it is recognized that local conditions may dictate the use of alternate methods utilizing hydropneumatic tanks and on-site emergency power equipment. Alternative capacity requirements to the elevated storage requirements may be obtained based on request to and approval by the executive director. Special conditions apply to systems qualifying for an elevated storage alternative capacity requirement.

(A) The system must submit documentation sufficient to assure that the alternate method of pressure maintenance is capable of providing a safe and uninterrupted supply of water under pressure to the distribution system during all demand conditions.

(i) A signed and sealed statement by a licensed professional engineer must be provided which certifies that the pressure maintenance facilities are sized, designed, and capable of providing a minimum pressure of at least 35 psi at all points within the distribution network at flow rates of 1.5 gpm per connection or greater. In addition, the engineer must certify that the emergency power facilities are capable of providing the greater of the average daily demand or 0.35 gpm per connection while maintaining distribution pressures of at least 35 psi, and that emergency power facilities powering production and treatment facilities are capable of supplying at least 0.35 gpm per connection to storage.

(ii) The system's licensed professional engineer must conduct a hydraulic analysis of the system under peak conditions. This must include an analysis of the time lag between the loss of the normal power supply and the commencement of emergency power as well as the

minimum pressure that will be maintained within the distribution system during this time lag. In no case shall this minimum pressure within the distribution system be less than 20 psi. The results of this analysis must be submitted to the executive director for review.

(iii) For existing systems, the system's licensed professional engineer must provide continuous pressure chart recordings of distribution pressures maintained during past power failures, if available. The period reviewed shall not be less than three years.

(B) Emergency power facilities must be maintained and provided with necessary appurtenances to assure immediate and dependable operation in case of normal power interruption.

(i) The facilities must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards and the manufacturers' recommendations.

(ii) The switching gear must be capable of bringing the emergency power generating equipment on-line during a power interruption such that the pressure in the distribution network does not fall below 20 psi at any time.

(iii) The minimum on-site fuel storage capacity shall be determined by the fuel demand of the emergency power facilities and the frequency of fuel delivery. An amount of fuel equal to that required to operate the facilities under-load for a period of at least eight hours must always be maintained on site.

(iv) Residential rated mufflers or other means of effective noise suppression must be provided on each emergency power motor.

(C) Battery-powered or uninterruptible power supply pressure monitors and chart recorders which are configured to activate immediately upon loss of normal power must be provided for pressure maintenance facilities. These records must be kept for a minimum of three years and made available for review by the executive director. Records must include chart recordings of all power interruptions including interruptions due to periodic emergency power under-load testing and maintenance.

(D) An emergency response plan must be submitted detailing procedures to be followed and individuals to be contacted in the event of loss of normal power supply.

(6) Any alternative capacity requirement granted under this subsection is subject to review and revocation or revision by the executive director. If permission to use an alternative capacity requirement is revoked, the public water system must meet the applicable minimum capacity requirements of this section.

(A) The following conditions, if attributable to the alternative capacity requirements, may constitute grounds for revocation or revision of established alternative capacity requirements or for denial of new requests, if the condition occurred within the last 36 months:

(i) documented pressure below 35 psi at any time not related to line repair, except during fire fighting when it cannot be less than 20 psi;

(ii) water outages due to high water usage;

(iii) mandatory water rationing due to high customer demand or overtaxed water production or supply facilities;

(iv) failure to meet a minimum capacity requirement or an established alternative capacity requirement;

(v) changes in water supply conditions or usage patterns which create a potential threat to public health; or

(vi) any other condition where the executive director finds that the alternative capacity requirement has compromised the public health or resulted in a degradation of service or water quality.

(B) If the executive director finds any of the conditions specified in subparagraph (A) of this paragraph, the process for revocation or revision of an alternative capacity requirement shall be as follows, unless the executive director finds that failure of the service or other threat to public health and safety is imminent under subparagraph (C) of this paragraph.

(i) The executive director must mail the public drinking water system written notice of the executive director's intent to revoke or revise an alternative capacity requirement identifying the specific reason(s) for the proposed action.

(ii) The public water system has 30 days from the date the written notice is mailed to respond to the proposed action.

(iii) The public water system has 30 days from the date the written notice is mailed to request a meeting with the agency's public drinking water program personnel to review the proposal. If requested, such a meeting must occur within 45 days of the date the written notice is mailed.

(iv) After considering any response from or after any requested meeting with the public drinking water system, the executive director must mail written notification to the public drinking water system of the executive director's final decision to continue, revoke, or revise an alternative capacity requirement identifying the specific reason(s) for the decision.

(C) If the executive director finds that failure of the service or other threat to public health and safety is imminent, the executive director may issue written notification of the executive director's final decision to revoke or revise an alternative capacity requirement at any time.

§290.46. Minimum Acceptable Operating Practices for Public Drinking Water Systems.

(a) General. When a public drinking water supply system is to be established, plans shall be submitted to the executive director for review and approval prior to the construction of the system. All public water systems are to be constructed in conformance with the requirements of this subchapter and maintained and operated in accordance with the following minimum acceptable operating practices. Owners and operators shall allow entry to members of the commission and employees and agents of the commission onto any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to public water systems in the state. Members, employees, or agents acting under this authority shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials.

(b) Microbiological. Submission of samples for microbiological analysis shall be as required by Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems). Microbiological samples may be required by the executive director for monitoring purposes in addition to the routine samples required by the drinking water standards. These samples shall be submitted to a certified laboratory. (A list of the certified laboratories can be obtained by contacting the executive director).

(c) Chemical. Samples for chemical analysis shall be submitted as directed by the executive director.

(d) Disinfectant residuals and monitoring. A disinfectant residual must be continuously maintained during the treatment process and throughout the distribution system.

(1) Disinfection equipment shall be operated and monitored in a manner that will assure compliance with the requirements of §290.110 of this title (relating to Disinfectant Residuals).

(2) The disinfection equipment shall be operated to maintain the following minimum disinfectant residuals in each finished water storage tank and throughout the distribution system at all times:

(A) a free chlorine residual of 0.2 mg/L; or

(B) a chloramine residual of 0.5 mg/L (measured as total chlorine) for those systems that feed ammonia.

(e) Operation by trained and licensed personnel. Except as provided in paragraph (1) of this subsection, the production, treatment, and distribution facilities at the public water system must be operated at all times under the direct supervision of a water works operator who holds an applicable, valid license issued by the executive director.

(1) Transient noncommunity public water systems are exempt from the requirements of this subsection if they use only groundwater or purchase treated water from another public water system.

(2) All public water systems that are subject to the provisions of this subsection shall meet the following requirements.

(A) Public water systems shall not allow new or repaired production, treatment, storage, pressure maintenance, or distribution facilities to be placed into service without the prior guidance and approval of a licensed water works operator.

(B) Public water systems shall ensure that their operators are trained regarding the use of all chemicals used in the water treatment plant. Training programs shall meet applicable standards established by the Occupational Safety and Health Administration (OSHA) or the Texas Hazard Communications Act, Texas Health and Safety Code, Title 6, Chapter 502.

(C) Beginning January 1, 2004, public water systems using chlorine dioxide shall place the operation of the chlorine dioxide facilities under the direct supervision of a licensed operator who has a Class "C" or higher license.

(3) Systems that only purchase treated water shall meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Purchased water systems serving no more than 250 connections must employ an operator who holds a Class "D" or higher license.

(B) Purchased water systems serving more than 250 connections, but no more than 1,000 connections, must employ an operator who holds a Class "C" or higher license.

(C) Purchased water systems serving more than 1,000 connections must employ at least two operators who hold a Class "C" or higher license and who each work at least 16 hours per month at the public water system's treatment or distribution facilities.

(4) Systems that treat groundwater and do not treat surface water or groundwater that is under the direct influence of surface water shall meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Groundwater systems serving no more than 250 connections must employ an operator with a Class "D" or higher license.

(B) Groundwater systems serving more than 250 connections, but no more than 1,000 connections, must employ an operator with a Class “C” or higher groundwater license.

(C) Groundwater systems serving more than 1,000 connections must employ at least two operators who hold a Class “C” or higher groundwater license and who each work at least 16 hours per month at the public water system’s production, treatment, or distribution facilities.

(5) Systems that treat groundwater that is under the direct influence of surface water must meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Systems which serve no more than 1,000 connections and utilize cartridge or membrane filters must employ an operator who holds a Class “C” or higher groundwater license and has completed a four-hour training course on monitoring and reporting requirements or who holds a Class “C” or higher surface water license and has completed the Groundwater Production course.

(B) Systems which serve more than 1,000 connections and utilize cartridge or membrane filters must employ at least two operators who meet the requirements of subparagraph (A) of this paragraph and who each work at least 24 hours per month at the public water system’s production, treatment, or distribution facilities.

(C) Systems which serve no more than 1,000 connections and utilize coagulant addition and direct filtration must employ an operator who holds a Class “C” or higher surface water license and has completed the Groundwater Production course or who holds a Class “C” or higher groundwater license and has completed a Surface Water Production course. Effective January 1, 2007, the public water system must employ at least one operator who has completed the Surface Water Unit I course and the Surface Water Unit II course.

(D) Systems which serve more than 1,000 connections and utilize coagulant addition and direct filtration must employ at least two operators who meet the requirements of subparagraph (C) of this paragraph and who each work at least 24 hours per month at the public water system’s production, treatment, or distribution facilities. Effective January 1, 2007, the public water system must employ at least two operators who have completed the Surface Water Unit I course and the Surface Water Unit II course.

(E) Systems which utilize complete surface water treatment must comply with the requirements of paragraph (6) of this subsection.

(F) Each plant must have at least one Class "C" or higher operator on duty at the plant when it is in operation or the plant must be provided with continuous turbidity and disinfectant residual monitors with automatic plant shutdown and alarms to summon operators so as to ensure that the water produced continues to meet the commission's drinking water standards during periods when the plant is not staffed.

(6) Systems that treat surface water must meet the following requirements in addition to the requirements contained in paragraph (2) of this subsection.

(A) Surface water systems that serve no more than 1,000 connections must employ at least one operator who holds a Class "B" or higher surface water license. Part-time operators may be used to meet the requirements of this subparagraph if the operator is completely familiar with the design and operation of the plant and spends at least four consecutive hours at the plant at least once every 14 days and the system also employs an operator who holds a Class "C" or higher surface water license. Effective January 1, 2007, the public water system must employ at least one operator who has completed the Surface Water Unit I course and the Surface Water Unit II course.

(B) Surface water systems that serve more than 1,000 connections must employ at least two operators; one of the required operators must hold a Class "B" or higher surface water license and the other required operator must hold a Class "C" or higher surface water license. Each of the required operators must work at least 32 hours per month at the public water system's production, treatment, or distribution facilities. Effective January 1, 2007, the public water system must employ at least two operators who have completed the Surface Water Unit I course and the Surface Water Unit II course.

(C) Each surface water treatment plant must have at least one Class "C" or higher surface water operator on duty at the plant when it is in operation or the plant must be provided with continuous turbidity and disinfectant residual monitors with automatic plant shutdown and alarms to summon operators so as to ensure that the water produced continues to meet the commission's drinking water standards during periods when the plant is not staffed.

(D) Public water systems shall not allow Class “D” operators to adjust or modify the treatment processes at surface water treatment plant unless an operator who holds a Class “C” or higher surface license is present at the plant and has issued specific instructions regarding the proposed adjustment.

(f) Operating records and reports. Water systems must maintain a record of water works operation and maintenance activities and submit periodic operating reports.

(1) The public water system's operating records must be organized, and copies must be kept on file or stored electronically.

(2) The public water system's operating records must be accessible for review during inspections.

(3) All public water systems shall maintain a record of operations.

(A) The following records shall be retained for at least two years:

(i) the amount of chemicals used:

(I) Systems that treat surface water or groundwater under the direct influence of surface water shall maintain a record of the amount of each chemical used each day.

(II) Systems that serve 250 or more connections or serve 750 or more people shall maintain a record of the amount of each chemical used each day.

(III) Systems that serve fewer than 250 connections, serve fewer than 750 people, and use only groundwater or purchased treated water shall maintain a record of the amount of each chemical used each week;

(ii) the volume of water treated:

(I) Systems that treat surface water or groundwater under the direct influence of surface water shall maintain a record of the amount of water treated each day.

(II) Systems that serve 250 or more connections or serve 750 or more people shall maintain a record of the amount of water treated each day.

(III) Systems that serve fewer than 250 connections, serve fewer than 750 people, and use only groundwater or purchase treated water shall maintain a record of the amount of water treated each week;

(iii) the date, location, and nature of water quality, pressure, or outage complaints received by the system and the results of any subsequent complaint investigation;

(iv) the dates that dead-end mains were flushed;

(v) the dates that storage tanks and other facilities were cleaned;

(vi) the maintenance records for water system equipment and facilities;

and

(vii) for systems that do not employ full-time operators to meet the requirements of subsection (e) of this section, a daily record or a monthly summary of the work performed and the number of hours worked by each of the part-time operators used to meet the requirements of subsection (e) of this section.

(B) The following records shall be retained for at least three years:

(i) copies of notices of violation and any resulting corrective actions. The records of the actions taken to correct violations of primary drinking water regulations must be retained for at least three years after the last action taken with respect to the particular violation involved;

(ii) copies of any public notice issued by the water system;

(iii) the disinfectant residual monitoring results from the distribution system;

(iv) the turbidity monitoring results and exception reports for individual filters as required by §290.111 of this title (relating to Turbidity);

(v) the calibration records for laboratory equipment, flow meters, rate-of-flow controllers, on-line turbidimeters, and on-line disinfectant residual analyzers; and

(vi) the records of backflow prevention device programs.

(C) The following records shall be retained for a period of five years after they are no longer in effect:

(i) the records concerning a variance or exemption granted to the system;

(ii) Concentration Time (CT) studies for surface water treatment plants; and

(iii) the Recycling Practices Report form and other records pertaining to site-specific recycle practices for treatment plants that recycle.

(D) The following records shall be retained for at least five years:

(i) the results of microbiological analyses;

(ii) the results of inspections (as required in subsection (m)(1) of this section) for all water storage and pressure maintenance facilities; and

(iii) the results of inspections as required by subsection (m)(2) of this section for all pressure filters.

(E) The following records shall be retained for at least ten years:

(i) copies of Monthly Operating Reports and any supporting documentation including turbidity monitoring results of the combined filter effluent;

(ii) the results of chemical analyses;

(iii) any written reports, summaries, or communications relating to sanitary surveys of the system conducted by the system itself, by a private consultant, or by the executive director shall be kept for a period not less than ten years after completion of the survey involved; and

(iv) copies of the Customer Service Inspection reports required by subsection (j) of this section.

(F) A public water system shall maintain records relating to special studies and pilot projects, special monitoring, and other system-specific matters as directed by the executive director.

(4) Water systems shall submit routine reports and any additional documentation that the executive director may require to determine compliance with the requirements of this chapter.

(A) The reports must be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(B) The reports must contain all the information required by the drinking water standards and the results of any special monitoring tests which have been required.

(C) The reports must be completed in ink, typed, or computer-printed and must be signed by the certified water works operator.

(g) Disinfection of new or repaired facilities. Disinfection by or under the direction of water system personnel must be performed when repairs are made to existing facilities and before new facilities are placed into service. Disinfection must be performed in accordance with AWWA requirements and water samples must be submitted to a laboratory approved by the executive director. The sample results must indicate that the facility is free of microbiological contamination before it is placed into service. When it is necessary to return repaired mains to service as rapidly as possible, doses may be increased to 500 mg/L and the contact time reduced to 1/2 hour.

(h) Calcium hypochlorite. A supply of calcium hypochlorite disinfectant shall be kept on hand for use when making repairs, setting meters, and disinfecting new mains prior to placing them in service.

(i) Plumbing ordinance. Public water systems must adopt an adequate plumbing ordinance, regulations, or service agreement with provisions for proper enforcement to insure that neither cross-connections nor other unacceptable plumbing practices are permitted. See §290.47(b) of this title (relating to Appendices). Should sanitary control of the distribution system not reside with the purveyor, the entity retaining sanitary control shall be responsible for establishing and enforcing adequate regulations in this regard. The use of pipes and pipe fittings that contain more than 8.0% lead or solders and flux that contain more than 0.2% lead is prohibited for installation or repair of any public water supply and for installation or repair of any plumbing in a residential or nonresidential facility providing water for human consumption and connected to a public drinking water supply system. This requirement may be waived for lead joints that are necessary for repairs to cast iron pipe.

(j) Customer service inspections. A customer service inspection certificate shall be completed prior to providing continuous water service to new construction, on any existing service either when the water purveyor has reason to believe that cross-connections or other potential contaminant hazards exist, or after any material improvement, correction, or addition to the private water distribution facilities. Any customer service inspection certificate form which varies from the format found in §290.47(d) of this title (relating to Customer Service Inspection Certificate) must be approved by the executive director prior to being placed in use.

(1) Individuals with the following credentials shall be recognized as capable of conducting a customer service inspection certification.

(A) Plumbing Inspectors and Water Supply Protection Specialists licensed by the Texas State Board of Plumbing Examiners.

(B) Customer service inspectors who have completed a commission-approved course, passed an examination administered by the executive director, and hold current professional certification or endorsement as a customer service inspector.

(2) As potential contaminant hazards are discovered, they shall be promptly eliminated to prevent possible contamination of the water supplied by the public water system. The existence of a

health hazard, as identified in §290.47(i) of this title, shall be considered sufficient grounds for immediate termination of water service. Service can be restored only when the health hazard no longer exists, or until the health hazard has been isolated from the public water system in accordance with §290.44(h) of this title (relating to Water Distribution).

(3) These customer service inspection requirements are not considered acceptable substitutes for and shall not apply to the sanitary control requirements stated in §290.102(a)(5) of this title (relating to Definitions).

(4) A customer service inspection is an examination of the private water distribution facilities for the purpose of providing or denying water service. This inspection is limited to the identification and prevention of cross-connections, potential contaminant hazards, and illegal lead materials. The customer service inspector has no authority or obligation beyond the scope of the commission's regulations. A customer service inspection is not a plumbing inspection as defined and regulated by the Texas State Board of Plumbing Examiners (TSBPE). A customer service inspector is not permitted to perform plumbing inspections. State statutes and TSBPE adopted rules require that TSBPE licensed plumbing inspectors perform plumbing inspections of all new plumbing and alterations or additions to existing plumbing within the municipal limits of all cities, towns, and villages which have passed an ordinance adopting one of the plumbing codes recognized by TSBPE. Such entities may stipulate that the customer service inspection be performed by the plumbing inspector as a part of the more comprehensive plumbing inspection. Where such entities permit customer service inspectors to perform customer service inspections, the customer service inspector shall report any violations immediately to the local entity's plumbing inspection department.

(k) Interconnection. No physical connection between the distribution system of a public drinking water supply and that of any other water supply shall be permitted unless the other water supply is of a safe, sanitary quality and the interconnection is approved by the executive director.

(l) Flushing of mains. All dead-end mains must be flushed at monthly intervals. Dead-end lines and other mains shall be flushed as needed if water quality complaints are received from water customers or if disinfectant residuals fall below acceptable levels as specified in §290.110 of this title (relating to Disinfectant Residuals).

(m) Maintenance and housekeeping. The maintenance and housekeeping practices used by a public water system shall ensure the good working condition and general appearance of the system's

facilities and equipment. The grounds and facilities shall be maintained in a manner so as to minimize the possibility of the harboring of rodents, insects, and other disease vectors, and in such a way as to prevent other conditions that might cause the contamination of the water.

(1) Each of the system's ground, elevated, and pressure tanks shall be inspected annually by water system personnel or a contracted inspection service.

(A) Ground and elevated storage tank inspections must determine that the vents are in place and properly screened, the roof hatches closed and locked, flap valves and gasketing provide adequate protection against insects, rodents, and other vermin, the interior and exterior coating systems are continuing to provide adequate protection to all metal surfaces, and the tank remains in a watertight condition.

(B) Pressure tank inspections must determine that the pressure release device and pressure gauge are working properly, the air-water ratio is being maintained at the proper level, the exterior coating systems are continuing to provide adequate protection to all metal surfaces, and the tank remains in watertight condition. Pressure tanks provided with an inspection port must have the interior surface inspected every five years.

(C) All tanks shall be inspected annually to determine that instrumentation and controls are working properly.

(2) When pressure filters are used, a visual inspection of the filter media and internal filter surfaces shall be conducted annually to ensure that the filter media is in good condition and the coating materials continue to provide adequate protection to internal surfaces.

(3) When cartridge filters are used, filter cartridges shall be changed at the frequency required by the manufacturer, or more frequently if needed.

(4) All water treatment units, storage and pressure maintenance facilities, distribution system lines, and related appurtenances shall be maintained in a watertight condition and be free of excessive solids.

(5) Basins used for water clarification shall be maintained free of excessive solids to prevent possible carryover of sludge and the formation of tastes and odors.

(6) Pumps, motors, valves, and other mechanical devices shall be maintained in good working condition.

(n) Engineering plans and maps. Plans, specifications, maps, and other pertinent information shall be maintained to facilitate the operation and maintenance of the system's facilities and equipment. The following records shall be maintained on file at the public water system and be available to the executive director upon request.

(1) Accurate and up-to-date detailed as-built plans or record drawings and specifications for each treatment plant, pump station, and storage tank shall be maintained at the public water system until the facility is decommissioned. As-built plans of individual projects may be used to fulfill this requirement if the plans are maintained in an organized manner.

(2) An accurate and up-to-date map of the distribution system shall be available so that valves and mains can be easily located during emergencies.

(3) Copies of well completion data such as well material setting data, geological log, sealing information (pressure cementing and surface protection), disinfection information, microbiological sample results, and a chemical analysis report of a representative sample of water from the well shall be kept on file for as long as the well remains in service.

(o) Filter backwashing at surface water treatment plants. Filters must be backwashed when a loss of head differential of six to ten feet is experienced between the influent and effluent loss of head gauges or when the turbidity level at the effluent of the filter reaches 1.0 NTU.

(p) Data on water system ownership and management. The agency shall be provided with information regarding water system ownership and management.

(1) When a water system changes ownership, a written notice of the transaction must be provided to the executive director. When applicable, notification shall be in accordance with Chapter 291 of this title (relating to Utility Regulations). Those systems not subject to Chapter 291 of this title shall notify the executive director of changes in ownership by providing the name of the current and prospective owner or responsible official, the proposed date of the transaction, and the address and phone number of the new owner or responsible official. The information listed in this paragraph and the system's public drinking water supply identification number, and any other

information necessary to identify the transaction shall be provided to the executive director 120 days before the date of the transaction.

(2) On an annual basis, the owner of a public water system shall provide the executive director with a written list of all the operators and operating companies that the public water system employs. The notice shall contain the name, license number, and license class of each employed operator and the name and registration number of each employed operating company. See §290.47(g) of this title (relating to Appendices).

(q) Special precautions. Special precautions must be instituted by the water system owner or responsible official in the event of low distribution pressures (below 20 psi), water outages, microbiological samples found to contain *E. coli* or fecal coliform organisms, failure to maintain adequate chlorine residuals, elevated finished water turbidity levels, or other conditions which indicate that the potability of the drinking water supply has been compromised.

(1) Boil water notifications must be issued to the customers within 24 hours using the prescribed notification format as specified in §290.47(e) of this title (relating to Appendices). A copy of this notice shall be provided to the executive director. Bilingual notification may be appropriate based upon local demographics. Once the boil water notification is no longer in effect, the customers must be notified in a manner similar to the original notice.

(2) The flowchart found in §290.47(h) of this title shall be used to determine if a boil water notification must be issued in the event of a loss of distribution system pressure. If a boil water notice is issued under this section, it shall remain in effect until water distribution pressures in excess of 20 psi can consistently be maintained, a minimum of 0.2 mg/L free chlorine residual or 0.5 mg/L chloramine residual (measured as total chlorine) is present throughout the system, and water samples collected for microbiological analysis are found negative for coliform organisms.

(3) A boil water notification shall be issued if the turbidity of the finished water produced by a surface water treatment plant exceeds 5.0 NTU. The boil water notice shall remain in effect until the water entering the distribution system has a turbidity level below 1.0 NTU, the distribution system has been thoroughly flushed, a minimum of 0.2 mg/L free chlorine residual or 0.5 mg/L chloramine residual (measured as total chlorine) is present throughout the system, and water samples collected for microbiological analysis are found negative for coliform organisms.

(4) Other protective measures may be required at the discretion of the executive director.

(r) Minimum pressures. All public water systems shall be operated to provide a minimum pressure of 35 psi throughout the distribution system under normal operating conditions. The system shall also be operated to maintain a minimum pressure of 20 psi during emergencies such as fire fighting.

(s) Testing equipment. Accurate testing equipment or some other means of monitoring the effectiveness of any chemical treatment processes must be used by the system.

(1) Flow measuring devices and rate-of-flow controllers that are required by §290.42(d) of this title shall be calibrated at least once every 12 months. Well meters required by §290.41(c)(3)(N) of this title shall be calibrated at least once every three years.

(2) Laboratory equipment used for compliance testing shall be properly calibrated.

(A) pH meters shall be properly calibrated.

(i) Benchtop pH meters shall be calibrated according to manufacturers specifications at least once each day.

(ii) The calibration of benchtop pH meters shall be checked with at least one buffer each time a series of samples is run, and if necessary, recalibrated according to manufacturers specifications.

(iii) On-line pH meters shall be calibrated according to manufacturer specifications at least once every 30 days.

(iv) The calibration of on-line pH meters shall be checked at least once each week with a primary standard or by comparing the results from the on-line unit with the results from a properly calibrated benchtop unit. If necessary, the on-line unit shall be recalibrated with primary standards.

(B) Turbidimeters shall be properly calibrated.

(i) Benchtop turbidimeters shall be calibrated with primary standards at least once every 90 days. Each time the turbidimeter is calibrated with primary standards, the secondary standards shall be restandardized.

(ii) The calibration of benchtop turbidimeters shall be checked with secondary standards each time a series of samples is tested, and if necessary, recalibrated with primary standards.

(iii) On-line turbidimeters shall be calibrated with primary standards at least once every 90 days.

(iv) The calibration of on-line turbidimeters shall be checked at least once each week with a primary standard, a secondary standard, or the manufacturer's proprietary calibration confirmation device or by comparing the results from the on-line unit with the results from a properly calibrated benchtop unit. If necessary, the on-line unit shall be recalibrated with primary standards.

(C) Disinfectant residual analyzers shall be properly calibrated.

(i) The accuracy of manual disinfectant residual analyzers shall be verified at least once every 30 days using chlorine solutions of known concentrations.

(ii) Continuous disinfectant residual analyzers shall be calibrated at least once every 90 days using chlorine solutions of known concentrations.

(iii) The calibration of continuous disinfectant residual analyzers shall be checked at least once each month with a chlorine solution of known concentration or by comparing the results from the on-line analyzer with the result of approved benchtop amperometric, spectrophotometric, or titration method.

(t) System ownership. All community water systems shall post a legible sign at each of its production, treatment, and storage facilities. The sign shall be located in plain view of the public and shall provide the name of the water supply and an emergency telephone number where a responsible official can be contacted.

(u) Abandoned wells. Abandoned public water supply wells owned by the system must be plugged with cement according to 16 TAC Chapter 76 (relating to Water Well Drillers and Water Well Pump Installers). Wells that are not in use and are non-deteriorated as defined in those rules must be tested every five years or as required by the executive director to prove that they are in a non-deteriorated condition. The test results shall be sent to the executive director for review and approval. Deteriorated wells must be either plugged with cement or repaired to a non-deteriorated condition.

(v) Electrical wiring. All water system electrical wiring must be securely installed in compliance with a local or national electrical code.

§290.47. Appendices.

(a) Appendix A. Recognition as a Superior or Approved Public Water System.

Figure: 30 TAC §290.47(a)

APPENDIX A

Requirements. Public water supply systems which achieve and maintain recognition must exceed the minimum acceptable standards of the commission in these sections.

(1) To attain recognition as a "Superior Public Water System", the following additional requirements must be met:

(A) Physical facilities shall comply with the requirements in these sections.

(B) There shall be a minimum of two certified operators with additional operators required for larger systems.

(C) The system's microbiological record for the previous 24 months period shall indicate no violations (frequency, number or MCL) of the drinking water standards.

(D) The quality of the water shall comply with all primary water quality parameters listed in the drinking water standards.

(E) The chemical quality of the water shall comply with all secondary constituent levels listed in the drinking water standards.

(F) The system's operation shall comply with applicable state statutes and minimum acceptable operating practices set forth in §290.46 of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Supplies).

(G) The system's capacities shall meet or exceed minimum water system capacity requirements set forth in §290.45 of this title (relating to Minimum Water System Capacity Requirements).

(H) The system shall have at least two wells, two raw water pumps or a combination of these with enough capacity to provide average daily consumption with the largest well or pump out of service. This requirement shall also apply to treatment plant pumps necessary for operation in accordance with §290.42 of this title (relating to Water Treatment).

(I) The water system shall be well maintained and the facilities shall present a pleasing appearance to the public.

(2) To attain recognition as an "Approved Public Water System," all additional requirements listed under subsection (a)(1) of this section with exception of secondary constituents, subsection (a)(1)(E) of this section must be met. Public water systems which provide water quality that exceeds the secondary chemical standards may be excluded from this recognition program at the discretion of the executive director.

Signs. Systems which have met the requirements for recognition as a superior or approved system may erect signs denoting this honor.

Inspections. To receive or maintain recognition as a superior or approved water system, the system must be inspected and evaluated by commission personnel as to physical facilities, appearance and operation. Systems which fail to meet the above requirements in this section will be denied recognition or will have their recognition revoked. The signs shall be immediately removed on notice from the executive director.

(b) Appendix B. Sample Service Agreement.

Figure: 30 TAC §290.47(b)

SERVICE AGREEMENT

I. PURPOSE. The NAME OF WATER SYSTEM is responsible for protecting the drinking water supply from contamination or pollution which could result from improper private water distribution system construction or configuration. The purpose of this service agreement is to notify each customer of the restrictions which are in place to provide this protection. The utility enforces these restrictions to ensure the public health and welfare. Each customer must sign this agreement before the NAME OF WATER SYSTEM will begin service. In addition, when service to an existing connection has been suspended or terminated, the water system will not re-establish service unless it has a signed copy of this agreement.

II. RESTRICTIONS. The following unacceptable practices are prohibited by State regulations.

A. No direct connection between the public drinking water supply and a potential source of contamination is permitted. Potential sources of contamination shall be isolated from the public water system by an air-gap or an appropriate backflow prevention device.

B. No cross-connection between the public drinking water supply and a private water system is permitted. These potential threats to the public drinking water supply shall be eliminated at the service connection by the installation of an air-gap or a reduced pressure-zone backflow prevention device.

C. No connection which allows water to be returned to the public drinking water supply is permitted.

D. No pipe or pipe fitting which contains more than 8.0% lead may be used for the installation or repair of plumbing at any connection which provides water for human use.

E. No solder or flux which contains more than 0.2% lead can be used for the installation or repair of plumbing at any connection which provides water for human use.

III. SERVICE AGREEMENT. The following are the terms of the service agreement between the NAME OF WATER SYSTEM (the Water System) and NAME OF CUSTOMER (the Customer).

A. The Water System will maintain a copy of this agreement as long as the Customer and/or the premises is connected to the Water System.

B. The Customer shall allow his property to be inspected for possible cross-connections and other potential contamination hazards. These inspections shall be conducted by the Water System or its designated agent prior to initiating new water service; when there is reason to believe that cross-connections or other potential contamination hazards exist; or after any major changes to the private water distribution facilities. The inspections shall be conducted during the Water System's normal business hours.

C. The Water System shall notify the Customer in writing of any cross-connection or other potential contamination hazard which has been identified during the initial inspection or the periodic reinspection.

D. The Customer shall immediately remove or adequately isolate any potential cross-connections or other potential contamination hazards on his premises.

E. The Customer shall, at his expense, properly install, test, and maintain any backflow prevention device required by the Water System. Copies of all testing and maintenance records shall be provided to the Water System.

IV. ENFORCEMENT. If the Customer fails to comply with the terms of the Service Agreement, the Water System shall, at its option, either terminate service or properly install, test, and maintain an appropriate backflow prevention device at the service connection. Any expenses associated with the enforcement of this agreement shall be billed to the Customer.

CUSTOMER'S SIGNATURE: _____

DATE: _____

(c) Appendix C. Sample Sanitary Control Easement Document for a Public Water Well.

Figure: 30 TAC §290.47(c)

SANITARY CONTROL EASEMENT

DATE: _____, 19 __

GRANTOR(S):

GRANTOR'S ADDRESS:

GRANTEE:

GRANTEE'S ADDRESS:

SANITARY CONTROL EASEMENT:

Purpose, Restrictions, and Uses of Easement:

1. The purpose of this easement is to protect the water supply of the well described and located below by means of sanitary control.
2. The construction and operation of underground petroleum and chemical storage tanks and liquid transmission pipelines, stock pens, feedlots, dump grounds, privies, cesspools, septic tank or sewage treatment drainfields, improperly constructed water wells of any depth, and all other construction or operation that could create an insanitary condition within, upon, or across the property subject to this easement are prohibited within this easement. For the purpose of the easement, improperly constructed water wells are those wells which do not meet the surface and subsurface construction standards for a public water supply well.
3. The construction of tile or concrete sanitary sewers, sewer appurtenances, septic tanks, storm sewers, and cemeteries is specifically prohibited within a 50-foot radius of the water well described and located below.
4. This easement permits the construction of homes or buildings upon the Grantor's property as long as all items in Restrictions Nos. 2 and 3 are recognized and followed.
5. This easement permits normal farming and ranching operations, except that livestock shall not be allowed within 50 feet of the water well. The Grantor's property subject to this Easement is described in the documents recorded at:

Volume ___, Pages ___ of the Real Property Records of _____ County, Texas.

Property Subject to Easement:

All of that area within a 150 foot radius of the water well located ___ feet at a radial of ___ degrees from the ___ corner of Lot ___, of a Subdivision of Record in Book ___, Page ___ of the County Plat Records, _____ County, Texas.

TERM: This easement shall run with the land and shall be binding on all parties and persons claiming under the Grantor(s) for a period of two years from the date that this easement is recorded; after which time, this easement shall be automatically extended until the use of the subject water well as a source of water for public water systems ceases.

ENFORCEMENT: Enforcement of this easement shall be proceedings at law or in equity against any person or persons violating or attempting to violate the restrictions in this easement, either to restrain the violation or to recover damages.

INVALIDATION: Invalidation of any one of these restrictions or uses (covenants) by a judgement or court order shall not affect any of the other provisions of this easement, which shall remain in full force and effect.

FOR AND IN CONSIDERATION, of the sum of One Dollar (\$1.00) and for other good and valuable consideration paid by the Grantee to the Grantor(s), the receipt of which is hereby acknowledged, the Grantor does hereby grant and convey to Grantee and to its successors and assigns the sanitary control easement described in this easement.

GRANTOR(S)

By:

ACKNOWLEDGMENT

STATE OF TEXAS

§

§

COUNTY OF

§

BEFORE ME, the undersigned authority, on the day of _____, 19 ____, personally appeared _____ known to me to be the person(s) whose name(s) is(are) subscribed to the foregoing instrument and acknowledged to me that executed the same for the purposes and consideration therein expressed.

Notary Public in
and for

THE STATE OF TEXAS

My Commission

Expires:

Typed or Printed

Name of Notary

Recorded in _____ Courthouse, _____ Texas on _____, 19 __

(d) Appendix D. Customer Service Inspection Certification.

Figure: 30 TAC §290.47(d)

Appendix D: Customer Service Inspection Certificate

Customer Service Inspection Certificate

Name of PWS _____ PWS I.D.# _____

Location of Service _____

Reason for Inspection:

New construction.....

Existing service where contaminant hazards are suspected

Major renovation or expansion of distribution facilities

I _____, upon inspection of the private water distribution facilities connected to the aforementioned public water supply do hereby certify that, to the best of my knowledge:

Compliance

Non-compliance

1. No direct connection between the public drinking water supply and a potential source of contamination exists. Potential sources of contamination are isolated from the public water system by an air gap or an appropriate backflow prevention assembly in accordance with Commission regulations.

- | | | | |
|--------------------------|--------------------------|----|---|
| <input type="checkbox"/> | <input type="checkbox"/> | 2. | No cross-connection between the public drinking water supply and a private water system exists. Where an actual air gap is not maintained between the public water supply and a private water supply, an approved reduced pressure-zone backflow prevention assembly is properly installed and a service agreement exists for annual inspection and testing by a certified backflow prevention assembly tester. |
| <input type="checkbox"/> | <input type="checkbox"/> | 3. | No connection exists which would allow the return of water used for condensing, cooling or industrial processes back to the public water supply. |
| <input type="checkbox"/> | <input type="checkbox"/> | 4. | No pipe or pipe fitting which contains more than 8.0% lead exists in private water distribution facilities installed on or after July 1, 1988. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. | No solder or flux which contains more than 0.2% lead exists in private water distribution facilities installed on or after July 1, 1988. |

I further certify that the following materials were used in the installation of the private water distribution facilities:

Service lines	Lead	<input type="checkbox"/>	Copper	<input type="checkbox"/>	PVC	<input type="checkbox"/>	Other	<input type="checkbox"/>
Solder	Lead	<input type="checkbox"/>	Lead Free	<input type="checkbox"/>	Solvent Weld	<input type="checkbox"/>	Other	<input type="checkbox"/>

I recognize that this document shall become a permanent record of the aforementioned Public Water System and that I am legally responsible for the validity of the information I have provided.

Remarks:

 Signature of Inspector

 Registration Number

 Title

 Type of Registration

(e) Appendix E. Boil Water Notification.

Figure: 30 TAC §290.47(e)

BOIL WATER NOTIFICATION
{INSERT NAME OF SYSTEM}

Due to conditions which have occurred recently in the water system, the Texas Commission on Environmental Quality has required the system to notify all customers to boil their water prior to consumption.

To ensure destruction of all harmful bacteria and other microbes, water for drinking, cooking, and ice making should be boiled and cooled prior to consumption. The water should be brought to a vigorous rolling boil and then boiled for two minutes. In lieu of boiling, you may purchase bottled water or obtain water from some other suitable source. When it is no longer necessary to boil the water, water system officials will notify you.

If you have questions regarding this matter you may contact (a) _____ at (b) _____.

(a) Utility Official(s) (b) Phone Number(s)

INSTRUCTIONS:

List more than one utility official and phone number. Do not list the commission as the primary contact. If a customer wishes to call the commission, please have them call (512) 239-6020.

(f) Appendix F. Sample Backflow Prevention Assembly Test and Maintenance Report.

Figure: 30 TAC §290.47(f)

The following form must be completed for each assembly tested. A signed and dated original must be submitted to the public water supplier for recordkeeping purposes:

BACKFLOW PREVENTION ASSEMBLY TEST AND MAINTENANCE REPORT

NAME OF PWS: _____

PWS I.D.: # _____

MAILING ADDRESS: _____

CONTACT PERSON: _____

LOCATION OF SERVICE: _____

The backflow prevention assembly detailed below has been tested and maintained as required by commission regulations and is certified to be operating within acceptable parameters.

TYPE OF ASSEMBLY

- Reduced Pressure Principle
- Double Check Valve
- Pressure Vacuum Breaker
- Reduced Pressure Principle-Detector
- Double Check-Detector
- Spill-Resistant Pressure Vacuum Breaker

Manufacturer _____ Size _____

Model Number _____ Located At _____

Serial Number _____

Is the assembly installed in accordance with manufacturer recommendations and/or local codes? _____

	Reduced Pressure Principle Assembly			Pressure Vacuum Breaker	
	Double Check Valve Assembly		Relief Valve	Air Inlet	Check Valve
	1st Check	2nd Check			
Initial Test	Held at _____ psid Closed Tight <input type="checkbox"/> Leaked <input type="checkbox"/>	Held at _____ psid Closed Tight <input type="checkbox"/> Leaked <input type="checkbox"/>	Opened at _____ psid Did not open <input type="checkbox"/>	Opened at _____ psid Did not Open <input type="checkbox"/>	Held at _____ psid Leaked <input type="checkbox"/>
Repairs and Materials Used					
Test After Repair	Held at _____ psid Closed Tight <input type="checkbox"/>	Held at _____ psid Closed Tight <input type="checkbox"/>	Opened at _____ psid	Opened at _____ psid	Held at _____ psid

Test gauge used: Make/Model _____ SN: _____ Calibration Date: _____

Remarks: _____

The above is certified to be true at the time of testing.

Firm Name _____ Certified Tester _____
 Firm Address _____ Cert. Tester No. _____ Date _____
 Firm Phone # _____

* TEST RECORDS MUST BE KEPT FOR AT LEAST THREE YEARS

** USE ONLY MANUFACTURER'S REPLACEMENT PARTS

(g) Appendix G. Operator and/or Employment Notice.

Figure: 30 TAC §290.47(g)

Section 290.46(p)(2), Data on water system ownership and management, requires the owner of a public water system to annually provide the executive director with a list of all the water works operators and operating companies that the public water system employs. The following form may be used to facilitate compliance with this requirement. This notice should be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC-155, P.O. Box 13087, Austin, Texas 78711-3087 or provided to the executive director during on-site inspections.

Operator and/or Employment Notice Form

Name of Operator or Operating Company	For Operators		For Companies
	License No.	Class of License	Registration No.
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			

9.			
10.			

 Signature of Water System Owner or Responsible Official

 Date

 Name of Water System Owner or Responsible Official

 Title of Owner or Responsible Official

(h) Appendix H. Special Precautions.

Figure: 30 TAC §290.47(h)

(i) Appendix I. Assessment of Hazard and Selection of Assemblies.

Figure: 30 TAC §290.47(i)

Appendix I: Assessment of Hazards and Selection of Assemblies

The following table lists many common hazards. It is not an all-inclusive list of the hazards which may be found connected to public water systems.

Premises Isolation - Description of Premises	Assessment of Hazard	Required Assembly
Aircraft and missile plants	Health	RPBA or AG
Animal feedlots	Health	RPBA or AG
Automotive plants	Health	RPBA or AG
Breweries	Health	RPBA or AG
Canneries, packing houses and rendering plants	Health	RPBA or AG
Commercial car wash facilities	Health	RPBA or AG
Commercial laundries	Health	RPBA or AG
Cold storage facilities	Health	RPBA or AG

Connection to sewer pipe	Health	AG
Dairies	Health	RPBA or AG
Docks and dockside facilities	Health	RPBA or AG
Dye works	Health	RPBA or AG
Food and beverage processing plants	Health	RPBA or AG
Hospitals, morgues, mortuaries, medical clinics, dental clinics, veterinary clinics, autopsy facilities, sanitariums, and medical labs	Health	RPBA or AG
Metal manufacturing, cleaning, processing, and fabrication plants	Health	RPBA or AG
Microchip fabrication facilities	Health	RPBA or AG
Paper and paper products plants	Health	RPBA or AG
Petroleum processing or storage facilities	Health	RPBA or AG
Photo and film processing labs	Health	RPBA or AG
Plants using radioactive material	Health	RPBA or AG
Plating or chemical plants	Health	RPBA or AG
Pleasure-boat marinas	Health	RPBA or AG
Private/Individual/Unmonitored Wells	Health	RPBA or AG
Reclaimed water systems	Health	RPBA or AG
Restricted, classified or other closed facilities	Health	RPBA or AG
Rubber plants	Health	RPBA or AG
Sewage lift stations	Health	RPBA or AG
Sewage treatment plants	Health	RPBA or AG
Slaughter houses	Health	RPBA or AG
Steam plants	Health	RPBA or AG
Tall buildings or elevation differences where the highest outlet is 80 feet or more above the meter	Nonhealth	DCVA

Internal Protection - Description of Cross Connection Assembly	Assessment of Hazard	Recommended
Aspirators	Nonhealth†	AVB
Aspirator (medical)	Health	AVB or PVB
Autoclaves	Health	RPBA
Autopsy and mortuary equipment	Health	AVB or PVB
Bedpan washers	Health	AVB or PVB
Connection to industrial fluid systems	Health	RPBA

Connection to plating tanks	Health	RPBA
Connection to salt-water cooling systems	Health	RPBA
Connection to sewer pipe	Health	AG
Cooling towers with chemical additives	Health	AG
Cuspidors	Health	AVB or PVB
Degreasing equipment	Nonhealth†	DCVA
Domestic space-heating boiler	Nonhealth†	RPBA
Dye vats or machines	Health	RPBA
Fire-fighting system (toxic liquid foam concentrates)	Health	RPBA
Flexible shower heads	Nonhealth†	AVB or PVB
Heating equipment		
Commercial	Nonhealth†	RPBA
Domestic	Nonhealth†	DCVA
Hose bibbs	Nonhealth†	AVB
Irrigation systems		
with chemical additives	Health	RPBA
without chemical additives	Nonhealth†	DCVA, AVB, or PVB
Kitchen equipment - Commercial	Nonhealth†	AVB
Lab bench equipment	Health or Nonhealth†	AVB or PVB
Ornamental fountains	Health	AVB or PVB
Swimming pools		
Private	Nonhealth†	PVB or AG
Public	Nonhealth†	RPBA or AG
Sewage pump	Health	AG
Sewage ejectors	Health	AG
Shampoo basins	Nonhealth†	AVB
Specimen tanks	Health	AVB or PVB
Steam generators	Nonhealth†	RPBA
Steam tables	Nonhealth†	AVB
Sterilizers	Health	RPBA
Tank vats or other vessels containing toxic substances	Health	RPBA
Trap primers	Health	AG
Vending machines	Nonhealth†	RPBA or PVB
Watering troughs	Health	AG or PVB

NOTE: AG = air gap; AVB = atmospheric vacuum breaker; DCVA = double check valve backflow prevention assembly; PVB = pressure vacuum breaker; RPBA = reduced-pressure principle backflow prevention assembly.

*AVBs and PVBs may be used to isolate health hazards under certain conditions, that is, backsiphonage situations. Additional area of premises isolation may be required.

†Where a greater hazard exists (due to toxicity or other potential health impact) additional area protection with RPBA is required.

**SUBCHAPTER F: DRINKING WATER STANDARDS GOVERNING
DRINKING WATER QUALITY AND REPORTING REQUIREMENTS
FOR PUBLIC WATER SYSTEMS**

§§290.104, 290.106, 290.107, 290.111, 290.117, 290.121, 290.122

STATUTORY AUTHORITY

These amendments are adopted under Texas Water Code, §5.102, which establishes the commission's general authority necessary to carry out its jurisdiction; §5.103, which establishes the commission's general authority to adopt rules; §5.105, which establishes the commission's authority to set policy by rule; and Texas Health and Safety Code, §341.031, which allows the commission to adopt rules to implement the federal Safe Drinking Water Act, 42 United States Code, §§300f to 300j-26.

§290.104. Summary of Maximum Contaminant Levels, Maximum Residual Disinfectant Levels, Treatment Techniques, and Action Levels.

(a) Summary table purpose. The maximum contaminant levels (MCLs), maximum residual disinfectant levels (MRDLs), treatment techniques, and action levels are presented in this section as a reference source. Only the regulatory concentrations are shown in these tables. Compliance requirements are given in the specific section for each chemical.

(b) MCLs for inorganic compounds. The MCLs for inorganic contaminants listed in this subsection apply to public water systems as provided in §290.106 of this title (relating to Inorganic Contaminants).

Figure: 30 TAC §290.104(b)

Contaminant	MCL (mg/L)
Antimony	0.006
Arsenic	0.05
Asbestos	7 million fibers/liter (longer than 10 μ m)
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1

Cyanide	0.2 (as free Cyanide)
Fluoride	4.0
Mercury	0.002
Nitrate	10 (as Nitrogen)
Nitrite	1 (as Nitrogen)
Nitrate & Nitrite (Total)	10 (as Nitrogen)
Selenium	0.05
Thallium	0.002

(c) MCLs for organic compounds. The following MCLs for synthetic organic contaminants and volatile organic contaminants apply to public water systems as provided in §290.107 of this title (relating to Organic Contaminants).

(1) The following are the MCLs for synthetic organic contaminants.

Figure: 30 TAC §290.104(c)(1)

The following are the maximum contaminant levels for synthetic organic contaminants.

Contaminant	MCL (mg/l)
Alachlor	0.002
Atrazine	0.003
Benzopyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2
Dibromochloropropane	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexyl)phthalate	0.006
Dinoseb	0.007

Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCB)	0.0005
Simazine	0.004
Toxaphene	0.003
2,3,7,8-TCDD (Dioxin)	3 X 10 ⁻⁸
2,4,5-TP	0.05
2,4-D	0.07

(2) The following are the MCLs for volatile organic contaminants.

Figure: 30 TAC §290.104(c)(2)

Contaminant	MCL (mg/L)
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.2

1,1,2-Trichloroethane	0.005
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
1,2,4-Trichlorobenzene	0.07
Benzene	0.005
Carbon tetrachloride	0.005
cis-1,2-Dichloroethylene	0.07
Dichloromethane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10

(d) MCLs for radiological contaminants. MCLs for radiological contaminants apply to public water systems as provided in §290.108 of this title (relating to Radiological Sampling and Analytical Requirements).

(e) Microbial contaminants. The MCL for microbial or bacteriological contaminants applies to public water systems as provided in §290.109 of this title (relating to Microbial Contaminants). The MCL for microbiological contaminants is based on the presence or absence of total coliform bacteria in a sample.

(f) Minimum and MRDLs. Minimum and MRDLs apply to public water systems as provided in §290.110 of this title (relating to Disinfectant Residuals).

(1) The minimum residual disinfectant concentration in the water entering the distribution system is 0.2 milligrams per liter (mg/L) free chlorine or 0.5 mg/L chloramine.

(2) The minimum residual disinfectant concentration in the water within the distribution system is 0.2 mg/L free chlorine or 0.5 mg/L chloramine.

(3) The MRDL of chlorine dioxide in the water entering the distribution system is 0.8 mg/L.

(4) The MRDL of free chlorine or chloramine in the water within the distribution system is 4.0 mg/L based on a running annual average.

(g) Turbidity. Systems must meet the turbidity treatment technique requirements as provided in §290.111 of this title (relating to Turbidity).

(1) The turbidity level of the combined filter effluent must never exceed 1.0 Nephelometric Turbidity Unit (NTU) and the turbidity level of the combined filter effluent must be 0.3 NTU or less in at least 95% of the samples tested each month.

(2) Systems are subject to individual filter turbidity provisions of §290.111 of this title.

(h) Disinfection by-product precursors. The treatment technique requirements for disinfection by-product precursors apply to water systems as provided in §290.112 of this title (relating to Total Organic Carbon (TOC)).

(i) Disinfection by-products (TTHM and HAA5). The MCLs for TTHM and HAA5 apply to water systems as provided in §290.113 of this title (relating to Disinfection By-products (TTHM and HAA5)). The MCLs for TTHM and HAA5 are:

(1) the MCL for TTHM is 0.080 mg/L; and

(2) the MCL for HAA5 is 0.060 mg/L.

(j) Disinfection by-products other than TTHM and HAA5. The MCLs for chlorite and bromate apply to water systems as provided in §290.114 of this title (relating to Disinfection By-products Other than TTHM and HAA5). The MCLs for chlorite and bromate are as follows:

- (1) the MCL for chlorite is 1.0 mg/L; and
- (2) the MCL for bromate is 0.010 mg/L.

(k) Lead and copper action levels. The action levels for lead and copper apply to water systems as provided in §290.117 of this title (relating to Regulation of Lead and Copper). Action levels for lead and copper are as follows:

- (1) the action level for lead is 0.015 mg/L; and
- (2) the action level for copper is 1.3 mg/L.

(l) Recycle streams. The treatment technique requirements for recycle streams are specified in §290.42(c)(6) and (d)(3) of this title (relating to Water Treatment).

§290.106. Inorganic Contaminants.

(a) Applicability. All public water systems are subject to the requirements of this section.

(1) Community and nontransient non-community systems shall comply with the requirements of this section regarding monitoring, reporting, and maximum contaminant levels (MCLs) for all inorganic contaminants (IOCs) listed in this section.

(2) Transient non-community systems shall comply with the requirements of this section regarding monitoring, reporting, and MCL for nitrate and nitrite.

(3) For purposes of this section, systems using groundwater under the direct influence of surface water shall meet the inorganic sampling requirements given for surface water systems.

(b) Maximum contaminant levels for IOCS. The MCLs for IOCs listed in the following table apply to community and nontransient, non-community water systems. The MCLs for nitrate, nitrite, and total nitrate and nitrite also apply to transient non-community water systems.

Figure: 30 TAC §290.106(b)

Contaminant	MCL (mg/L)
Antimony	0.006
Arsenic	0.05
Asbestos	7 million fibers/liter (longer than 10 μ m)
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide	0.2 (as free Cyanide)
Fluoride	4.0
Mercury	0.002
Nitrate	10 (as Nitrogen)
Nitrite	1 (as Nitrogen)
Nitrate & Nitrite (Total)	10 (as Nitrogen)
Selenium	0.05
Thallium	0.002

(c) Monitoring requirements for IOCs. Public water systems shall monitor for IOCs at the locations specified by the executive director. All monitoring conducted under the requirements of this section must be conducted at sites designated in the public water system's monitoring plan. Each public water system shall monitor at the time designated during each compliance period.

(1) Monitoring locations for IOCs except asbestos, antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nitrate, nitrite, selenium, and thallium shall be monitored at each entry point to the distribution system.

(A) If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point that is representative of all sources and during periods of normal operating conditions when water is representative of all sources being used.

(B) Systems shall take all subsequent samples at the same entry point to the distribution system unless the executive director determines that conditions make another entry point more representative of the source or treatment plant being monitored.

(C) The executive director may approve the use of composite samples.

(i) Compositing must be done in the laboratory or in the field by persons designated by the executive director.

(ii) Compositing shall be allowed only at groundwater entry points to the distribution system.

(iii) Compositing shall be allowed only within a single system. Samples from different systems shall not be included in a composite sample.

(iv) No more than five individual samples shall be included in a composite sample.

(v) The maximum number of individual samples allowed in a composite sample shall not exceed the number obtained by dividing the MCL for the contaminant by the detection limit of the analytical method and rounding the quotient to the next lowest integer. Detection limits for each analytical method are as listed in 40 Code of Federal Regulations (CFR) §141.23(a)(4)(i).

(vi) If the concentration in the composite sample is greater than or equal to the proportional contribution of the MCL (e.g., 20% of MCL when five points are composited) for any inorganic chemical, then a follow-up sample must be collected from each sampling point included in the composite sample.

(I) Follow-up samples must be collected within 14 days of receipt of the composite sample results.

(II) If duplicates of the original sample taken from each entry point to the distribution system used in the composite are available, the system may use these instead of resampling. The duplicates must be analyzed within 14 days of the composite.

(III) The follow-up or duplicate samples must be analyzed for the contaminant(s) which were excessive in the composite sample.

(2) Monitoring locations for asbestos. Asbestos shall be monitored at locations where asbestos contamination is most likely to occur.

(A) A system vulnerable to asbestos contamination due solely to source water shall sample at the entry point to the distribution system.

(B) A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall sample at a tap served by asbestos-cement pipe, under conditions where asbestos contamination is most likely to occur.

(C) A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall sample at a tap served by asbestos-cement pipe, under conditions where asbestos contamination is most likely to occur.

(D) The executive director may require additional sampling locations based on the size, length, age, and location of asbestos-cement pipe in the distribution system. The system must provide information regarding the size, length, age, and location of asbestos-cement pipe in the distribution system to the executive director upon request.

(3) Monitoring frequency for IOCs except asbestos, nitrate, and nitrite. Community and nontransient non-community public water systems shall monitor for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium at the following frequency.

(A) A public water system shall routinely monitor for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium.

(i) Each groundwater source shall be sampled once every three years at the entry point to the distribution system.

(ii) Each surface water source shall be sampled annually at the entry point to the distribution system.

(iii) Each of the sampling frequencies listed in paragraph (3) of this subsection constitute one round of sampling for groundwater and surface water systems, respectively.

(B) The executive director may reduce the monitoring frequency for a system that has completed a minimum of three rounds of sampling by granting a waiver to the routine

monitoring frequency for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium.

(i) Systems that use a new water source are not eligible for a waiver until three rounds of sampling from the new source have been completed.

(ii) To be considered for a waiver, systems shall demonstrate that all previous analytical results were less than the MCL. At least one sample shall have been taken since January 1, 1990.

(iii) In determining the appropriate reduced monitoring frequency, the executive director shall consider:

(I) the reported contaminant concentrations from all previous samples;

(II) the degree of variation in reported concentrations; and

(III) other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in the flow or characteristics of a reservoir or stream used as the water source.

(iv) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(v) The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).

(vi) A system must take a minimum of one sample during each compliance cycle while the waiver is effective.

(C) The executive director may increase the monitoring frequency for public water systems with sources that exceed the MCL for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, or thallium.

(i) Systems shall sample quarterly beginning in the next quarter after the violation occurs.

(ii) After the initiation of quarterly monitoring, the executive director may return a system to the routine monitoring frequency if monitoring shows that the system is reliably and consistently below the MCL.

(I) The executive director shall not decrease the quarterly sampling requirement until a groundwater system has taken a minimum of two quarterly samples.

(II) The executive director shall not decrease the quarterly sampling requirement until a surface water system has taken a minimum of four quarterly samples.

(4) Asbestos monitoring frequency. Community and nontransient non-community water systems shall monitor for asbestos at the following frequency.

(A) A public water system shall routinely monitor for asbestos once during the first three years of each compliance cycle.

(B) The executive director may waive the routine monitoring frequency requirements for asbestos.

(i) When determining if a waiver should be granted, the executive director shall consider:

(I) the potential for asbestos contamination of the water source;

(II) the use of asbestos-cement pipe for finished water distribution; and

(III) the corrosivity of the water.

(ii) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(iii) The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).

(C) The executive director may increase the monitoring frequency for asbestos.

(i) A system which exceeds the MCL for asbestos shall sample quarterly beginning in the next quarter after the violation occurs.

(ii) After the initiation of quarterly sampling, the executive director may return a system to the routine monitoring frequency if monitoring shows that the system is reliably and consistently below the MCL.

(I) The executive director shall not decrease the quarterly sampling requirement until a groundwater system has taken a minimum of two quarterly samples.

(II) The executive director shall not decrease the quarterly sampling requirement until a surface (or combined surface water and groundwater) water system has taken a minimum of four quarterly samples.

(5) Nitrate monitoring frequency. All public water systems shall monitor for nitrate at the following frequency.

(A) All public water systems shall routinely monitor for nitrate.

(i) All public water systems shall annually sample each groundwater source at the entry point to the distribution system.

(ii) A community or non-transient non-community water system shall sample each surface water source quarterly at the entry point to the distribution system.

(iii) A transient non-community water system shall sample each surface water source annually at the entry point to the distribution system.

(B) The executive director may reduce the monitoring frequency for community or non-transient, non-community water systems using surface water sources by granting a waiver to the routine monitoring frequency.

(i) To be considered for a waiver, a system shall demonstrate that the nitrate concentration in each sample collected during the previous four consecutive quarters was less than 50% of the nitrate MCL.

(ii) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(iii) A system that receives a waiver to the routine nitrate monitoring frequency must sample annually for nitrate. The annual sample must be collected in the quarter that previously resulted in the highest nitrate concentration.

(iv) A system that is sampling annually shall return to routine quarterly monitoring if the nitrate concentration in any sample is equal to or greater than 50% of the nitrate MCL.

(C) The executive director may increase the nitrate monitoring frequency for community or non-transient, non-community water systems using groundwater sources.

(i) A system that is sampling annually shall begin quarterly nitrate sampling if the nitrate concentration in any sample is equal to or greater than 50% of the nitrate MCL. Quarterly sampling must begin the first quarter after the elevated nitrate level was detected.

(ii) After the initiation of quarterly sampling, the executive director may return a system to the routine annual nitrate monitoring frequency if quarterly sampling shows that the system is reliably and consistently below the nitrate MCL for a minimum of four consecutive quarters.

(6) Nitrite monitoring frequency. All public water systems shall monitor for nitrite at the following frequency.

(A) All public water systems shall routinely take one nitrite sample during the first three years of each compliance cycle.

(B) The executive director may reduce the monitoring frequency for nitrite by granting a waiver to the routine monitoring frequency.

(i) To be considered for a waiver, a system shall demonstrate that the nitrite concentration in the initial sample was less than 50% of the nitrite MCL.

(ii) If the executive director grants a waiver, it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the executive director. The executive director shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system becomes available.

(iii) A system that receives a waiver to the routine nitrite monitoring frequency must sample at a frequency specified by the executive director.

(C) The executive director may increase the monitoring frequency for nitrite.

(i) A system shall sample quarterly for at least one year following any sample in which the nitrite concentration is greater than or equal to 50% of the MCL.

(ii) The executive director may allow a system to return to the routine monitoring frequency after determining the system is reliably and consistently less than the MCL.

(7) Confirmation sampling. The executive director may require a public water system to confirm the results of any individual sample.

(A) If a sample result exceeds the MCL, a public water system shall collect one additional sample to confirm the results of the initial test.

(i) Confirmation samples must be collected at the same entry point to the distribution system as the sample that exceeded the MCL.

(ii) Confirmation samples for IOCs except nitrate and nitrite shall be collected as soon as possible after the system receives the analytical results of the first sample.

(iii) Confirmation samples for nitrate and nitrite shall be collected within 24 hours of the system's receipt of notification of the analytical results of the first sample. Systems unable to comply with the 24-hour sampling requirement must immediately notify the consumers served by the public water system in accordance with subsection (f) of this section. Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

(B) The executive director may require a confirmation sample for any sample with questionable results.

(8) The executive director may require more frequent monitoring than specified in paragraphs (3) - (6) of this subsection.

(d) Analytical requirements for IOCs. Analytical procedures shall be performed in accordance with §290.119 of this title (relating to Analytical Procedures). Testing for inorganic contaminants shall be performed at a laboratory certified by the executive director.

(e) Reporting requirements for IOCs. Upon the request of the executive director, the owner or operator of a public water system must provide the executive director with a copy of the results of any test, measurement, or analysis required by this subsection. The copies must be submitted within ten days of the request or within ten days of their receipt by the public water system, whichever is later. The copies must be mailed to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(f) Compliance determination for IOCs. Compliance with this section shall be determined using the following criteria.

(1) Compliance with the MCL for each IOC shall be based on the analytical results obtained at each individual sampling point.

(2) A public water system that exceeds the levels for nitrate, nitrite, or the sum of nitrate and nitrite specified in subsection (b) of this section commits an acute MCL violation. Compliance shall be based on the results of the single sample. If a confirmation sample is collected, compliance shall be based on the average result of the original and confirmation samples.

(3) A public water system that exceeds the levels of antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, or thallium (i.e., any IOC except nitrate and nitrite) specified in subsection (b) of this section commits an MCL violation.

(A) For systems that are sampling annually or less frequently, compliance may be based on the results of a single sample, if a confirmation sample is not collected.

(B) For systems that are sampling annually or less frequently, if a confirmation sample is collected, compliance will be based on the average result of the original and confirmation samples.

(C) For systems that are sampling more frequently than annually, compliance is based on the running annual average for each sampling point.

(D) If a single quarterly sample would cause the running annual average to be exceeded, then the system is immediately out of compliance.

(4) Any result below the method detection limit shall be considered to be zero for the purpose of calculating compliance.

(5) The executive director may exclude the results of obvious sampling errors from the compliance calculations.

(g) Public notice for IOCs. A public water system that violates the requirements of this section must notify the executive director and the system's customers.

(1) A public water system that violates the MCL for nitrate, nitrite, or the sum of nitrate and nitrite shall notify the executive director by the next business day and the water system customers of this acute violation in accordance with the requirements of §290.122(a) of this title (relating to Public Notification).

(2) A public water system that violates the MCL for nitrate, nitrite, or the sum of nitrate and nitrite that is unable to comply with the 24-hour confirmation sampling requirement must immediately notify the consumers served by the public water system in accordance with §290.122(a) of this title.

(3) A public water system that fails to meet the MCL for any of the regulated IOCs except nitrate and nitrite (i.e., antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium) shall notify the executive director by the end of the next business day and the water system customers in accordance with the requirements of §290.122(b) of this title.

(4) A public water system which fails to conduct the monitoring required by this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

(5) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the executive director may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.

(h) Best Available Technology (BAT) for IOCs. BAT for treatment of violations of MCLs in subsection (b) of this section are listed in 40 CFR §141.62.

§290.107. Organic Contaminants.

(a) Applicability. All community and nontransient, non-community water systems shall comply with the requirements of this section regarding organic contaminants. For purposes of this section, systems using groundwater under the direct influence of surface water shall meet the organic sampling requirements given for surface water systems.

(b) Maximum contaminant levels (MCLs) for organic contaminants. The concentration of synthetic and volatile organic chemicals shall not exceed the MCLs specified in this section.

(1) The following are MCLs for synthetic organic contaminants (SOCs).

Figure: 30 TAC §290.107(b)(1)

Contaminant	MCL (mg/l)
Alachlor	0.002
Atrazine	0.003
Benzopyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2
Dibromochloropropane	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexyl)phthalate	0.006
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide	0.00005

Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCB)	0.0005
Simazine	0.004
Toxaphene	0.003
2,3,7,8-TCDD (Dioxin)	3×10^{-8}
2,4,5-TP	0.05
2,4-D	0.07

(2) The following are MCLs for volatile organic contaminants (VOCs).

Figure: 30 TAC §290.107(b)(2)

Contaminant	MCL (mg/L)
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
1,2,4-Trichlorobenzene	0.07

Benzene	0.005
Carbon tetrachloride	0.005
cis-1,2-Dichloroethylene	0.07
Dichloromethane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10

(3) Each public water system must certify annually to the executive director (using third party or manufacturer's certification) that when acrylamide or epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed 0.05% dosed at 1.0 mg/L (or equivalent) for acrylamide and 0.01% dosed at 20 mg/L (or equivalent) for epichlorohydrin.

(c) Monitoring requirements for organic contaminants. Public water systems shall monitor for organic contaminants at the locations and frequency in paragraphs (1) and (2) of this subsection. All monitoring conducted under the requirements of this section must be conducted at sites designated in the public water system's monitoring plan. All samples must be taken during periods of normal operation when water representative of all sources used by the system is being used.

(1) SOC monitoring requirements. Monitoring of the SOC contaminants shall be conducted at the frequency and locations given in this paragraph.

(A) SOC monitoring locations. Monitoring of the SOC contaminants shall be conducted at the following locations.

(i) Systems treating only groundwater shall sample for SOCs at every entry point to the distribution system which is representative of each well after treatment. Subsequent samples must be taken at the same entry point to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(ii) Systems using surface water and systems treating groundwater under the direct influence of surface water shall sample for SOCs at points in the distribution system that are representative of each source or at each entry point to the distribution system. Subsequent samples must be taken at the same entry points to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(B) SOC monitoring frequency. Monitoring of the SOC contaminants shall be conducted at the following frequency.

(i) Community and nontransient noncommunity water systems shall take four consecutive quarterly samples for each SOC contaminant listed in subsection (b)(1) of this section during each compliance period beginning with the initial compliance period.

(ii) Community and nontransient noncommunity water systems serving more than 3,300 persons that do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of two consecutive quarterly samples in one year during each repeat compliance period.

(iii) Community and nontransient noncommunity water systems serving 3,300 persons or fewer that do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

(iv) Each public water system shall monitor at the time designated by the executive director within each compliance period.

(C) Increased SOC monitoring. The executive director may change the monitoring frequency for SOCs.

(i) Systems which violate the SOC MCL's of subsection (b)(1) of this section as determined by subsection (f) of this section must monitor quarterly. After a minimum of four quarterly samples shows the system is in compliance and the executive director determines the system is reliably and consistently below the MCL, as determined by the methods specified in subsection (f) of this section, the executive director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.

(ii) The executive director may change the monitoring frequency if an organic SOC contaminant is detected in any sample.

(I) If an organic SOC contaminant is detected in any sample, the system must monitor quarterly at each entry point to the distribution system at which a detection occurs.

(II) After a groundwater system collects a minimum of two consecutive quarterly samples, the executive director may decrease the quarterly monitoring requirement specified in subclause (I) of this clause, if the system is reliably and consistently below the MCL.

(III) After a surface water system or system treating groundwater under the direct influence of surface water collects a minimum of four consecutive quarterly samples, the executive director may decrease the quarterly monitoring requirement specified in subclause (I) of this clause, if the system is reliably and consistently below the MCL.

(IV) After the executive director determines that a system is reliably and consistently below the MCL, the executive director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.

(V) Systems which have three consecutive annual samples with no detection of a contaminant may be granted a waiver at the discretion of the executive director. The executive director will consider the waiver for each compliance period.

(VI) If monitoring results in detection of one or more of certain related contaminants (i.e., heptachlor, and heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.

(iii) The executive director may increase the required SOC monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source, etc.).

(iv) The executive director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the executive director, the result must be averaged with the first sampling result and the average used for the compliance determination as specified by subsection (f) of this section. The executive director has discretion to delete results of obvious sampling errors from this calculation.

(D) Waivers for SOC monitoring. The executive director may grant a waiver to reduce the SOC monitoring frequency from the monitoring frequency requirements of subparagraph (B) of this paragraph, based on previous use of the contaminant within the watershed or zone of influence of the water source. Examples of use of a contaminant include transport, storage, or disposal. If a determination by the executive director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If the executive director cannot determine whether the contaminant has been used in the watershed or if the contaminant has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(i) previous analytical results;

(ii) the proximity of the system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at drinking water sources, manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources include the use of pesticides to control insects, weeds, or pests on agricultural areas, forest lands, home and garden property, or other land application uses;

(iii) the environmental persistence and transport of the pesticide herbicide or contaminant;

(iv) how well the water source is protected against contamination due to such factors as depth of the well, type of soil, and the integrity of well construction. Surface water systems must consider watershed vulnerability and protection;

(v) elevated nitrate levels at the water supply source; and

(vi) use of polychlorinated byphenyls (s) in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

(E) Compositing for SOC monitoring. The executive director may reduce the total number of samples required from a system for analysis by allowing the use of compositing. Composite samples from a maximum of five entry points to the distribution system are allowed. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(i) If, in the composite sample, a detection of one or more SOC contaminants listed in subsection (b)(1) of this section occurs, then a follow-up sample must be taken from each entry point to the distribution system included in the composite and analyzed within 14 days of collection.

(ii) If duplicates of the original SOC sample taken from each entry point to the distribution system used in the composite are available, the executive director may use these duplicates instead of resampling. The duplicate must be analyzed within 14 days of collection and the results reported to the executive director.

(iii) Compositing may only be permitted at entry points to the distribution system within a single system.

(F) Initial SOC monitoring. If monitoring data are generally consistent with the requirements of this subsection, then the executive director may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period.

(2) VOC monitoring requirements. Monitoring of the VOC contaminants shall be conducted at the frequency and locations given in this paragraph.

(A) VOC monitoring locations. Monitoring of the VOC contaminants shall be conducted at the following locations.

(i) Systems that use only groundwater shall sample for VOCs at every entry point to the distribution system which is representative of each well after treatment. Subsequent samples must be taken at the same entry point to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(ii) Surface water systems, systems using groundwater under the direct influence of surface water, and systems blending groundwater and surface water shall sample for VOCs at points in the distribution system that are representative of each source or at each entry point to the distribution system. Subsequent samples must be taken at the same entry points to the distribution system unless a change in conditions makes another entry point to the distribution system more representative of each source or treatment plant. The executive director must approve any change in sampling location.

(B) VOC monitoring frequency. Monitoring of the VOC contaminants shall be conducted at the following frequency.

(i) Community and nontransient noncommunity water systems shall take four consecutive quarterly samples for each VOC contaminant listed in subsection (b)(2) of this section during each compliance period, beginning with the initial compliance period.

(ii) If the initial monitoring for VOC contaminants has been completed by December 31, 1992, and the system did not detect any VOC contaminant listed in subsection (b)(2) of this section, the system shall take one sample annually beginning with the initial compliance period.

(iii) After a minimum of three years of annual sampling, the executive director may allow groundwater systems with no previous detection of any VOC contaminant listed in subsection (b)(2) of this section to take one sample during each compliance period.

(iv) Each community and nontransient groundwater system which does not detect a VOC contaminant listed in subsection (b)(2) of this section may be granted a waiver from the annual or triannual requirements of subsection (c)(2)(B)(ii) and (iii) of this section after completing the initial monitoring. For the purposes of this section, detection is defined as an analytical result of 0.0005 mg/L or greater. A waiver shall be effective for no more than six years (two compliance periods).

(v) Each public water system shall monitor at the time designated by the executive director within each compliance period.

(C) Increased VOC monitoring. The executive director may change the monitoring frequency for VOCs.

(i) Systems which violate the VOC MCLs of subsection (b)(2) of this section, as determined by subsection (f) of this section, must monitor quarterly. After a minimum of

four consecutive quarterly samples that show the system is in compliance as specified in subsection (f) of this section and after the executive director determines that the system is reliably and consistently below the MCL, the executive director may allow the system to monitor annually during the quarter that previously yielded the highest analytical result.

(ii) The executive director may require a confirmation sample for positive or negative results. If a confirmation sample is required by the executive director, the result must be averaged with the first sampling result and the average is used for the compliance determination as specified by subsection (f) of this section. The executive director has discretion to delete results of obvious sampling errors from this calculation.

(iii) If a VOC contaminant listed in subsection (b)(2) of this section is detected at a level exceeding 0.0005 mg/L in any sample, then:

(I) the system must monitor quarterly at each entry point to the distribution system which resulted in a detection;

(II) the executive director may decrease the quarterly monitoring requirement specified in subsection (c)(2)(C)(iii)(I) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case shall the executive director make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples;

(III) if the executive director determines that the system is reliably and consistently below the MCL, the executive director may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter which previously yielded the highest analytical result;

(IV) systems which have three consecutive annual samples with no detection of a contaminant may be granted a waiver as specified in subparagraph (D) of this paragraph; and

(V) groundwater systems which have detected one or more of the following two-carbon organic compounds: trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each entry point to the distribution system at which one or more of the two-carbon organic compounds was detected. If the result of the first analysis does not detect vinyl chloride, the executive director

may reduce the quarterly monitoring frequency for vinyl chloride to one sample during each compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the executive director.

(iv) The executive director may increase the required VOC monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source, etc.).

(D) Waivers for VOC monitoring. The executive director may grant a waiver after evaluating the previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the water sources. If a determination by the executive director reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(i) previous analytical results;

(ii) the proximity of the system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at drinking water sources manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities;

(iii) the environmental persistence and transport of the contaminants;

(iv) the number of persons served by the public water system and the proximity of a smaller system to a larger system;

(v) how well the water source is protected against contamination (e.g., is it a surface or groundwater system). Groundwater systems must consider factors such as depth of the well, the type of soil, and well construction. Surface water systems must consider watershed protection;

(vi) as a condition of the waiver a groundwater system must take one sample at each entry point to the distribution system during the time the waiver is effective (i.e., one sample during two compliance periods or six years) and update its vulnerability assessment considering the factors listed in this paragraph. Based on this updated vulnerability assessment the executive director must reconfirm that the system is not vulnerable. If the executive director does not make this

reconfirmation within three years of the initial determination, then the waiver is invalid and the system is required to sample annually; and

(vii) community and nontransient surface water systems which do not detect a VOC contaminant listed in subsection (b)(2) of this section may be considered by the executive director for a waiver from the annual sampling requirements of subparagraph (B)(ii) of this paragraph after completing the initial monitoring. Systems meeting this criteria must be determined by the executive director to be non-vulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the executive director (if any).

(E) Compositing for VOC monitoring. The executive director may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of entry points to the distribution system are allowed. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(i) If the VOC concentration in the composite sample is 0.0005 mg/L or greater for any contaminant listed in subsection (b)(2) of this section, then a follow-up sample must be taken and analyzed within 14 days from each entry point to the distribution system included in the composite.

(ii) If duplicates of the original sample taken from each entry point to the distribution system used in the composite are available, the system may use these instead of resampling. The duplicate must be analyzed within 14 days of collection.

(iii) Compositing may only be permitted by the executive director at entry points to the distribution system within a single system.

(iv) Procedures for compositing VOC samples are as stated in 40 Code of Federal Regulations (CFR) §141.24 (f)(14)(iv).

(d) Analytical requirements for organic contaminants. Analytical procedures shall be performed in accordance with §290.119 of this title (relating to Analytical Procedures). Testing for organic contaminants shall be performed at a laboratory certified by the executive director.

(e) Reporting requirements for organic contaminants. Upon the request of the executive director, the owner or operator of a public water system must provide the executive director with a copy of the results of any test, measurement, or analysis required by this subsection. The copies must

be submitted within ten days of the request or within ten days of their receipt by the public water system, whichever is later. The copies must be mailed to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(f) Compliance determination for organic contaminants. Compliance with the MCLs of subsection (b)(1) and (2) of this section shall be determined based on the analytical results obtained at each entry point to the distribution system.

(1) For systems which are sampling more than once a year, compliance is determined by a running annual average of all samples taken at each entry point to the distribution system. If the annual average at any entry point to the distribution system is greater than the MCL, the system commits an MCL violation. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be considered to be zero for purposes of calculating the annual average.

(2) For systems which are sampling once a year or less, compliance is based on a single sample. If the level of a contaminant at any entry point to the distribution system is greater than the MCL, the system commits an MCL violation. If a confirmation sample is required the executive director, the determination of compliance will be based on the average of the two samples.

(3) The executive director has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

(g) Public notification requirements for organic contaminants. A public water system that violates the requirements of this section must notify the executive director and the system's customers. If a public water system has a distribution system separate from other parts of the distribution system with no interconnections, the executive director may allow the system to give public notice to only that portion of the system which is out of compliance.

(1) A system that violates an MCL given in subsection (b) of this section, shall report to the executive director and notify the public as provided under §290.122(b) of this title.

(2) A public water system which fails to conduct the monitoring required by this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title (relating to Public Notification).

(h) Best available technology for organic contaminants. Best available technology for treatment of violations of MCLs in subsection (b) of this section are listed in 40 CFR §141.61. Copies are available for review in the Water Supply Division, Texas Commission on Environmental Quality, P. O. Box 13087, Austin, Texas 78711-3087.

§290.111. Turbidity.

(a) Applicability. A public water system that treats surface water or groundwater under the direct influence of surface water must comply with the requirements of this section. A public water system that uses groundwater under the direct influence of surface water must comply with the requirements of this section by a date specified by the executive director. This compliance date shall not exceed 18 months from the date that the executive director first notifies the system that the groundwater source is under the direct influence of surface water.

(b) Treatment technique requirements and performance criteria for turbidity. The filtration techniques used by public water systems treating surface water or groundwater under the direct influence of surface water must ensure the system meets the following treatment technique requirements and performance criteria.

(1) Treatment technique requirements. The treatment process must achieve at least a 2-log removal of *Cryptosporidium* oocysts, a 3-log removal or inactivation of *Giardia lamblia* cysts, and a 4-log removal or inactivation of viruses before the water is supplied to any consumer. The executive director may require additional levels of treatment in cases of poor source water quality.

(A) Treatment plants using conventional media filtration must achieve the following turbidity levels.

(i) The turbidity level of the combined filter effluent must never exceed 1.0 Nephelometric Turbidity Unit (NTU).

(ii) The turbidity level of the combined filter effluent must be 0.3 NTU or less in at least 95% of the samples tested each month.

(B) Membrane facilities must meet site-specific performance standards approved by the executive director.

(C) The executive director may extend the compliance date for this paragraph and subparagraph (A) of this paragraph if the system serves fewer than 10,000 people and uses conventional media filters.

(i) The compliance date may not be extended beyond January 1, 2004.

(ii) During any extension that is granted, the system must achieve at least a 3-log removal or inactivation of *Giardia lamblia* cysts and a 4-log removal or inactivation of viruses before the water is supplied to any consumer and must meet the following turbidity requirements.

(I) The turbidity level of the combined filter effluent must never exceed 5.0 NTU.

(II) The turbidity level of the combined filter effluent must be 0.5 NTU or less in at least 95% of the samples tested each month. The executive director may allow a turbidity level of up to 1.0 NTU in at least 95% of the samples if the system can achieve the required 3-log removal or inactivation of *Giardia lamblia* cysts and 4-log removal or inactivation of viruses at that higher turbidity level.

(2) Performance criteria for individual filters. The filtration techniques must ensure the public water system meets the following performance criteria.

(A) At a public water system that serves 10,000 people or more, the turbidity from each individual filter should not exceed 0.5 NTU at four hours after the individual filter is returned to service after backwash or shut down.

(B) The turbidity from each individual filter should never exceed 1.0 NTU at a public water system that serves 10,000 people or more.

(C) Beginning January 1, 2005, the turbidity from each individual filter should never exceed 1.0 NTU at a public water system that serves fewer than 10,000 people.

(c) Monitoring requirements for turbidity. Public water systems with surface water sources or groundwater sources that are under the direct influence of surface water shall monitor the performance of their filtration facilities.

(1) Public water systems that serve fewer than 500 people must monitor the turbidity of the combined filter effluent.

(A) Beginning January 1, 2005, public water systems that serve fewer than 500 people and continuously monitor the turbidity level of each individual filter must measure and record the turbidity level of the combined filter effluent at least once each day that the plant is in operation.

(B) Beginning January 1, 2005, public water systems that serve fewer than 500 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) of this title shall continuously monitor the turbidity of the combined filter effluent and record the turbidity value every 15 minutes.

(C) Through December 31, 2004, public water systems that serve fewer than 500 people must measure and record the turbidity level of the combined filter effluent at least once each day that the plant is in operation.

(2) Public water systems that serve 500 people or more must monitor the turbidity of the combined filter effluent.

(A) Beginning January 1, 2005, public water systems that serve at least 500 people and continuously monitor the turbidity level of each individual filter must measure and record the turbidity level of the combined filter effluent at least every four hours that the system serves water to the public.

(B) Beginning January 1, 2005, public water systems that serve at least 500 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) of this title shall continuously monitor the turbidity of the combined filter effluent and record the turbidity value every 15 minutes.

(C) Through December 31, 2004, public water systems that serve at least 500 people must measure and record the turbidity level of the combined filter effluent at least every four hours that the water system serves water to the public.

(3) Public water systems that serve 10,000 people or more must continuously monitor the filtered water turbidity at the effluent of each individual filter and record the turbidity value every 15 minutes.

(4) Public water systems that serve fewer than 10,000 people must measure and record the filtered water turbidity level at the effluent of each individual filter.

(A) Beginning January 1, 2005, public water systems that serve fewer than 10,000 people and have individual filters that are equipped with on-line turbidimeters and recorders must continuously monitor the filtered water turbidity at the effluent of each individual filter and record the turbidity value every 15 minutes.

(B) Beginning January 1, 2005, public water systems that serve fewer than 10,000 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) of this title shall:

(i) continuously monitor the turbidity of the combined filter effluent and record the turbidity value every 15 minutes; and

(ii) measure and record the turbidity level at the effluent of each filter at least once each day the plant is in operation.

(C) Through December 31, 2004, public water systems that serve at least 500 people must measure and record the turbidity level of the combined filter effluent at least every four hours that the water system serves water to the public.

(5) Special monitoring requirements for systems that serve 10,000 people or more. Public water systems which serve 10,000 people or more and fail to meet the turbidity criteria specified in subsection (b)(2) of this section must conduct additional monitoring. The executive director can waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(A) Each time a filter exceeds either of the filtered water turbidity levels specified in subsection (b)(2)(A) or (B) of this section for two consecutive 15-minute readings, the public water system must either identify the cause of the exceedance or produce a filter profile on the filter within seven days of the exceedance.

(B) Each time a filter exceeds the filtered turbidity level specified in subsection (b)(2)(B) of this section for two consecutive 15-minute readings on three separate occasions during any consecutive three month period, the public water system must conduct a filter assessment on the filter within 14 days of the third exceedance.

(C) Each time the filtered water turbidity level for a specific filter or any combination of individual filters exceeds 2.0 NTU on two consecutive 15-minute readings during two consecutive months, the public water system must participate in a third-party comprehensive performance evaluation within 90 days of the first exceedance in the second month.

(6) Special monitoring requirements for systems that serve fewer than 10,000 people and have on-line turbidimeters at the effluent of individual filters. Beginning January 1, 2005, public water systems which serve fewer than 10,000 people and fail to meet the turbidity criteria specified in subsection (b)(2) of this section must conduct additional monitoring. The executive director can waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(A) Each time a filter exceeds 1.0 NTU for two consecutive 15-minute readings, the public water system must either identify the cause of the exceedance or complete a filter profile on the filter within seven days of the exceedance.

(B) Each time a filter exceeds 1.0 NTU for two consecutive 15-minute readings on three separate occasions during any consecutive three-month period, the public water system must conduct a filter assessment on the filter within 14 days of the third exceedance.

(C) Each time the filtered water turbidity level for a specific filter or any combination of individual filters exceeds 2.0 NTU on two consecutive 15-minute readings during two consecutive months, the public water system must participate in a third-party comprehensive performance evaluation within 120 days of the first exceedance in the second month.

(7) Special monitoring requirements for systems that serve fewer than 10,000 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity. Beginning January 1, 2005, public water systems subject to the requirements of this paragraph that fail to meet the turbidity criteria in subsection (b)(1)(A) of this section must conduct additional monitoring. The executive director may waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(A) Each time the combined filter effluent turbidity level exceeds 1.0 NTU for two consecutive 15-minute readings, the public water system must either identify the cause of the exceedance or complete a filter profile on the combined filter effluent within seven days of the exceedance.

(B) Each time the combined filter effluent turbidity level exceeds 1.0 NTU for two consecutive 15-minute readings on three separate occasions during any consecutive three-month period, the public water system must conduct a filter assessment on each filter within 14 days of the third exceedance.

(C) Each time the combined filter effluent turbidity level exceeds 2.0 NTU on two consecutive 15-minute readings during two consecutive months, the public water system must participate in a third-party comprehensive performance evaluation within 120 days of the first exceedance in the second month.

(d) Analytical requirements for turbidity. All monitoring required by this section must be conducted by a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title. Equipment used for compliance measurements must be maintained and calibrated in accordance with §290.46(s) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(1) Turbidity must be measured with turbidimeters that use EPA Method 180.1 and Standard Method 2130B or Great Lakes Instruments Method 2.

(2) At systems that are required to monitor the performance of individual filters with on-line turbidimeters and recorders, monitoring of combined filter effluent may be conducted by either continuously monitoring turbidity levels with an on-line turbidimeter or measuring the turbidity level in grab samples with a benchtop turbidimeter.

(3) Beginning January 1, 2005, systems that serve fewer than 10,000 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title shall monitor the turbidity of the combined filter effluent with a continuous, on-line turbidimeter and a device that records the turbidity level reading at least once every 15 minutes.

(A) Continuous combined filter turbidity may be recorded electronically by a supervisory control and data acquisition system or on a strip chart. The recorder must be designed so that the operator can accurately determine the turbidity level readings at 15-minute intervals;

(B) If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than 14 working days following the failure of the equipment.

(4) Systems serving 10,000 or more people must monitor the turbidity of the water produced by individual filters with a continuous, on-line turbidimeter and a device that records the turbidity reading at least once every 15 minutes.

(A) Continuous individual filter turbidity may be recorded electronically by a supervisory control and data acquisition (SCADA) system or on a strip chart. The recorder must be designed so that the operator can accurately determine the turbidity readings at 15-minute intervals.

(B) If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

(5) Beginning January 1, 2005, systems serving fewer than 10,000 people must monitor the turbidity of the water produced by individual filters with a continuous, on-line turbidimeter and a device that records the turbidity reading at least once every 15 minutes, except for systems with only two filters that monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title.

(A) Individual filter turbidity may be recorded electronically by a SCADA system or on a strip chart. The recorder must be designed so that the operator can accurately determine the turbidity readings at 15-minute intervals.

(B) If there is a failure in the continuous turbidity monitoring equipment, the system must conduct grab sampling every four hours in lieu of continuous monitoring, but for no more than 14 working days following the failure of the equipment.

(6) Beginning January 1, 2005, systems serving fewer than 10,000 people and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must monitor the performance of individual filters using a bench-top turbidimeter.

(7) Through December 31, 2004, systems serving fewer than 10,000 people must monitor the turbidity of the water produced by individual filters by continuously monitoring turbidity levels with an on-line turbidimeter or measuring the turbidity level in grab samples with a benchtop turbidimeter.

(e) Reporting requirements for turbidity. Public water systems shall properly complete and submit periodic reports to demonstrate compliance with this section.

(1) A public water system that has a turbidity level exceeding 1.0 NTU in the combined filter effluent shall notify the executive director by the next business day.

(2) Public water systems which use surface water sources or groundwater sources under the direct influence of surface water, must submit a Monthly Operating Report for Surface Water Treatment Plants (commission Form 0102C) each month.

(3) Beginning January 1, 2005, public water systems that use surface water sources or groundwater sources under the direct influence of surface water, serve fewer than 10,000 people, and monitor combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must submit a Monthly Operating Report plus Addendum for Surface Water Treatment Plants (commission Form 0102D) each month.

(4) Public water systems that must complete the additional monitoring required by subsection (c)(5)(A), (6)(A), or (7)(B) of this section must submit a Filter Profile Report for Individual Filters (commission Form 10276) with their Monthly Operating Report for Surface Water Treatment Plants.

(5) Public water systems that must complete the additional monitoring required by subsection (c)(5)(B), (6)(B), or (7)(B) of this section must submit a Filter Assessment Report for Individual Filters (commission Form 10277) with their Monthly Operating Report for Surface Water Treatment Plants.

(6) Public water systems that must complete the additional monitoring required by subsection (c)(5)(C), (6)(C), or (7)(C) of this section must submit a Comprehensive Performance Evaluation Request Form (commission Form 10278) with their Monthly Operating Report for Surface Water Treatment Plants.

(7) Periodic reports required by this section must be submitted to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(f) Compliance determination. Compliance with the requirements of this section shall be determined using the following criteria.

(1) A public water system that fails to conduct the combined filter effluent or individual filter monitoring tests required by this section commits a monitoring violation.

(2) A public water system that fails to report the results of the combined filter effluent or individual filter monitoring tests required by this section commits a reporting violation.

(3) A public water system that fails to submit the reports required by subsection (e)(4) - (6) of this section commits a reporting violation.

(4) A public water system that has a turbidity level exceeding 5.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(5) A public water system that violates the requirements of subsection (b)(1) of this section commits a treatment technique violation.

(6) A system that fails to correct the performance-limiting factors identified in a CPE conducted under the requirements of subsection (c)(5)(C), (6)(C), or (7)(C) of this section commits a violation.

(g) Public notification for turbidity. The owner or operator of a public water system that violates the requirements of this section must notify the executive director and the people served by the system.

(1) A public water system that has a turbidity level exceeding 5.0 NTU in the combined filter effluent shall notify the executive director and the water system customers of the acute violation by the next business day in accordance with the requirements of §290.46(q) of this title and §290.122(a) of this title (relating to Public Notification).

(2) A public water system that fails to meet the treatment technique requirements of subsection (b)(1) of this section shall notify the executive director by the end of the next business day and the water system customers in accordance with the requirements of §290.122(b) of this title.

(3) A public water system which fails to conduct the monitoring required by this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

§290.117. Regulation of Lead and Copper.

(a) General requirements.

(1) Applicability -- The requirements of this section apply to community and nontransient noncommunity water systems. New water systems will be required to meet the requirements of this section when notified by the executive director.

(2) Compliance -- The water system is not in compliance if it fails to meet any reporting, monitoring, public education, or other requirement in this section relating to the regulation of lead and/or copper.

(A) All applicable water systems shall determine compliance based on monitoring and reporting requirements for lead and copper established in this section or contained in 40 Code of Federal Regulations (CFR) §§141.85, 141.86, 141.87, 141.88, or 141.90.

(B) Failure to conduct or report any requirements of this section shall constitute a monitoring, reporting or treatment technique violation and shall be a violation of these standards.

(3) Action levels for lead and copper are 0.015 mg/L and 1.3 mg/L, respectively. The action levels are exceeded if the concentration of lead and/or copper in more than 10% of the first draw tap water samples collected during any monitoring period is greater than 0.015 mg/L for lead or 1.3 mg/L for copper. If collecting only five samples, the average of the two highest samples shall be used to determine compliance with the action level.

(b) Sample Site Selection and Materials Survey.

(1) By the applicable date for commencement of tap sample monitoring, each system shall complete a materials survey of its distribution system to identify a pool of tap sampling sites that meet the requirements of this section. All first draw tap samples are to be collected from this pool of sites. Sampling sites may not include faucets that have point-of-use or entry point treatment devices. After completing sample site selection, the system will submit the Lead and Copper Sample Site Selection form to the executive director for approval.

(2) Information for conducting a materials survey and selecting sampling sites are provided to each system by the executive director before initial tap sampling is initiated. Procedural requirements set forth in 40 CFR §141.86 will be followed for sampling site selection activities except that reporting of tap sampling sites to the executive director shall be conducted using the materials survey and sampling site selection forms supplied by the executive director. Supplemental explanatory information from the system will be considered as part of the sampling site selection document.

Systems must make a good faith effort to conduct a thorough and complete materials survey and submit a valid sample site selection form before initial tap sampling may be conducted.

(3) A system that does not have enough Tier 1, 2, or 3 sites, as set forth in 40 CFR §141.86, must use other representative sites to complete its sampling pool. A representative site is one that uses plumbing materials commonly found at other sites to which the system provides water.

(c) Tap sampling.

(1) A first draw tap sample means a one liter or one quart sample of tap water collected from a cold water, frequently used interior tap, after the water has been standing in the plumbing for at least six hours and is collected without first flushing the tap. The kitchen cold water faucet is the preferred sampling tap at residential sites. It is recommended that the water not be allowed to stand in the plumbing for more than 18 hours prior to a sample collection.

(2) A sample collection may be conducted by either water system personnel or the residents. If the resident is allowed to collect samples for lead and copper monitoring, the water system must provide written instructions for sample collection procedures.

(3) A water system shall collect each tap sample from the same sampling site from which it collected a previous sample. If this is not possible, the water system shall provide a written explanation to the executive director. The water system must select an alternate sampling site from the system's sampling pool which meets similar criteria and is within reasonable proximity to the original sampling site.

(4) Monitoring approved by the executive director and conducted by systems in addition to the minimum requirements of this section shall be considered by the executive director in making any determination of compliance.

(5) The system shall collect at least two sets of initial tap samples during two consecutive six-month monitoring periods, unless granted a monitoring waiver.

(6) The minimum number of sample sites required for initial monitoring are listed in Table Number 1, as well as the number of sites required of each system conducting reduced monitoring.

Figure: 30 TAC §290.117(c)(6)

Table No. 1

SYSTEM SIZE (No. of People Served)	INITIAL MONITORING SITES	REDUCED MONITORING SITES
> 100,000	100	50
10,001 - 100,000	60	30
3,301 - 10,000	40	20
501 - 3,300	20	10
101 - 500	10	5
< 101	5	5

(7) Initial tap sampling shall be conducted only after the executive director has determined that a system has successfully completed a materials survey and has obtained approval of its sample site selection form which is required to be submitted by subsection (b)(2) of this section.

(8) A new community or nontransient noncommunity water system begins the first six-month initial monitoring period in the year following a new water system's assignment of a Public Water System identification number.

Figure: 30 TAC §290.117(c)(8)

Table No. 2

SYSTEM SIZE (No. of People Served)	FIRST SIX-MONTH MONITORING PERIODS BEGIN
> 50,000	January 1, 1992
3,301 - 50,000	July 1, 1992
< 3,301	July 1, 1993

(d) Computing 90th Percentile Lead and Copper Levels. Determination of 90th percentile levels shall be obtained by ranking the results of lead and copper samples collected during a monitoring

period in ascending order (lowest concentration equal sample Number 1; highest concentration equal sample Numbers 10, 20, 30, 40, 50, etc), up to the total number of samples collected. The number of samples collected during the monitoring period shall be multiplied by 0.9 and the concentration of lead and copper in the numbered sample yielded by this calculation is the 90th percentile sample contaminant level. The system is in compliance with the lead and/or copper action levels if the 90th percentile sample contaminant level is equal to or less than the action levels specified in subsection (a)(3) of this section. For water systems serving fewer than 101 people, the 90th percentile level is computed by taking the average of the highest two sample results.

(e) Reduced tap monitoring.

(1) The executive director shall notify each water system that it is eligible for reduced monitoring of first draw tap samples if it is in compliance with the 90th percentile lead and copper action levels after completion of 12 consecutive months of initial tap sampling.

(2) Reduced monitoring shall be conducted annually during June, July, August, or September by collecting one set of samples from the appropriate number of reduced monitoring sites, after notification.

(3) The number of reduced monitoring sites required for each system are found in Table Number 1 located in subsection (c)(6) of this section, if not otherwise specified by the executive director.

(4) Any system that the 90th percentile lead level is greater than 0.005 mg/L and/or the 90th percentile copper level is greater than 0.65 mg/L during either of the two initial six-month monitoring periods must conduct two annual rounds of reduced monitoring the two calendar years following the completion of initial tap sampling.

(5) Any system that demonstrates during the initial 12-month monitoring periods that the 90th percentile lead level is less than or equal to 0.005 mg/L and the 90th percentile copper level is less than or equal to 0.65 mg/L shall have the required frequency of sampling reduced to once every three years and at the reduced number of sampling sites shown in subsection (c)(6) of this title, Table Number 1.

(f) Invalidation of lead or copper tap samples.

(1) A sample invalidated under this subsection does not count toward determining lead or copper 90th percentile levels or toward meeting the minimum number of tap sample requirements.

(2) The executive director may invalidate a lead or copper tap sample if one of the following conditions is met:

(A) the laboratory establishes that an analytical error has occurred or that an analytical method requirement has been violated;

(B) the executive director determines that the sample was taken from an inappropriate site;

(C) the sample was damaged in transit; or

(D) the executive director determines that the sample was subject to tampering.

(3) The water system must provide written documentation to the executive director for samples the water system believes should be invalidated.

(4) The water system must collect replacement samples for any samples invalidated under this section. Any such replacement samples must be collected as soon as possible, but no later than ten days after receiving notification of sample invalidation from the executive director.

(g) Monitoring waivers for small water systems.

(1) Small water system monitoring waivers approved by the executive director prior to January 1, 2002, shall remain in effect subject to the provisions of paragraph (2)(E) of this subsection.

(2) Any water system serving a population of less than 3,301 people that meets the criteria of subparagraphs (A) and (B) of this paragraph may apply to the executive director to reduce the frequency of monitoring for lead and copper to once every nine years.

(A) The water system must demonstrate on the lead/copper sampling site selection form that its distribution system and the service lines and all drinking water supply plumbing, including plumbing conveying drinking water within all residences and buildings connected to the system, are free of lead-containing materials and/or copper-containing materials to demonstrate the risk from lead and/or copper exposure is negligible throughout the water system.

(B) The water system must have completed at least one six-month series of initial tap water monitoring for lead and copper and have demonstrated that its 90th percentile lead level does not exceed 0.005 mg/L and the 90th percentile copper level does not exceed 0.65 mg/L.

(C) The executive director shall provide the water system with a waiver application setting forth the basis and conditions of the waiver after meeting the requirements of subparagraphs (A) and (B) of this paragraph.

(D) The executive director shall not issue any “partial waivers” for lead and copper monitoring.

(E) If a water system with a waiver adds a new source of water, changes any water treatment or no longer meets the requirements of subparagraph (A) of this paragraph, the water system must notify the executive director in writing within 60 days of the change. The executive director has the authority to add or modify the monitoring waiver conditions, if modifications are necessary to address changes that have occurred since approving the original waiver application.

(h) Monitoring requirements for water quality parameters (WQPs) and source water.

(1) Water quality parameters.

(A) All large water systems (serving populations greater than 50,000) are required to conduct monitoring beginning with the initial period of first draw tap samples and continuing until corrosion control is optimized.

(B) All medium and small water systems (serving populations of 3,301 to 50,000 and less than 3,301, respectively) that exceed the lead or copper action level shall conduct WQP monitoring beginning in the first calendar quarter following the calendar quarter in which the commission officially notified the water system of its exceedance status and shall continue monitoring and reporting as long as the water system exceeds the lead or copper action level.

(C) WQP monitoring shall be conducted quarterly for the following parameters: pH; alkalinity; calcium; conductivity; water temperature; orthophosphate (when an inhibitor containing a phosphate compound is used); and silica (when an inhibitor containing a silicate compound is used). Temperature and pH must be measured at the sampling site at the same time of sample collection.

(D) Large water systems must conduct WQP monitoring at all entry points and at the number of distribution sites specified in subsection (c)(8) of this title, Table Number 2. Small and medium water systems that are required to conduct WQP monitoring must monitor at all entry points and at the required number of distribution sites as shown in subsection (c)(8) of this section, Table Number 2.

Figure: 30 TAC §290.117(h)(1)(D)

Table No. 2

SYSTEM SIZE (# of people served)	INITIAL WQP DISTRIBUTION SITES	REDUCED WQP DISTRIBUTION SITES	NO. OF SITES FOR WQP MONITORING
> 100,000	25	10	25
10,001 - 100,000	10	7	10
3,301 - 10,000	3	3	3
501 - 3,300	2	2	2
101 - 500	1	1	1
< 101	1	1	1

(E) WQP distribution sites (exclusive of entry points) may be sites normally used for bacteriological monitoring and samples need not be collected inside the home. These sites shall be representative of water quality throughout the distribution system.

(F) After corrosion control treatment is installed, water quality parameters shall be measured at the initial number of distribution sites as indicated in subsection (c)(8) of this section, Table Number 2 quarterly and also at entry points biweekly (every two weeks).

(G) WQP monitoring after corrosion control treatment is installed shall be conducted for the following parameters: pH; alkalinity; orthophosphate (when an inhibitor containing a phosphate compound is used); silica (when an inhibitor containing a silicate compound is used); and calcium (when calcium carbonate stabilization is used as part of the treatment). These parameters must be measured at all entry points and initial distribution sites.

(H) Any water system that maintains the range of values for WQP's reflecting optimum corrosion control as approved by the executive director for one-year may collect quarterly distribution samples at the reduced number of distribution sites indicated in subsection (c)(8) of this section, Table Number 2. WQP samples shall continue to be measured at entry points on a biweekly basis and results submitted to the executive director.

(I) Any water system that reflects optimal corrosion control treatment during three consecutive years may reduce the frequency at which it collects distribution samples for applicable WQPs to annually.

(J) Any water system that reflects optimal corrosion control treatment during three consecutive years of annual WQP distribution monitoring may reduce the frequency at which it collects the number of WQP distribution samples for applicable WQPs to once every three years. Additionally, the last two consecutive tap sample monitoring periods must have a 90th percentile lead value of less than or equal to 0.005 mg/L and a 90th percentile copper value of less than or equal to 0.65 mg/L. The water system must also have maintained the range of values for WQPs reflecting optimal corrosion control as specified in that system's state approved corrosion control study.

(K) Water quality parameter testing must be conducted at a laboratory that uses the methods described in 40 CFR §141.89, and it is the responsibility of the water system to collect, submit, and report these values. If a water system fails to meet the WQP values or ranges specified by the executive director, it is out of compliance with this section. WQP values may be confirmed by the system in accordance with 40 CFR §141.82(g). The state requires that the values be reported, but is not responsible for supplying sample bottles and testing services to the water system.

(L) Any water system subject to the reduced monitoring frequency that fails to operate within the approved range of WQP values shall resume distribution sampling in accordance with the number and frequency requirements in subparagraph (F) of this paragraph.

(M) A water system conducting WQP monitoring may limit entry point sampling to each official entry point as designated in the database for SDWA compliance sampling. The water system must monitor WQPs at all entry points regardless of whether corrosion control treatment is required at all entry points or not. The water system must inform the executive director of the identity of treated and non-treated entry points and their seasonal use, if any, and demonstrate that the WQPs represent water quality and treatment conditions throughout the system.

(N) Any water system subject to reduced monitoring frequency (which has completed installation of approved corrosion control treatment as proposed in the system's corrosion control study) that fails to operate at or above the minimum range of values the system proposed for more than nine days in a six-month period shall resume distribution WQP sampling in accordance with the number and frequency requirements in this subsection. The system may resume distribution WQP sampling at the reduced number of sites as specified in this subsection after completing two consecutive six-month periods of distribution WQP sampling at the original frequency and then may follow subparagraphs (H) and (J) of this paragraph.

(O) Large water systems shall monitor applicable WQPs every calendar quarter beginning after installation of corrosion control treatment approved by the executive director. Small and medium water systems shall monitor WQPs every calendar quarter while the system is in

exceedance status. The executive director will issue a reporting waiver to small and medium systems for WQPs after the system completes two follow up rounds of tap sampling without exceeding either the lead or copper action level. The water system will continue to collect and record certain crucial parameters that will be available for inspection. If a small or medium water system exceeds the lead or copper action level during a reduced tap monitoring round (summer monitoring), the system shall conduct WQP monitoring until the exceedance status is resolved.

(P) The commission will not designate WQP ranges for any large water system that did not exceed 0.005 mg/L at the 90th percentile for lead during either initial tap sampling round. The commission will not designate WQP ranges for any small or medium water system that never exceeded the lead or copper action level at the 90th percentile during either initial tap sampling round or any reduced monitoring tap sampling round. Systems that must conduct WQP monitoring shall submit proposed WQP ranges for the executive director's approval.

(Q) Using WQPs proposed by the water system or its representatives, the commission will issue an approval letter if the corrosion control study and treatment proposed meet the requirements of this rule. Water systems will operate within the approved WQP ranges at all times and will conduct lead and copper tap sampling under the requirements in subsection (c) of this section and WQP reporting in this paragraph.

(2) Entry point water sampling.

(A) Entry point water sampling for lead and copper shall be conducted by systems that exceed the lead or copper action levels to determine the lead or copper content of source water. Entry point water samples shall be collected using sample location, number of samples, and collection methods as specified in §290.106 of this title (relating to Inorganic Contaminants). A large water system is deemed to have optimized corrosion control if it submits results of tap water monitoring conducted according to the requirements in subsection (c) of this section and results of source water monitoring conducted according to requirements in §290.106 of this title (relating to Inorganic Contaminants). The results must demonstrate for a 12-month monitoring period that lead at the 90th percentile is less than or equal to 0.005 mg/L.

(B) The executive director shall complete an evaluation of all entry point water sample results, along with the corrosion control study, to determine if source water treatment is necessary. If source water treatment is deemed necessary by the executive director, the system must install it in accordance with the scheduling requirements specified in 40 CFR §141.83(a).

(C) Any system that installs entry point water treatment shall collect an additional round of source water samples as described in subparagraph (A) of this paragraph during two consecutive six-month periods within 36 months after source water treatment begins.

(D) The monitoring frequency for lead and copper in source water, after the executive director determines that source water treatment is not required, or after the executive director has specified the maximum permissible source water levels for lead and copper, shall be in accordance with inorganic chemical monitoring practices and procedures as stated in §290.106 of this title (relating to Inorganic Contaminants).

(E) Reduced source water monitoring procedures as specified in 40 CFR §141.88(e) for lead and copper will be followed by the executive director.

(F) All water systems shall notify the executive director in writing of any proposed change in treatment or the addition or deletion of a source of water. The executive director may require any such system to conduct additional monitoring or to take other action the executive director deems appropriate to ensure that such systems maintain minimal levels of corrosion in the distribution system.

(i) Public education requirements.

(1) A water system that exceeds the lead action level at the 90th percentile tap sample shall deliver to the public the public education materials listed in 40 CFR §141.85(a), and according to the requirements in paragraph (2) of this subsection shall provide copies of the public education materials to the executive director within ten days after the delivery of the materials to the public.

(2) A community water system shall, within 60 days of notification by the commission:

(A) insert notices in each customer's water utility bill or by separate mailing, if approved in writing by the executive director, that includes the information in 40 CFR §141.85(a), and print the following alert on the water bill itself, or on a bill insert, in large print: "SOME HOMES IN THIS COMMUNITY HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICANT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION.";

(B) submit the required information in 40 CFR §141.85(a) to the editorial departments of the major local daily or weekly newspaper circulated throughout the system;

(C) deliver pamphlets or brochures that contain the public education materials as specified in 40 CFR §141.85(a)(2) and (4) to city or county health departments, to public schools or local school boards, Women, Infants and Children (WIC) or Head Start Programs when available, public and private hospitals or clinics, pediatricians, family planning clinics, and local welfare agencies, within their service area;

(D) submit the public service announcement in 40 CFR §141.85(b) to at least five radio or television stations broadcasting to the area served by the water system;

(E) a community water system serving 501 to 3,300 people may omit the task contained in subparagraph (D) of this paragraph;

(F) a community water system serving 500 or fewer people may omit the tasks contained in subparagraphs (B) - (D) of this paragraph;

(G) all community water systems must repeat the public education requirements every six months for as long as the system exceeds the lead action level; and

(H) if no lead service lines exist anywhere in the water system service area, all community water systems may delete information pertaining to lead service lines, and any additional information presented by a water system in the public education material shall be consistent with the information in 40 CFR §141.85(a) and be written in easily understood language.

(3) A nontransient noncommunity water system must within 60 days of notification by the executive director deliver the public education materials in 40 CFR §141.85(a)(2) as follows:

(A) post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system;

(B) distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the water system. The commission may allow the water system to utilize electronic transmission in lieu of or combined with printed materials as long as it achieves at least the same coverage;

(C) a water system may delete or modify language relating only to community water systems that is not relevant to its particular facility; and

(D) a water system must repeat the tasks in subparagraphs (A) and (B) of this paragraph at least once during each calendar year for as long as the water system exceeds the lead action level.

(4) A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

(5) A water system that fails to meet the lead action level as stated in subsection (a)(3) of this section shall make available to any customer who requests it, information as to how and where water samples may be submitted for lead and copper analysis.

(j) Corrosion control.

(1) All applicable water systems shall install and operate optimal corrosion control treatment, which means the corrosion control treatment that minimizes lead and copper concentrations at users' taps while insuring that the treatment does not cause the system to violate any other drinking water standard. All large water systems that exceeded 0.005 mg/L lead at the 90th percentile during initial monitoring or any system that exceeded the lead or copper action level at the 90th percentile during any tap monitoring sampling round and that has installed corrosion control treatment with approved WQP ranges, must operate and maintain optimal corrosion control within those ranges. Compliance periods for this paragraph are two six-month periods, January 1 to June 30, and July 1 to December 31. A water system is out of compliance with this subsection for a six-month period if the water system has WQP excursions for any approved range for more than nine days. An excursion occurs whenever the daily value for one or more WQPs's measured at a sampling location is below the minimum value or outside the range approved by the executive director. The executive director has the discretion to delete results of obvious sampling errors from this calculation. Daily values are calculated as follows.

(A) Water systems that collect more than one WQP measurement in one day must record the daily value as an average of all WQP values collected during the day regardless of whether the measurements are collected through continuous monitoring, grab sampling, or a combination of both.

(B) On days when only one measurement for the WQP is collected at the sampling location, the daily value shall be the result of that measurement.

(C) On days when no measurement is collected for the WQP at the sampling location, the daily value last calculated on the most recent day shall serve as the daily value.

(2) Large water systems (serving greater than 50,000 people) are required to conduct corrosion control studies unless they can demonstrate that corrosion control is already optimized to the satisfaction of the executive director. If required to conduct a corrosion control study, a large water system must complete it by July 1, 1994, and the executive director shall designate optimal corrosion control treatment and parameters by January 1, 1995. The water system shall install corrosion control treatment by January 1, 1997. Large water systems that exceed lead and/or copper action levels must conduct a demonstration study as described in paragraph (4)(B) of this subsection. If a large water system exceeds either the lead or copper action level during a reduced tap sampling monitoring round, it will adhere to the schedule specified in the paragraph for medium systems, with time periods for completing each step being triggered by the date the executive director notifies the water system that it has exceeded an action level.

(3) Water systems are deemed to have optimized corrosion control if the water system meets the lead and copper action levels during each of two consecutive six-month monitoring periods. These systems will be required to conduct a desk-top corrosion control study to optimize corrosion control if at anytime the 90th percentile action level for lead and/or copper is exceeded. The study must be conducted and submitted within 12 months of a verified lead or copper exceedance. If a small or medium water system exceeds either the lead or copper action level during a reduced tap sampling monitoring round, it will adhere to the schedule specified in the paragraph for small and medium systems.

(4) Performance for corrosion control studies.

(A) Any public water system performing a corrosion control study shall evaluate the effectiveness of each of the following treatments (or combinations of treatments) to identify the optimal control treatment:

(i) alkalinity and pH adjustments;

(ii) calcium hardness adjustment; and

(iii) addition of phosphate or silicate corrosion inhibitor.

(B) The water system shall conduct this evaluation using either pipe rig/loop tests, metal coupon tests, partial systems tests (demonstration study), or analyses based on treatments in

documented analogous systems (desk-top study). Analogous system means a system of similar size, water chemistry, and distribution system configuration.

(C) The water system shall measure the parameters listed in subsection (h)(1)(C) of this section.

(D) On the basis of the evaluation stated in subparagraphs (A) and (B) of this paragraph, the water system shall recommend to the executive director, in writing, the treatment option that constitutes optimum corrosion control or treatment along with sufficient documentation as required by the executive director to establish the validity of the evaluation procedure. Operational WQP ranges shall be proposed to the executive director where applicable.

(E) The executive director will, within six months after submittal of the corrosion control study by the water system, review the study and designate optimal corrosion control treatment and parameters.

(F) The water system shall install optimal corrosion control treatment within 24 months after the executive director designates optimal corrosion control treatment and notifies the water system.

(G) Large water systems that install corrosion control treatment shall conduct first-draw lead and copper tap sample monitoring as an initial monitoring during each of two consecutive six-month periods by January 1, 1998. Small and medium water systems shall complete the above stated monitoring within 36 months after the executive director designates optimal corrosion control treatment. Small and medium water systems are deemed to have optimized corrosion control if action levels for lead and copper are not exceeded in two rounds of subsequent tap sample monitoring. Large water systems are deemed to have optimized corrosion control if they have demonstrated through first-draw tap monitoring conducted after treatment installation and water quality parameter sampling conducted in compliance with standards set by the executive director for optimum corrosion control that they are operating within executive director-designated parameters.

(H) Any system that has received approval for a corrosion control study and demonstrates optimal corrosion control and operates in compliance with the executive director-designated optimal water quality parameters, may conduct reduced tap sampling as described in subsection (e) of this section, when written permission is granted by the executive director after the executive director has evaluated all pertinent data. Systems that do not meet the action levels for lead and copper after receiving approval for a corrosion control study must continue to operate in accordance

with WQP requirements established by the executive director and follow procedures specified in subsection (e)(4) of this section.

(I) The executive director may modify, upon his own initiative or in response to a water system request or a request from interested parties, his designated corrosion control treatment or parameters. The request and executive director response pursuant to modification shall be in writing.

(5) Optimization of corrosion control.

(A) Any water system may be deemed by the executive director to have optimized corrosion control treatment if the system demonstrates, to the satisfaction of the executive director, that it has conducted activities equivalent to the corrosion control steps listed in paragraph (4) of this subsection.

(B) Any large water system is deemed to have optimized corrosion control if it submits results of lead and copper tap water monitoring and entry point water monitoring in accordance with this section which demonstrates for two consecutive six-month monitoring periods that the 90th percentile tap sample lead level is less than 0.005 mg/L.

(k) Lead service line replacement. The provisions of 40 CFR §141.84 relating to lead service line replacement are adopted by reference.

(l) Analytical and sample preservation methods.

(1) Analysis for lead and copper shall be conducted using methods stated in 40 CFR §141.89, in laboratories certified by the executive director. Analysis for pH, conductivity, calcium, alkalinity, or the phosphate, silica, and temperature may be conducted in any laboratory utilizing EPA methods prescribed in 40 CFR §141.89.

(2) The Practical Quantitation Limits (PQL) and the Method Detection Limits (MDL) shall be as stated in 40 CFR §141.89. The laboratory certified for the analysis of lead and copper tap samples must achieve the MDL of 0.001 mg/L for lead if composited entry point water samples are analyzed for lead.

(3) The executive director has the authority to allow the use of previously collected monitoring data if the data were collected in accordance with 40 CFR §141.89.

(4) All lead levels measured between the PQL and the MDL must be reported as measured, and all lead levels measured below the MDL must be reported as zero.

(5) First-draw-tap samples must be received in the laboratory within 14 days after the collection date.

(m) Reporting and recordkeeping requirements.

(1) Reporting requirements.

(A) Report all results of WQP analyses including the location/address of each distribution system sampling point. This report must include each WQP specified in subsection (h) of this section, as well as all sample results from entry points to the distribution system. Water Quality Parameter Reports should be submitted to the executive director no later than ten days after the end of each calendar quarter.

(B) Where applicable, the first-draw-tap monitoring shall be reported within ten days following the end of each monitoring period as specified by the executive director. (Analysis results from the approved laboratory are normally provided simultaneously to the water system and the executive director.) The results of first-draw-tap sampling shall be reported to the water system by the approved laboratory if the system's billing account is not delinquent. The executive director shall provide the water system with official notification of the results and the water system's calculated 90th percentile as the data is made available from the approved laboratory.

(C) As part of the site selection form, each water system shall justify the selection of sites other than Tier 1 sampling sites as defined on the site selection form and, if lead service lines are present, why the water system was not able to locate a sufficient number to make up at least 50% of its required number of sampling sites, should this condition arise.

(D) Where applicable, the water system must certify that source water treatment has been installed as recommended by the executive director and that installation was done in accordance with the specified time requirements.

(E) Where applicable, the water system must certify that lead service lines have been replaced in accordance with directives of the executive director and in accordance with time schedules specified in subsection (k) of this section.

(F) Where applicable, the water system must provide copies of public education materials and certification that distribution of said materials is being conducted in accordance with subsection (i) of this section.

(G) A water system must collect tap samples from the same sampling sites selected during the initial monitoring period for all subsequent sampling periods. If a water system changes a sampling site for any reason allowed in this section, the water system must provide the executive director with a written explanation showing which sampling site will be abandoned and the sampling site that replaces the abandoned sampling site. The water system's report shall include an explanation as to why a sampling site was changed from the previous round of sampling, if applicable. If a water system discovers that a sample has been collected at an inappropriate sampling site, the water system may request in writing that the sample be invalidated. The executive director may invalidate the sample and allow for recollection. If a water system has no sampling sites available that meet the first draw criteria specified in subsection (c) of this section, they shall proceed in accordance with 40 CFR §141.90(a)(2).

(H) Corrosion control treatment data shall be reported as required by the executive director for water systems that:

- (i) have demonstrated optimum corrosion control;
- (ii) are required to specify optimum corrosion control treatment (as part of the corrosion control study);
- (iii) install corrosion control treatment as designated by the executive director; and
- (iv) are required to evaluate effectiveness of corrosion control treatments.

(2) Recordkeeping requirements. Records of all sampling site data, sample submission forms, analysis results, reports, surveys, letters, evaluations, schedules, executive director recommendations, requirements or determinations, and any other information deemed appropriate by the water system shall be retained by the water system for a minimum of 12 years. These records include, but are not limited to, the following items:

(A) tap water monitoring results including the location of each site and date of collection;

(B) certification of the volume and validity of first-draw-tap sample criteria via a copy of the laboratory analysis request form;

(C) where residents collected the sample, certification that the water system informed the resident of proper sampling procedures;

(D) the analytical results for lead and copper concentrations (provided to each water system by the executive director) at each tap sample site; and

(E) designation of any substitute site not used in previous monitoring periods.

§290.121. Monitoring Plans.

(a) Applicability. All public water systems shall maintain an up-to-date chemical and microbiological monitoring plan. Monitoring plans are subject to the review and approval of the executive director. A copy of the monitoring plan must be maintained at each water treatment plant and at a central location.

(b) Monitoring plan requirements. The monitoring plan shall identify all sampling locations, describe the sampling frequency, and specify the analytical procedures and laboratories that the public water system will use to comply with the monitoring requirements of this subchapter.

(1) Monitoring locations. The monitoring plan shall include information on the location of all required sampling points in the system. Required sampling locations for regulated chemicals are provided in §290.106 of this title (relating to Inorganic Contaminants), §290.107 of this title (relating to Organic Contaminants), §290.108 of this title (relating to Radiological Sampling and Analytical Requirements), §290.109 of this title (relating to Microbial Contaminants), §290.110 of this title (relating to Disinfectant Residuals), §290.111 of this title (relating to Turbidity), §290.112 of this title (relating to Total Organic Carbon (TOC)), §290.113 of this title (relating to Disinfection By-products (TTHM and HAA5)), §290.114 of this title (relating to Disinfection By-products other than TTHM and HAA5), §290.115 of this title (relating to Transition Rule for Disinfection By-products), §290.117 of this title (relating to Regulation of Lead and Copper), and §290.118 of this title (relating to Secondary Constituent Levels).

(A) The location of each sampling site at a treatment plant or pump station must be designated on a plant schematic. The plant schematic must show all water pumps, flow meters, unit processes, chemical feed points, and chemical monitoring points. The plant schematic must also show the origin of any flow stream that is recycled at the treatment plant, any pretreatment that occurs

before the recycle stream is returned to the primary treatment process, and the location where the recycle stream is reintroduced to the primary treatment process.

(B) Each entry point to the distribution system shall be identified in the monitoring plan as follows:

(i) a written description of the physical location of each entry point to the distribution system shall be provided; or

(ii) the location of each entry point shall be indicated clearly on a distribution system or treatment plant schematic.

(C) The address of each sampling site in the distribution system shall be included in the monitoring plan or the location of each distribution system sampling site shall be designated on a distribution system schematic. The distribution system schematic shall clearly indicate the following:

(i) the location of all pump stations in the distribution system;

(ii) the location of all ground and elevated storage tanks in the distribution system; and

(iii) the location of all chemical feed points in the distribution system.

(D) The system must revise its monitoring plan if changes to a plant or distribution system require changes to the sampling locations.

(2) Monitoring frequency. The monitoring plan must include a written description of sampling frequency and schedule.

(A) The monitoring plan must include a list of all routine samples required on a daily, weekly, monthly, quarterly, and annual basis and identify the sampling location where the samples will be collected.

(B) The system must maintain a current record of the sampling schedule.

(3) The monitoring plan must identify the analytical procedures that will be used to perform each of the required analyses.

(4) The monitoring plan must identify all laboratory facilities that may be used to analyze samples required by this chapter.

(5) The monitoring plan shall include a written description of the methods used to calculate compliance with all maximum contaminant levels, maximum residual disinfectant levels, and treatment techniques that apply to the system.

(c) Reporting requirements. All public water systems shall maintain a copy of the current monitoring plan at each treatment plant and at a central location. The water system must update the monitoring plan when the water system's sampling requirements or protocols change.

(1) Public water systems that treat surface water or groundwater under the direct influence of surface water and serve at least 10,000 people must submit a copy of the monitoring plan to the executive director by January 1, 2001.

(2) Public water systems that treat surface water or groundwater under the direct influence of surface water and serve fewer than 10,000 must submit a copy of the monitoring plan to the executive director by January 1, 2003.

(3) Public water systems that treat groundwater that is not under the direct influence of surface water or purchase treated water from a wholesaler must develop a monitoring plan by January 1, 2004, and submit a copy of the monitoring plan to the executive director upon request.

(4) All water systems must provide the executive director with any revisions to the plan upon request.

(d) Compliance determination. Compliance with the requirements of this section shall be determined using the following criteria.

(1) A public water system that fails to submit an administratively complete monitoring plan by the required date or fails to submit updates to a plan upon request commits a reporting violation.

(2) A public water system that fails to maintain an up-to-date monitoring plan commits a monitoring violation.

(e) Public notification. A system that commits a violation described in §290.122(d) of this title (relating to Public Notification) shall notify its customers of the violation in the next consumer confidence report that is issued by the system.

§290.122. Public Notification.

(a) Public notification requirements for acute violations. The owner or operator of a public water system must notify persons served by their system of any maximum contaminant limit (MCL), maximum residual disinfectant level (MRDL), or treatment technique violation that poses an acute threat to public health. Each notice required by this section must meet the requirements of subsection (d) of this section.

(1) Violations that pose an acute threat to public health include:

(A) a violation of the acute MCL for microbial contaminants as defined in §290.109(f)(1) of this title (relating to Microbial Contaminants);

(B) a treated water turbidity level above 5.0 Nephelometric Turbidity Unit in the combined filter effluent of a treatment plant that is treating surface water or groundwater under the direct influence of surface water;

(C) a violation of the MCL for nitrate or nitrite as defined in §290.106(f)(2) of this title (relating to Inorganic Contaminants);

(D) a violation of the acute MRDL for chlorine dioxide as defined in §290.110(f)(5)(A) or (B) of this title (relating to Disinfectant Residuals);

(E) occurrence of a waterborne disease outbreak; and

(F) other violations deemed by the executive director to pose an acute risk to human health.

(2) The initial acute public notice and boil water notice required by this subsection shall be issued as soon as possible, but in no case later than 24 hours after the violation is identified. The initial public notice for an acute violation shall be issued in the following manner.

(A) The owner or operator of a water system with an acute microbiological or turbidity violation as described in paragraph (1)(A) or (B) of this subsection shall include a boil water

notice issued in accordance with the requirements of §290.46(q) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(B) The owner or operator of a community water system shall furnish a copy of the notice to the radio and television stations serving the area served by the public water system.

(C) The owner or operator of a community water system shall publish the notice in a daily newspaper of general circulation in the area served by the system. If the area is not served by a daily newspaper of general circulation, notice shall instead be issued by direct delivery or by continuous posting in conspicuous places within the area served by the system.

(D) The owner or operator of a noncommunity water system shall issue the notice violation by direct delivery or by continuously posting the notice in conspicuous places within the area served by the water system.

(E) If notice is provided by posting, the posting must remain in place for as long as the violation exists or seven days, whichever is longer.

(3) The owner or operator of a water system required to issue an initial notice for an acute MCL or treatment technique violation shall issue additional notices. The additional public notices for acute violations shall be issued in the following manner.

(A) Not later than 45 days after the violation, the owner or operator of a community water system shall notify persons served by the system using mail (by direct mail or with the water bill) or hand delivery. The executive director may waive mail or hand delivery if it is determined that the violation was corrected within the 45-day period. The executive director must make the waiver in writing and within the 45-day period.

(B) The owner or operator of a community water system must issue a notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists.

(C) If the owner or operator of a noncommunity water system issued the initial notice by continuous posting, posting must continue for as long as the violation exists and in no case less than seven days. If the owner or operator of a noncommunity water system issued the initial notice by direct delivery, notice by direct delivery must be repeated at least every three months for as long as the violation exists.

(4) The owner or operator of the public water system must issue a notice when the public water system has corrected the acute violation. This notice must be issued in the same manner as the original notice was issued.

(5) Copies of all notifications required under this subsection must be submitted to the executive director within ten days of its distribution.

(b) Public notification requirements for other MCL, MRDL, or treatment technique violations and for variance and exemption violations. The owner or operator of a public water system must notify persons served by their system of any MCL, MRDL, or treatment technique violation other than those described in subsection (a)(1) of this section and of any violation involving a variance or exemption requirement. Each notice required by this section must meet the requirements of subsection (d) of this section.

(1) Violations that require notification under this subsection include:

(A) any violation of an MCL, MRDL, or treatment technique not listed under subsection (a) of this section;

(B) failure to comply with the requirements of any variance or exemption granted under §290.102(d) of this title (relating to General Applicability); or

(C) other violations deemed appropriate by the executive director that pose a non-acute risk to human health.

(2) The initial public notice for any violation identified in this subsection must be issued as soon as possible, but in no case later than 30 days after the violation is identified. The initial public notice shall be issued in the following manner.

(A) The owner or operator of a community water system shall issue the notice by:

(i) mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

(ii) any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in clause (i) of this subparagraph. Such persons may include those who do not pay water bills or do not have

service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.) Other methods may include: publication in a local newspaper; delivery of multiple copies for distribution by customers that provide drinking water to others (e.g., apartment building owners or large private employers); continuous posting in conspicuous public places within the area served by the system or on the Internet; or delivery to community organizations.

(B) The owner or operator of a noncommunity water system shall issue the notice by direct delivery or by continuously posting the notice in conspicuous places within the area served by the system.

(C) If notice is provided by posting, the posting must remain in place for as long as the violation exists or seven days, whichever is longer.

(3) The owner or operator of a system required to issue an initial violation notice shall issue additional notices. The additional notices shall be issued in the following manner.

(A) The owner or operator of a community water system must issue a notice at least once every three months by mail delivery (by direct mail or with the water bill) or by direct delivery, for as long as the violation exists.

(B) If the owner or operator of a noncommunity water system issued the initial notice by continuously posting the notice, the posting must continue for as long as the violation exists, and in no case less than seven days. If the owner or operator of a noncommunity water system issued the initial notice by direct delivery, notice by direct delivery must be repeated at least every three months for as long as the violation exists.

(4) The owner or operator of the public water system must issue a notice when the public water system has corrected the violation. This notice must be issued in the same manner as the original notice was issued.

(c) Public notification requirements for other violations, variances, exemptions. The owner or operator of a public water system who fails to perform monitoring required by this chapter, fails to comply with a testing procedure established by this chapter, or is subject to a variance or exemption granted under §290.102(b) of this title shall notify persons served by the system. Each notice required by this section must meet the requirements of subsection (d) of this section.

(1) Violations that require notification as described in this section include:

- (A) exceedance of the secondary constituent levels (SCL) for flouride;
- (B) failure to perform monitoring or reporting required by this subchapter;
- (C) failure to comply with the analytical requirements or testing procedures required by this subchapter;
- (D) operating under a variance or exemption granted under §290.102(b) of this title; and
- (E) failure to maintain records on recycle practices as required by §290.46(f)(3)(C)(iii) of this title.

(2) The initial public notice issued pursuant to this section shall be issued within three months of the violation or the granting of a variance or exemption. The initial public notice shall be issued in the following manner.

(A) The owner or operator of a community water system shall publish the notice in a daily newspaper of general circulation in the area served by the system. If the area served by the public water system is not served by a daily newspaper of general circulation, the notice shall instead be published in a weekly newspaper of general circulation serving the area. If the area is not served by either a daily or weekly newspaper of general circulation, notice shall instead be given by direct delivery or by continuous posting in conspicuous places within the area served by the system.

(B) The owner or operator of a noncommunity water system shall issue the notice by direct delivery or by continuously posting the notice in conspicuous places within the area served by the system.

(C) If notice is provided by posting, the posting must remain in place for as long as the violation exists or seven days, whichever is longer.

(3) The owner or operator of a system required to issue an initial violation notice shall issue additional notices. The additional notices shall be issued in the following manner.

(A) The owner or operator of a community water system shall issue repeat notices at least once every 12 months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists or variance or exemption remains in effect. Repeat public notice may be included as part of the Consumer Confidence Report.

(B) If the owner or operator of a noncommunity water system issued the initial notice by continuously posting the notice, the posting must continue for as long as the violation exists, and in no case less than seven days. If the owner or operator of a noncommunity water system issued the initial notice by direct delivery, notice by direct delivery must be repeated at least every three months for as long as the violation exists.

(4) The owner or operator of the public water system must issue a notice when the public water system has corrected the violation. This notice must be issued in the same manner as the original notice was issued.

(d) Each public notice must conform to the following general requirements.

(1) The notice must contain a clear and readily understandable explanation of the violation or situation that lead to the notification. The notice must not contain very small print, unduly technical language, or other items that frustrate the purpose of the notice.

(2) If the notice is required for a specific event, it must state when the event occurred.

(3) For notices required under subsections (a), (b), or (c)(1)(A) of this section, the notice must describe potential adverse health effects.

(A) For MCL, MRDL, or treatment technique violations, the notice must contain the mandatory federal contaminant-specific language contained in 40 Code of Federal Regulations (CFR) Subpart Q, Appendix B, in addition to any language required by the executive director.

(B) For fluoride SCL violations, the notice must contain the mandatory federal contaminant-specific language contained in 40 CFR §141.208, in addition to any language required by the executive director.

(C) The notice must describe the population at risk, especially subpopulations particularly vulnerable if exposed to the given contaminant.

(4) The notice must state what actions the water system is taking to correct the violation or situation, and when the water system expects to return to compliance.

(5) The notice must state whether alternative drinking water sources should be used, and what other actions consumers should take, including when they should seek medical help, if known.

(6) Each notice must contain the telephone number at which consumers may contact the owner, operator, or designee of the public water system for additional information concerning the notice.

(7) Where appropriate, the notice must be multilingual.

(8) The notice shall include a statement to encourage the notice recipient to distribute the public notice to the other persons served.

(9) Systems with variances or exemptions must notify in accordance with 40 CFR §141.205(b).

(e) Notice to new billing units. The owner or operator of a community water system must give a copy of the most recent public notice for any outstanding violation of any MCL, or any treatment technique requirement, or any variance or exemption schedule to all new billing units or new hookups prior to or at the time service begins.

(f) Proof of public notification. A copy of any public notice required under this section must be submitted to the executive director within ten days of its distribution as proof of public notification. The copies must be mailed to the Texas Commission on Environmental Quality, Water Supply Division, MC 155, P.O. Box 13087, Austin, Texas 78711-3087.

(g) Notice to consecutive systems. A public water system that is required to notify its customers must also provide a copy of the notification to any public water systems that purchase or otherwise receive water from it in the same manner in which they inform their customers. Each public water system that is affected by the subject of the notification is responsible for notification to its own customers.

(h) Notices given by the executive director. The executive director may give the notice required by this section on behalf of the owner and operator of the public water system following the requirements of this section. The owner or operator of the public water system remains responsible for ensuring that the requirements of this section are met.