TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

AGENDA ITEM REQUEST

for Rulemaking Adoption

AGENDA REQUESTED: July 1, 2015

DATE OF REQUEST: June 12, 2015

INDIVIDUAL TO CONTACT REGARDING CHANGES TO THIS REQUEST, IF NEEDED: Derek Baxter, (512) 239-2613

CAPTION: Docket No. 2014-0615-RUL. Consideration of the adoption of amendments to Sections 290.38, 290.39, 290.41 - 290.47, 290.110, 290.111 and 290.116 of 30 TAC Chapter 290, Public Drinking Water.

The adoption would amend Chapter 290 for consistency with Texas Water Code, Section 12.013 and Chapter 13; existing federal regulations and guidance; and provide clarification on existing state rules. The adopted rulemaking will address: federal changes to the lead and *Escherichia Coli* thresholds; desalination; chloramination; plan review submittal process; enforceability of exceptions; and other drinking water matters. The proposed rules were published in the February 6, 2015, issue of the *Texas Register* (40 TexReg 518). (Marlo Wanielista Berg, P.E., Ruth Takeda) (Rule Project No. 2013-046-290-OW)

L' Oreal Stephney, P.E.
Deputy Director

Linda Brookins
Division Director

Derek Baxter
Agenda Coordinator

Copy to CCC Secretary? NO X YES

Texas Commission on Environmental Quality
Interoffice Memorandum

To: Commissioners **Date:** June 12, 2015

Thru: Bridget C. Bohac, Chief Clerk
Richard A. Hyde, P.E., Executive Director

From: L'Oreal W. Stepney, P.E., Deputy Director
Office of Water

Docket No.: 2014-0615-RUL

Subject: Commission Approval for Rulemaking Adoption
Chapter 290, Public Drinking Water
HB 1600, §2.96, and SB 567, §§1, 4, 95, and 96; Federal Revisions; and Staff-Initiated Rule Efficiencies
Rule Project No. 2013-046-290-OW

Background and reason(s) for the rulemaking:
This rulemaking adopts changes to Chapter 290:

- for consistency with Texas Water Code (TWC), §12.013 and Chapter 13, as amended during the 83rd Legislature, 2013, by §2.96 of House Bill (HB) 1600, authored by Representative Byron Cook, and §§1, 4, 95, and 96 of Senate Bill (SB) 567, sponsored by Senators Kirk Watson and Robert Nichols, related to transfer of the utilities and rates program to the Public Utility Commission of Texas (PUC);
- to implement federal changes to the lead and *Escherichia Coli (E. coli)* thresholds; and
- to provide clarification on and streamlining of existing rules, including:
  - desalination;
  - chloramination;
  - plan review submittal process;
  - enforceability of exceptions; and
  - other drinking water matters.

Scope of the rulemaking:
A.) Summary of what the rulemaking will do:
State statutes – HB 1600 and SB 567 amended TWC, §12.013 and Chapter 13, transferring the utilities and rates program from the Texas Commission on Environmental Quality (TCEQ) to the PUC, effective September 1, 2014. This rulemaking removes a requirement for the submission of Certificate of Public Convenience and Necessity (CCN) information in existing §290.39(j)(3) as the TCEQ no longer has jurisdiction over CCNs. The majority of the rule changes to implement HB 1600 and SB 567 will occur under Rule Project No. 2013-057-291-OW.

Federal regulations
Reduction of Lead in Drinking Water Act – The federal requirement for lead content of pipes, pipe fittings, and plumbing fittings and fixtures was reduced from 8.0% to 0.25%, effective January 4, 2014, as announced in 2011 to allow time for manufacturers to change their products. TCEQ's public drinking water rules only apply to public water systems

(PWSs) and include allowable lead content requirements that must be revised to maintain consistency with applicable federal law. PWSs will now need to procure plumbing fixtures that comply with the allowable lead level, but because the federal act applies to all manufacturers, there should only be products that meet the criteria on the market.

E. coli Threshold – The federal Long Term 2 Enhanced Surface Water Treatment Rule (LT2) required PWSs with surface water, or groundwater under the influence of surface water, sources to monitor for *Cryptosporidium*. The United States Environmental Protection Agency (EPA) gave states the discretion to allow small PWSs — those with a population less than 10,000 — to monitor for *E. coli* instead. The TCEQ adopted the alternate monitoring process and established an *E. coli* trigger level of 50 E. coli/100 milliliters or 10 *E. coli*/100 milliliters based on the water source. Subsequent federal guidance established an *E. coli* trigger level of 100 *E. coli*/100 milliliters, no matter the water's source. By raising the TCEQ's *E. coli* trigger level, fewer small PWSs have monitored for *Cryptosporidium* because the higher level is more commonly achieved.

Additional staff recommendations – The staff-initiated changes to Chapter 290 are necessary to formalize existing procedures into the rules, while also clarifying requirements and streamlining existing agency practices. The items that will formalize existing procedures include: adding the requirements of existing well design standards to the rule, and changing the tank design requirements to clarify tank types. To clarify the rules, the TCEQ adopts additional criteria to help PWSs find all of the criteria within a rule while also incorporating the necessary elements into the design, rather than adding the criteria at a later date. To ensure consistency in the pipe encasement design, the TCEQ's water and wastewater requirements for water distribution pipe crossings will be expanded to include other subsections of the rule. The remainder of the adopted staff-initiated changes streamlines existing practices on: the process for submitting plans; TCEQ's ability to cite a violation for failure to comply with a condition of a granted exception; allowing the use of chloramines without an exception; allowing the use of desalination technology without an exception; and adding additional options for overflow pipe outlets without an exception.

B.) Scope required by federal regulations or state statutes:

State statutes – This adopted rulemaking implements HB 1600 and SB 567 by removing a requirement in existing §290.39(j)(3) as the TCEQ no longer has jurisdiction over CCNs.

Federal regulations

Reduction of Lead in Drinking Water Act – This adopted rulemaking amends §§290.41, 290.44, 290.46, and 290.47 for consistency with the federal reduction in the lead content of pipes, pipe fittings, and plumbing fittings and fixtures from 8.0% to 0.25%.

E. coli Threshold – The TCEQ has been applying the revised *E. coli* trigger level since it was released by the EPA in 2010. This adopted rulemaking amends §290.111 to be consistent

with federal guidance and continue providing additional monitoring cost savings to small PWSs.

C.) Additional staff recommendations that are not required by federal rule or state statute: *Process for Approving Desalination Technology* – This adopted rulemaking amends §§290.38, 290.39, 290.42, 290.45, and 290.46 to allow the use of desalination technologies for chemical removal without an exception request, which has been required when approving the use of innovative/alternate treatment technologies. The use of reverse osmosis membranes and other desalination technologies for water treatment has been in use for decades. Over 15,000 desalination plants were in use worldwide in 2002. Following extensive input from the regulated community and interested stakeholders, this adopted rulemaking establishes design, operation, maintenance, monitoring, and reporting standards.

Chloramine Disinfection Criteria – As the use of chloramines has become a common practice among PWSs, this adopted rulemaking amends §§290.39, 290.41 - 290.43, 290.46, 290.47, 290.110, 290.111, and 290.116 to allow the use of chloramines without requiring an exception review by including the design, operation, maintenance, monitoring, and documentation criteria within the rules to simplify the process for the TCEQ and PWSs. In the proposal, the executive director's staff sought public comment on the placement of sample taps in relation to chloramine chemical injection. Written comments were received and have been addressed in the Response to Comments section of the rulemaking.

Modification of the Plan Review Submittal Process – Existing §290.39 instructs PWSs to first notify the TCEQ of significant changes and then submit plans and specifications upon the TCEQ's request. This adopted rulemaking amends §290.39 by: requiring PWSs to submit plans and specifications for significant changes. Simplifying the criteria for a change to be considered significant will reduce confusion in the regulated community and reduce staffs' processing time currently spent issuing requests for the submission of plans and specifications.

Enforceability of Exceptions – Under existing §290.39(l)(2), if a PWS does not meet the requirements of a granted exception, the exception can be revoked and a violation subsequently issued in a time-consuming, cumbersome process. To streamline this process and ensure that PWSs follow the conditions established in the granted exception, this adopted rulemaking clarifies that failing to follow the conditions of a granted exception is a violation.

Clarification for Well Construction Review Process – This adopted rulemaking amends §290.41 by incorporating language from an existing standard into the rule and providing specific cementing requirements for PWS wells in order to consolidate the requirements in one location, thus making them more accessible to the PWSs.

Alternative Appurtenances for Overflow Devices – The existing rule requires a "gravity-hinged and weighted cover" at the end of the overflow pipe on water storage tanks. Other designs have also proven to be effective in preventing backflow and the entrance of contaminants; however, a PWS has been required to apply for a case-by-case exception to use other devices. This adopted rulemaking amends §290.43, streamlining the process for PWSs to use other devices and reduces staffs' time currently spent reviewing these exception requests.

Water Storage – This adopted rulemaking amends §290.43 to remove the sentence referencing American Water Works Association (AWWA) Standard D103. A rule petition which in part raised AWWA Standard D103 as an issue was denied during the April 23, 2013, agenda; at that agenda, staff was directed to consider amending the rule during a subsequent rulemaking.

Water Distribution Crossings – During a rule change in 1995, language applicable to waterlines crossing under wastewater lines was added into §290.44 which created potential conflict with the requirement for wastewater lines in 30 TAC §217.53. This adopted rulemaking amends §290.44 for consistency with §217.53 to be protective of public health.

Appendices – The amended rule removes three figures, or appendices, in existing §290.47. Based upon the revision of federal law regarding the lead content in pipes, fittings, and fixtures, the commission proposed amending Figure: 30 TAC §290.47(b). During its amendment of Figure: 30 TAC §290.47(b), the commission revisited the other figures in existing §290.47 and proposed the removal of Figures: 30 TAC §290.47(c), (d), and (f) to allow PWSs an editable form that can be modified without retyping the figure.

Statutory authority:
TWC, §§5.102, 5.103, 5.105, 12.013 and Chapter 13; and Texas Health and Safety Code, Chapter 341.

Effect on the:
A.) Regulated community:
The TCEQ regulates approximately 7,000 PWSs, including PWSs owned by units of local, state and federal government, as well as for profit businesses or individually owned PWSs. This rulemaking does not create a new group of affected persons.

State statutes – There will be no fiscal impact on the regulated community from the adopted amendment implementing the transfer of the CCN program to the PUC.

Federal regulations
Reduction of Lead in Drinking Water Act – PWSs with an existing stockpile of plumbing materials that do not meet the 0.25% lead level will not be able to install these materials. The Reduction of Lead in Drinking Water Act was enacted in January 2011, and PWSs were

given advance notice of the federal change, allowing them the opportunity to use their stockpiled materials. Because of this advance notice, any impact from this adopted rulemaking upon the regulated community is expected to be minimal.

E. coli Threshold – There is no impact anticipated upon the regulated community as the TCEQ has followed the federal guidance since its issuance.

Additional staff recommendations
Process for Approving Desalination Technology – Placing the desalination requirements in the rule may reduce expenses and construction time for PWSs.

Chloramine Disinfection Criteria – By allowing the use of chloramines without an exception request, the regulated community can save time and effort currently spent on requesting the exception from the TCEQ.

Modification of the Plan Review Submittal Process – The adopted rule will provide a more efficient submittal process for the regulated community and will clarify the criteria constituting a "significant change," which has caused confusion in the past for the regulated community.

Enforceability of Exceptions – The adopted rule will allow a PWS to provide the corrective action for a specific violation, instead of reapplying for a revoked exception.

Clarification for Well Construction Review Process – By placing the PWS well construction requirements in the rule, PWSs will have one location to find information about well design, thus making the requirements more accessible to the PWSs.

Alternative Appurtenances for Overflow Devices – Allowing the use of alternative appurtenances will permit PWSs to use these designs without requesting an exception, which will save such PWSs time and expense.

Water Storage – PWSs will be allowed more flexibility when designing water storage tanks by allowing tanks of other materials approved by the AWWA. The adopted rule will also reduce confusion in the regulated community by removing the reference to one specific AWWA Standard, D103.

Water Distribution Crossings – This adopted rule will align the TCEQ's water and wastewater requirements for water distribution pipe crossings and provide PWSs with consistency in the TCEQ's applicable rules which will also help PWSs protect public health by ensuring that wastewater lines are not located over waterlines.

Appendices – By moving some appendices to forms, the regulated community can save time and effort currently spent on potentially retyping the appendices to customize the forms for PWS use.

B.) Public:
State statutes – The adopted amendment will not impact the public.

Federal regulations – Any costs or cost avoidance experienced by the PWSs may be passed on to the public. The impact of this adopted rulemaking upon the public is anticipated to be minimal.

Additional staff recommendations – Any cost savings experienced by the PWSs are anticipated to be minimal and may be passed on to the public.

C.) Agency programs:
State statutes – No impact is anticipated from the adopted amendment.

Federal regulations – There will be minimal impact to the TCEQ's programs. Staff may receive questions from PWSs about the federal changes.

Additional staff recommendations – The staff-initiated rule efficiencies will save TCEQ staff resources by removing, clarifying, and streamlining TCEQ processes, while affording staff the opportunity to concentrate their efforts on other, more complex innovative treatment reviews. There will be minimal impact to the TCEQ's programs. Staff may receive questions from PWSs about the changes.

Stakeholder meetings:
On May 9 and June 3, 2014, the TCEQ met with interested stakeholders, including representatives of PWSs, government agencies, design engineers, membrane vendors, and other interested participants, to solicit input on the proposed rule change for approving desalination technology without obtaining an exception as required under existing §290.42(g) in addition to other proposed rule revisions. With the exception of treatment for pathogen control and the treatment of seawater (both of which have unique challenges), the stakeholder process developed a path for PWSs and their design engineers to use rule-based criteria to demonstrate that the desalination process would be effective, reliable and safe. With that goal in mind during the stakeholder meetings, TCEQ staff presented a discussion outline that included plant design, engineering report, capacity requirements, operator licensing, operating records and reports, and instrument calibration. As a result of the stakeholder meetings, TCEQ staff received sufficient feedback supporting the development of the proposed rule for desalination to meet the majority of the regulated community's concerns while remaining protective of public health.

Public comment:
The comment period began on February 6, 2015, and closed on March 10, 2015. A public hearing was held on February 26, 2015, in Austin, Texas, and no oral testimony occurred. The commission received timely written comments from the South Central Membrane

Association with the support of the American Membrane Technology Association and two individuals.

The comments focused on the reverse osmosis and nanofiltration requirements and the chloramination requirements. The comments on reverse osmosis and nanofiltration included questions on: a reverse osmosis and nanofiltration definition; the water sources that may be treated by reverse osmosis and nanofiltration; when a plan review and a baseline study is required; the location of conductivity samples; the use of historical classes for training requirements; the maintenance of records; when a module must be replaced; and, the calibration interval for instruments. The comments on chloramination included questions on: when a nitrification action plan is required; where the nitrification action plan samples can be taken; disinfection sample collection; mixing requirements, drain requirements; sample accuracy limits; and, color comparators. The comments have been summarized in the Response to Comments section of the preamble.

Significant changes from proposal:
None, though in response to comment, some proposed rules were revised.

Potential controversial concerns and legislative interest:
The legislature, interested stakeholders, and the regulated community continue to express interest in using desalination to treat water and produce a new drinking water source without undertaking an exception process.

Does this rulemaking affect any current policies or require development of new policies?
This adopted rulemaking merely formalizes existing policies into Chapter 290; no additional policies are planned for development.

State statutes – Without approval, Chapter 290 will be inconsistent with existing state statutes. If not adopted within this rulemaking, the removal of a requirement in existing §290.39(j)(3) related to CCNs could be addressed in Rule Project No. 2013-057-291-OW.

Federal regulations – The TCEQ could attempt to implement both federal changes, lead content and LT2 sampling, directly from the federal law or guidance. However, TCEQ investigators are authorized to enforce state law, not federal, and the state rules governing lead content without amendment would be inconsistent with and less stringent than the federal law.

Additional staff recommendations – Instead of adopting design, operation, maintenance, and recordkeeping rules, the TCEQ could continue requiring the submission of exception requests which can be supported by computer models instead of physical studies for desalination that meets primary drinking water standards.

Re: Docket No. 2014-0615-RUL

Key points in the adoption rulemaking schedule:

***Texas Register* proposal publication date:**	February 6, 2015
Anticipated Texas Register adoption publication date:	July 17, 2015
Anticipated effective date:	July 23, 2015
Six-month *Texas Register* filing deadline:	August 6, 2015

Agency contacts:
Marlo Wanielista Berg, P.E., Rule Project Manager, (512) 239-6967, Water Supply
Ruth Takeda, Staff Attorney, (512) 239-6635
Derek Baxter, Texas Register Coordinator, (512) 239-2613

Attachments
HB 1600, §2.96
SB 567, §§1, 4, 95, and 96
Federal Regulations for Lead and *E. coli*
EPA's *Summary of the Reduction of Lead in Drinking Water Act*, located at:
http://water.epa.gov/drink/info/lead/upload/epa815s13003.pdf

cc: Chief Clerk, 2 copies
Executive Director's Office
Marshall Coover
Pattie Burnett
Stephen Tatum
Office of General Counsel
Marlo Wanielista Berg, P.E.
Derek Baxter

the rates the political subdivision charges to the person. Chapter 12, Water Code, and rules adopted under that chapter apply to an appeal under this section.

(b) The Public Utility Commission of Texas [~~commission~~] shall hear the appeal not later than the 180th day after the date the appeal is filed.

(c) The Public Utility Commission of Texas [~~commission~~] shall issue a final decision on the appeal not later than the 60th day after the date the hearing ends.

SECTION 2.94. Section 8803.151(1), Special District Local Laws Code, is amended to read as follows:

(1) "Commission" means the Public Utility Commission of Texas [~~Commission on Environmental Quality~~].

SECTION 2.95. Section 8808.151(1), Special District Local Laws Code, is amended to read as follows:

(1) "Commission" means the Public Utility Commission of Texas [~~Commission on Environmental Quality~~].

SECTION 2.96. (a) On September 1, 2014, the following are transferred from the Texas Commission on Environmental Quality to the Public Utility Commission of Texas:

(1) the powers, duties, functions, programs, and activities of the Texas Commission on Environmental Quality relating to the economic regulation of water and sewer service, including the issuance and transfer of certificates of convenience and necessity, the determination of rates, and the administration of hearings and proceedings involving those matters, under Section 12.013 and Chapter 13, Water Code, as provided by this Act;

(2) any obligations and contracts of the Texas Commission on Environmental Quality that are directly related to implementing a power, duty, function, program, or activity transferred under this Act; and

(3) all property and records in the custody of the Texas Commission on Environmental Quality that are related to a power, duty, function, program, or activity transferred under this Act and all funds appropriated by the legislature for that power, duty, function, program, or activity.

(b) The Texas Commission on Environmental Quality shall continue to carry out the commission's duties related to the economic regulation of water and sewer service under the law as it existed immediately before the effective date of this Act until September 1, 2014, and the former law is continued in effect for that purpose.

(c) The Texas Commission on Environmental Quality and the Public Utility Commission of Texas shall enter into a memorandum of understanding that:

(1) identifies in detail the applicable powers and duties that are transferred by this Act;

(2) establishes a plan for the identification and transfer of the records, personnel, property, and unspent appropriations of the Texas Commission on Environmental Quality that are used for purposes of the commission's powers and duties directly related to the economic regulation of water and sewer service under Section 12.013 and Chapter 13, Water Code, as amended by this Act; and

(3) establishes a plan for the transfer of all pending applications, hearings, rulemaking proceedings, and orders relating to the economic regulation of water and sewer service under Section 12.013 and Chapter 13, Water Code, as amended by this Act, from the Texas Commission on Environmental Quality to the Public Utility Commission of Texas.

(d) The memorandum of understanding under this section:

(1) is not required to be adopted by rule under Section 5.104, Water Code; and

(2) must be completed by August 1, 2014.

(e) The executive directors of the Texas Commission on Environmental Quality and the Public Utility Commission of Texas may agree in the memorandum of understanding under this section to transfer to the Public Utility Commission of Texas any personnel of the Texas Commission on Environmental Quality whose functions predominantly involve powers, duties, obligations, functions, and activities related to the economic regulation of water and sewer service under Section 12.013 and Chapter 13, Water Code, as amended by this Act.

(f) The Texas Commission on Environmental Quality and the Public Utility Commission of Texas shall periodically update the Office of Public Utility Counsel on the anticipated contents of the memorandum of understanding under this section during the development of the memorandum.

(g) On or after September 1, 2013, the Office of Public Utility Counsel may initiate or intervene in a contested case before the Texas Commission on Environmental Quality that the

office would be entitled to initiate or intervene in if the case were before the Public Utility Commission of Texas, as authorized by Chapter 13, Water Code, as amended by this Act.

(h) The Texas Commission on Environmental Quality and the Public Utility Commission of Texas shall appoint a transition team to accomplish the purposes of this section. The transition team may consult with the Office of Public Utility Counsel to accomplish the purposes of this section. The transition team shall establish guidelines on how the two agencies will cooperate regarding:

(1) meeting federal drinking water standards;

(2) maintaining adequate supplies of water;

(3) meeting established design criteria for wastewater treatment plants;

(4) demonstrating the economic feasibility of regionalization; and

(5) serving the needs of economically distressed areas.

(i) The transition team appointed under Subsection (h) of this section shall provide monthly updates to the executive directors of the Texas Commission on Environmental Quality and the Public Utility Commission of Texas on the implementation of this Act and provide a final report on the implementation to the executive directors not later than September 1, 2014.

(j) A rule, form, policy, procedure, or decision of the Texas Commission on Environmental Quality related to a power, duty, function, program, or activity transferred under this Act continues in effect as a rule, form, policy, procedure, or decision of the

Public Utility Commission of Texas and remains in effect until amended or replaced by that agency. Notwithstanding any other law, beginning September 1, 2013, the Public Utility Commission of Texas may propose rules, forms, policies, and procedures related to a function to be transferred to the Public Utility Commission of Texas under this Act.

(k) The Public Utility Commission of Texas and the Texas Commission on Environmental Quality shall adopt rules to implement the changes in law made by this Act to Section 12.013 and Chapter 13, Water Code, not later than September 1, 2015.

(l) An affiliate of a Class A utility, as those terms are defined by Section 13.002, Water Code, as amended by this Act, may not file an application for a rate change on or after the effective date of this Act unless the affiliated Class A utility has filed for a rate change on or after that date. In relation to the application filed by the affiliate of the Class A utility, the Public Utility Commission of Texas:

(1) may not approve the rate change application until the Public Utility Commission of Texas approves the rate change application filed by the affiliated Class A utility; and

(2) may require the affiliate to comply with the Class A utility rate change process prescribed by Section 13.187, Water Code, regardless of whether the affiliate is classified as a Class A, B, or C utility under Section 13.002, Water Code, as amended by this Act.

SECTION 2.97. (a) The Public Utility Commission of Texas shall conduct a comparative analysis of the ratemaking authority of

S.B. No. 567

AN ACT

relating to rates for water service, to the transfer of functions relating to the economic regulation of water and sewer service from the Texas Commission on Environmental Quality to the Public Utility Commission of Texas, and to the duties of the Office of Public Utility Counsel regarding the economic regulation of water and sewer service.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF TEXAS:

SECTION 1. Subsection (a), Section 5.013, Water Code, is amended to read as follows:

(a) The commission has general jurisdiction over:

(1) water and water rights including the issuance of water rights permits, water rights adjudication, cancellation of water rights, and enforcement of water rights;

(2) continuing supervision over districts created under Article III, Sections 52(b)(1) and (2), and Article XVI, Section 59, of the Texas Constitution;

(3) the state's water quality program including issuance of permits, enforcement of water quality rules, standards, orders, and permits, and water quality planning;

(4) the determination of the feasibility of certain federal projects;

(5) the adoption and enforcement of rules and performance of other acts relating to the safe construction,

maintenance, and removal of dams;

(6) conduct of the state's hazardous spill prevention and control program;

(7) the administration of the state's program relating to inactive hazardous substance, pollutant, and contaminant disposal facilities;

(8) the administration of a portion of the state's injection well program;

(9) the administration of the state's programs involving underground water and water wells and drilled and mined shafts;

(10) the state's responsibilities relating to regional waste disposal;

(11) the responsibilities assigned to the commission by Chapters 361, 363, 382, and 401, Health and Safety Code; and

(12) [~~administration of the state's water rate program under Chapter 13 of this code; and~~

[~~(13)~~] any other areas assigned to the commission by this code and other laws of this state.

SECTION 2. Subsection (a), Section 5.311, Water Code, is amended to read as follows:

(a) The commission may delegate to an administrative law judge of the State Office of Administrative Hearings the responsibility to hear any matter before the commission [~~and to issue interlocutory orders related to interim rates under Chapter 13~~].

SECTION 3. Section 5.507, Water Code, is amended to read as

follows:

Sec. 5.507. EMERGENCY ORDER FOR OPERATION OF UTILITY THAT DISCONTINUES OPERATION OR IS REFERRED FOR APPOINTMENT OF RECEIVER. The commission or the Public Utility Commission of Texas may issue an emergency order appointing a willing person to temporarily manage and operate a utility under Section 13.4132. Notice of the action is adequate if the notice is mailed or hand delivered to the last known address of the utility's headquarters.

SECTION 4. Subsections (a) and (c), Section 5.508, Water Code, are amended to read as follows:

(a) Notwithstanding the requirements of Subchapter F, Chapter 13 [~~Section 13.187~~], the Public Utility Commission of Texas [~~commission~~] may authorize an emergency rate increase for a utility for which a person has been appointed under Section 5.507 or 13.4132 [~~13.412~~] or for which a receiver has been appointed under Section 13.412 [~~13.4132~~] if the increase is necessary to ensure the provision of continuous and adequate services to the utility's customers. The Public Utility Commission of Texas shall consult with the commission as needed to carry out this section.

(c) Notwithstanding Section 5.505, an order may be issued under this section for a term not to exceed 15 months. The Public Utility Commission of Texas [~~commission~~] shall schedule a hearing to establish a final rate within 15 months after the date on which an emergency rate increase takes effect. The additional revenues collected under an emergency rate increase are subject to refund if the utility commission finds that the rate increase was larger than necessary to ensure continuous and adequate service.

the rates the political subdivision charges to the person. Chapter 12, Water Code, and rules adopted under that chapter apply to an appeal under this section.

(b) The Public Utility Commission of Texas [~~commission~~] shall hear the appeal not later than the 180th day after the date the appeal is filed.

(c) The Public Utility Commission of Texas [~~commission~~] shall issue a final decision on the appeal not later than the 60th day after the date the hearing ends.

SECTION 94. Subdivision (1), Section 8803.151, Special District Local Laws Code, is amended to read as follows:

(1) "Commission" means the Public Utility Commission of Texas [~~Commission on Environmental Quality~~].

SECTION 95. Subdivision (1), Section 8808.151, Special District Local Laws Code, is amended to read as follows:

(1) "Commission" means the Public Utility Commission of Texas [~~Commission on Environmental Quality~~].

SECTION 96. (a) On September 1, 2014, the following are transferred from the Texas Commission on Environmental Quality to the Public Utility Commission of Texas:

(1) the powers, duties, functions, programs, and activities of the Texas Commission on Environmental Quality relating to the economic regulation of water and sewer service, including the issuance and transfer of certificates of convenience and necessity, the determination of rates, and the administration of hearings and proceedings involving those matters, under Section 12.013 and Chapter 13, Water Code, as provided by this Act;

(2) any obligations and contracts of the Texas Commission on Environmental Quality that are directly related to implementing a power, duty, function, program, or activity transferred under this Act; and

(3) all property and records in the custody of the Texas Commission on Environmental Quality that are related to a power, duty, function, program, or activity transferred under this Act and all funds appropriated by the legislature for that power, duty, function, program, or activity.

(b) The Texas Commission on Environmental Quality shall continue to carry out the commission's duties related to the economic regulation of water and sewer service under the law as it existed immediately before the effective date of this Act until September 1, 2014, and the former law is continued in effect for that purpose.

(c) The Texas Commission on Environmental Quality and the Public Utility Commission of Texas shall enter into a memorandum of understanding that:

(1) identifies in detail the applicable powers and duties that are transferred by this Act;

(2) establishes a plan for the identification and transfer of the records, personnel, property, and unspent appropriations of the Texas Commission on Environmental Quality that are used for purposes of the commission's powers and duties directly related to the economic regulation of water and sewer service under Section 12.013 and Chapter 13, Water Code, as amended by this Act; and

(3) establishes a plan for the transfer of all pending applications, hearings, rulemaking proceedings, and orders relating to the economic regulation of water and sewer service under Section 12.013 and Chapter 13, Water Code, as amended by this Act, from the Texas Commission on Environmental Quality to the Public Utility Commission of Texas.

(d) The memorandum of understanding under this section:

(1) is not required to be adopted by rule under Section 5.104, Water Code; and

(2) must be completed by August 1, 2014.

(e) The executive directors of the Texas Commission on Environmental Quality and the Public Utility Commission of Texas may agree in the memorandum of understanding under this section to transfer to the Public Utility Commission of Texas any personnel of the Texas Commission on Environmental Quality whose functions predominantly involve powers, duties, obligations, functions, and activities related to the economic regulation of water and sewer service under Section 12.013 and Chapter 13, Water Code, as amended by this Act.

(f) The Texas Commission on Environmental Quality and the Public Utility Commission of Texas shall periodically update the Office of Public Utility Counsel on the anticipated contents of the memorandum of understanding under this section during the development of the memorandum.

(g) On or after September 1, 2013, the Office of Public Utility Counsel may initiate or intervene in a contested case before the Texas Commission on Environmental Quality that the

office would be entitled to initiate or intervene in if the case were before the Public Utility Commission of Texas, as authorized by Chapter 13, Water Code, as amended by this Act.

(h) The Texas Commission on Environmental Quality and the Public Utility Commission of Texas shall appoint a transition team to accomplish the purposes of this section. The transition team may consult with the Office of Public Utility Counsel to accomplish the purposes of this section. The transition team shall establish guidelines on how the two agencies will cooperate regarding:

(1) meeting federal drinking water standards;

(2) maintaining adequate supplies of water;

(3) meeting established design criteria for wastewater treatment plants;

(4) demonstrating the economic feasibility of regionalization; and

(5) serving the needs of economically distressed areas.

(i) The transition team appointed under Subsection (h) of this section shall provide monthly updates to the executive directors of the Texas Commission on Environmental Quality and the Public Utility Commission of Texas on the implementation of this Act and provide a final report on the implementation to the executive directors not later than September 1, 2014.

(j) A rule, form, policy, procedure, or decision of the Texas Commission on Environmental Quality related to a power, duty, function, program, or activity transferred under this Act continues in effect as a rule, form, policy, procedure, or decision of the

Public Utility Commission of Texas and remains in effect until amended or replaced by that agency. Notwithstanding any other law, beginning September 1, 2013, the Public Utility Commission of Texas may propose rules, forms, policies, and procedures related to a function to be transferred to the Public Utility Commission of Texas under this Act.

(k) The Public Utility Commission of Texas and the Texas Commission on Environmental Quality shall adopt rules to implement the changes in law made by this Act to Section 12.013 and Chapter 13, Water Code, not later than September 1, 2015.

(l) An affiliate of a Class A utility, as those terms are defined by Section 13.002, Water Code, as amended by this Act, may not file an application for a rate change on or after the effective date of this Act unless the affiliated Class A utility has filed for a rate change on or after that date. In relation to the application filed by the affiliate of the Class A utility, the Public Utility Commission of Texas:

(1) may not approve the rate change application until the Public Utility Commission of Texas approves the rate change application filed by the affiliated Class A utility; and

(2) may require the affiliate to comply with the Class A utility rate change process prescribed by Section 13.187, Water Code, regardless of whether the affiliate is classified as a Class A, B, or C utility under Section 13.002, Water Code, as amended by this Act.

SECTION 97. This Act takes effect September 1, 2013.

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42 U.S. Code § 300g–6 - Prohibition on use of lead pipes, solder, and flux

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(a) In general

(1) Prohibitions

(A) In general

No person may use any pipe, any pipe or plumbing fitting or fixture, any solder, or any flux, after June 19, 1986, in the installation or repair of—

(i)any public water system; or

(ii)any plumbing in a residential or nonresidential facility providing water for human consumption,

that is not lead free (within the meaning of subsection (d) of this section).

(B) Leaded joints

Subparagraph (A) shall not apply to leaded joints necessary for the repair of cast iron pipes.

(2) Public notice requirements

(A) In general

Each owner or operator of a public water system shall identify and provide notice to persons that may be affected by lead contamination of their drinking water where such contamination results from either or both of the following:

(i)The lead content in the construction materials of the public water distribution system.

(ii)Corrosivity of the water supply sufficient to cause leaching of lead.

The notice shall be provided in such manner and form as may be reasonably required by the Administrator. Notice under this paragraph shall be provided notwithstanding the absence of a violation of any national drinking water standard.

(B) Contents of notice

Notice under this paragraph shall provide a clear and readily understandable explanation of—

(i)the potential sources of lead in the drinking water,

(ii)potential adverse health effects,

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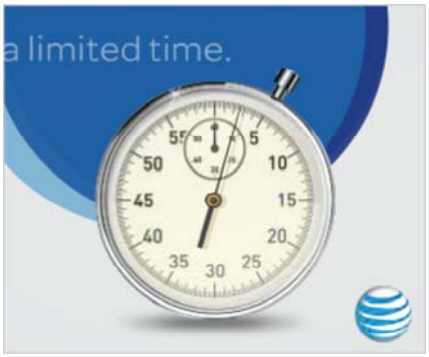

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(iii)reasonably available methods of mitigating known or potential lead content in drinking water,

(iv)any steps the system is taking to mitigate lead content in drinking water, and

(v)the necessity for seeking alternative water supplies, if any.

(3) Unlawful acts

Effective 2 years after August 6, 1996, it shall be unlawful—

(A)for any person to introduce into commerce any pipe, or any pipe or plumbing fitting or fixture, that is not lead free, except for a pipe that is used in manufacturing or industrial processing;

(B)for any person engaged in the business of selling plumbing supplies, except manufacturers, to sell solder or flux that is not lead free; or

(C)for any person to introduce into commerce any solder or flux that is not lead free unless the solder or flux bears a prominent label stating that it is illegal to use the solder or flux in the installation or repair of any plumbing providing water for human consumption.

(4) Exemptions

The prohibitions in paragraphs (1) and (3) shall not apply to—

(A)pipes, pipe fittings, plumbing fittings, or fixtures, including backflow preventers, that are used exclusively for nonpotable services such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not anticipated to be used for human consumption; or

(B)toilets, bidets, urinals, fill valves, flushometer valves, tub fillers, shower valves, fire hydrants, service saddles, or water distribution main gate valves that are 2 inches in diameter or larger.

(b) State enforcement

(1) Enforcement of prohibition

The requirements of subsection (a)(1) of this section shall be enforced in all States effective 24 months after June 19, 1986. States shall enforce such requirements through State or local plumbing codes, or such other means of enforcement as the State may determine to be appropriate.

(2) Enforcement of public notice requirements

The requirements of subsection (a)(2) of this section shall apply in all States effective 24 months after June 19, 1986.

(c) Penalties

If the Administrator determines that a State is not enforcing the requirements of subsection (a) of this section as required pursuant to subsection (b) of this section, the Administrator may withhold up to 5 percent of Federal funds available to that State for State program grants under section 300j–2(a) of this title.

(d) Definition of lead free

(1) In general

For the purposes of this section, the term “lead free” means—

(A)not containing more than 0.2 percent lead when used with respect to solder and flux; and

(B)not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

(2) Calculation

The weighted average lead content of a pipe, pipe fitting, plumbing fitting, or fixture shall be calculated by using the following formula: For each wetted component, the percentage of lead in the component shall be multiplied by the ratio of the wetted

surface area of that component to the total wetted surface area of the entire product to arrive at the weighted percentage of lead of the component. The weighted percentage of lead of each wetted component shall be added together, and the sum of these weighted percentages shall constitute the weighted average lead content of the product. The lead content of the material used to produce wetted components shall be used to determine compliance with paragraph (1)(B). For lead content of materials that are provided as a range, the maximum content of the range shall be used.

(e) Plumbing fittings and fixtures

(1) In general

The Administrator shall provide accurate and timely technical information and assistance to qualified third-party certifiers in the development of voluntary standards and testing protocols for the leaching of lead from new plumbing fittings and fixtures that are intended by the manufacturer to dispense water for human ingestion.

(2) Standards

(A) In general

If a voluntary standard for the leaching of lead is not established by the date that is 1 year after August 6, 1996, the Administrator shall, not later than 2 years after August 6, 1996, promulgate regulations setting a health-effects-based performance standard establishing maximum leaching levels from new plumbing fittings and fixtures that are intended by the manufacturer to dispense water for human ingestion. The standard shall become effective on the date that is 5 years after the date of promulgation of the standard.

(B) Alternative requirement

If regulations are required to be promulgated under subparagraph (A) and have not been promulgated by the date that is 5 years after August 6, 1996, no person may import, manufacture, process, or distribute in commerce a new plumbing fitting or fixture, intended by the manufacturer to dispense water for human ingestion, that contains more than 4 percent lead by dry weight.

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Summary Of The
Reduction Of Lead In Drinking Water Act
And Frequently Asked Questions

The Reduction of Lead in Drinking Water Act was enacted on January 4, 2011 to amend Section 1417 of the Safe Drinking Water Act (SDWA or Act) respecting the use and introduction into commerce of lead pipes, plumbing fittings or fixtures, solder and flux. The Act established a prospective effective date of January 4, 2014, which provided a three year timeframe for affected parties to transition to the new requirements. Upon signature the Community Fire Safety Act of 2013[1] will further amend Section 1417 to exempt fire hydrants. In anticipation of these changes taking effect, EPA is providing the following summary of the requirements of the lead ban provisions in Section 1417 and some answers to frequently asked questions related to the amendments to assist manufacturers, retailers, plumbers and consumers in understanding the changes to the law.

Outreach

On August 16, 2012, EPA held a public webinar with stakeholders to discuss the Reduction of Lead in Drinking Water Act and the potential ramifications that this change in law may have. Participants included public utilities, government agencies, plumbing manufacturers, plumbing retailers and trade associations. At the end of this webinar, EPA solicited comments from the attendees on issues and concerns related to the new requirements. The webinar proceedings and the solicited input were used in formulating an initial set of Frequently Asked Questions (FAQs) that were published for public comment on May 23, 2013. EPA held a webinar on November, 25 2013 to solicit information from stakeholders regarding the applicability of Section 1417 to fire hydrants. EPA was reassessing whether fire hydrants should be subject to the lead free requirements when the Community Fire Safety Act was passed. EPA has revised this document to explain that fire hydrants would be exempt from the lead free requirements in accordance with the Community Fire Safety Act.

This document, including revised answers to frequently asked questions, is intended to help the public understand the statutory requirements, EPA intends to further clarify and refine these and other issues related to these provisions in a future rulemaking. These FAQs include some recommendations that are advisory only (indicated by the use of the words such as “should” or “encourages”).

EPA remains interested in feedback on these FAQs, for refinement of these answers, to respond to new questions, or to determine which issues should be explored in its rulemaking. As a result, EPA may revise or supplement these FAQs from time to time.

SDWA Section 1417

Since 1986, the Safe Drinking Water Act (“SDWA” or “the Act”) has prohibited the <u>use</u> of certain items that are not lead free and since 1996 the Act has made it unlawful for anyone to <u>introduce into commerce</u> items that are not lead free.

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[1] The Community Fire Safety Act of 2013 was passed in both the House (December 2, 2013) and Senate (December 17, 2013). As of December 19, 2013, the President’s signature to enact the bill is pending.

Use Prohibition

Section 1417(a)(1) prohibits the "use of any pipe, any pipe or plumbing fitting or fixture, any solder, or any flux, after June 1986, in the installation or repair of (i) any public water system; or (ii) any plumbing in a residential or non-residential facility providing water for human consumption, that is not lead free" as defined in Section 1417(d). Prior to the 2011 Amendments, the only exception to this prohibition was for "leaded joints necessary for the repair of cast iron pipes."

Unlawful Commerce Provision

There are three components to the "unlawful commerce" provision. Section 1417(a)(3) provides that "it shall be unlawful –

(A) for any person to introduce into commerce any pipe, or any pipe or plumbing fitting or fixture, that is not lead free, except for a pipe that is used in manufacturing or industrial processing;

(B) for any person engaged in the business of selling plumbing supplies, except manufacturers, to sell solder or flux that is not lead free; or

(C) for any person to introduce into commerce any solder or flux that is not lead free unless the solder or flux bears a prominent label stating that it is illegal to use the solder or flux in the installation or repair of any plumbing providing water for human consumption."

Summary of the Amendments to SDWA Section 1417

The 2011 Reduction of Lead in Drinking Water Act revised Section 1417 to:

(1) Redefine lead free in SDWA Section 1417(d) to:
- lower the maximum lead content of the wetted surfaces of plumbing products such as pipes, pipe fittings, plumbing fittings and fixtures from 8.0% to a weighted average of 0.25%;
- establish a statutory method for the calculation of lead content; and
- eliminate the requirement that lead free products be in compliance with voluntary standards established in accordance with SDWA 1417(e) for leaching of lead from new plumbing fittings and fixtures.

(2) Create exemptions in SDWA Section 1417(a)(4) from the prohibitions on the use or introduction into commerce for:
- "pipes, pipe fittings, plumbing fittings or fixtures, including backflow preventers, that are used exclusively for nonpotable services such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not anticipated to be used for human consumption;" (SDWA 1417(a)(4)(A))

- "toilets, bidets, urinals, fill valves, flushometer valves, tub fillers, fire hydrants, shower valves, service saddles, or water distribution main gate valves that are 2 inches in diameter or larger." (SDWA 1417(a)(4)(B))

Effective Date of the Amendments

The amendments will become effective on January 4, 2014.
Until January 4, 2014:

- The definition of lead free is a maximum lead content of 8.0%
- None of the exemptions created by the 2011 amendments apply
- Plumbing fittings and fixtures must be in compliance with the voluntary standard Section 9 of NSF, International (NSF)/American National Standards Institute (ANSI) Standard 61.

As of January 4, 2014, the 2011 amendments to Section 1417 of SDWA take effect and therefore:

- A new definition of lead free applies, including a maximum lead content of 0.25% and a method for calculating it, unless the product is covered by one of the exemptions.
- While SDWA still refers to voluntary standards, it no longer requires plumbing fittings and fixtures to be in compliance with Section 9 of NSF/ANSI Standard 61 (e.g., new endpoint devices).

Other laws related to the sale or use of plumbing products that contain lead

It is important to note that State and local jurisdictions may have additional limitations or requirements regarding the use or sale and distribution of pipes, pipe or plumbing fittings, or fixtures that contain lead. Contact your local or State plumbing or drinking water authority to find out more about any additional requirements that may apply.

Frequently Asked Questions

Definition of Lead Free

1. **Q.** How exactly will the definition of lead free change?

A. Prior to January 4, 2014, lead free has the following definition:-

(1) when used with respect to solders and flux, lead free refers to solders and flux containing not more than 0.2 percent lead;

(2) when used with respect to pipes and pipe fittings, lead free refers to pipes and pipe fittings containing not more than 8.0 percent lead; and

(3) when used with respect to plumbing fittings and fixtures, lead free refers to plumbing fittings and fixtures in compliance with standards established in accordance with SDWA Section 1417(e) (e.g. Section 9 of NSF/ANSI Standard 61).

Effective January 4, 2014, lead free means:

(A) not containing more than 0.2 percent lead when used with respect to solder

and flux; and

(B) not more than a weighted average of 0.25 percent lead when used with respect to the wetted surfaces of pipes, pipe fittings, plumbing fittings, and fixtures.

Calculation

For purposes of the Act, the weighted average lead content of a pipe, pipe fitting, plumbing fitting, or fixture is calculated by using the following statutory formula:

- For each wetted component, the percentage of lead in the component is multiplied by the ratio of the wetted surface area of that component to the total wetted surface area of the entire product to arrive at the weighted percentage of lead of the component.
- The weighted percentage of lead of each wetted component is added together, and the sum of these weighted percentages constitute the weighted average lead content of the product. The lead content of the material used to produce wetted components is used to determine compliance.
- For lead content of materials that are provided as a range, the maximum content of the range must be used.[2]

Questions about Coverage

2. Q. What did Congress mean by pipes, pipe fittings, plumbing fittings and fixtures?

A. By removing Section 1417(d)(3) from the definition of lead free, the 2011 amendments eliminated distinctions between "pipes" "pipe fittings", "plumbing fittings" and "plumbing fixtures." As a general matter, Congress intended that these amendments broadly apply to pipes and plumbing that may provide water for human consumption so that lead in the wetted surfaces of these conveyances can be minimized or eliminated, thus reducing exposures to lead in tap water. For purposes of these FAQs, EPA is using the term "pipes, fittings or fixtures" as a shorthand to refer to pipes, pipe fittings, plumbing fittings and fixtures, as those terms are used in the Act

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[2] Following is an example of the statutory calculation. Note: The formula will vary for each product depending upon the number of components and the wetted surface area of each component. Equation: Total % Lead = $[Pb\%C_1 \times RWSAC_1] + [Pb\%C_2 \times RSAC_2] + [Pb\%C_n \times RSAC_n]$

Example:

Component	(Pb%) Lead Content	(RWSA) Ratio of Wetted Surface Area	Weighted % Lead
Washer	0.50%	1/1000	0.0005
Pipe	0.10% lead	999/1000	0.099

Weighted Average Lead Content: 0.0005 + 0.099 = 0.0995

3. **Q.** I am a manufacturer of faucet-mounted water treatment devices and plumbed-in treatment devices, which may include dedicated faucets. Are these types of devices a pipe, fitting or fixture that is subject to the new lead free requirements?

   A. Yes, both point-of-use and point-of-entry devices are covered by the lead free requirements because the terms used by Congress are commonly understood to include kitchen and bathroom faucets and the pipes leading to such faucets. These devices are typically integrated into a faucet or plumbing system that delivers drinking water and as such is considered to be covered by the new lead free requirements. Because these devices may be designed to remove lead, EPA expects that some may already meet the lead content limit of 0.25%.

4. **Q.** I am a manufacturer of stand-alone appliances that are not connected to a potable water distribution system (i.e. non-plumbed), such as coffee makers or pour through water filters. Are these types of items required to meet the new definition of lead free before I introduce them into commerce?

   A. These stand-alone, non-plumbed, appliances or devices do not logically fit within the statutory reference to pipes, fittings or fixtures because they are not plumbed in and they are not part of the drinking water distribution system. The focus of SDWA Section 1417 is to prevent the contamination of the drinking water in the distribution system by lead that has leached from pipes, faucets and other fixtures incidental to the delivery of potable water. As noted in the legislative history of the 1996 amendments to Section 1417, "[i]t is the intent of the Committee that the terms pipe and plumbing fittings and fixtures in the legislation are in reference to drinking water applications…." EPA does encourage manufacturers to avoid the use of lead in such appliances and EPA also encourages consumers to consult the manufacturers of these items to make sure that they do not contain lead.

   Where such devices are, however, integrated into pipes, fitting or fixtures for the delivery of water, such as a plumbed in coffee maker, they would logically come within the scope of the new lead free requirements.

5. **Q.** Are fire hydrants subject to the lead free requirements in section 1417(a)?

   A. No, the Community Fire Safety Act of 2013, once enacted, would exempt fire hydrants from the lead free requirements in section 1417(a).

6. **Q.** Are household appliances or fixtures, such as washing machines, dishwashers and water heaters subject to the lead free requirements?

A. If the appliance or fixture is part of the plumbing system and is not used exclusively for nonpotable services, it is subject to the lead free requirements. As a result, washing machines are exempt as a device that is used exclusively for nonpotable services. Dishwashers and water heaters, on the other hand, are not exempt because they are used for potable services.

7. **Q.** How does EPA interpret the phrase "potable services"?

A. EPA interprets "potable services" to be services or applications that provide water suitable for human ingestion (e.g. drinking, teeth brushing, food preparation, dishwashing, maintaining oral hygiene).

8. **Q.** Are temporarily installed items, including those used for emergency repairs, subject to the new lead free requirements?

A. There is no exemption in the statute for temporary or emergency repairs; therefore under the language of the statute, any pipe, fitting or fixture used in installation or repair, beginning January 4, 2014, is subject to the lead free requirements and must meet the new definition of lead free, even if their installation is only temporary or for an emergency repair.

9. **Q.** I am a manufacturer of hose bibs (threaded faucets with nozzles bent downward). I market them and sell them primarily for use outdoors (e.g. to connect to a garden hose, sprinkler, or irrigation system) but they could be used for services associated with human consumption as well. Are the hose bibs required to meet the new definition of lead free?

A. A hose bib is a pipe, fitting or fixture under the language of the statute and therefore it is subject to the requirements in Section 1417 unless it is used exclusively for nonpotable services. If you market and sell hose bibs for nonpotable services, and the bibs are prominently and clearly labeled as illegal to use for potable services and not anticipated to be used for human consumption, then EPA would generally consider them to be used exclusively for nonpotable services and therefore, exempt from the lead free requirements in SDWA 1417(a)(1) and (3).

10. **Q.** I am a manufacturer of pipes, fittings or fixtures (e.g. backflow preventers). Some of the products I make are marketed and sold for use in nonpotable services exclusively, and some products I make are marketed and sold for both potable and nonpotable services. The products marketed and sold for use in nonpotable services could theoretically be used for potable services. If I affix a label to the products that are sold for nonpotable services identifying it as illegal to use for potable services, could it be considered exempt under 1417(a)(4)(A)?

A. Yes. While there is no requirement in the statute to label pipes, fittings or fixtures as either lead free or not lead free, a manufacturer could use labeling to establish that the pipe,

fitting or fixture is used exclusively for nonpotable services and therefore, exempt from the lead free requirements in SDWA 1417(a)(1) and (3). In implementing the new requirements, EPA would generally consider pipes, fittings or fixtures to be used exclusively for nonpotable services if they are marketed and sold for use in nonpotable services, and prominently and clearly labeled as illegal to use in potable services and not anticipated for human consumption.

EPA also recommends that the label identify some examples of potable services to convey that it includes more than drinking water. For example, the label could say "It is illegal to use this product in potable services such as drinking water, handwashing, food preparation, and dishwashing."

11. **Q.** I am a manufacturer of toilets, bidets, urinals, fill valves, flushometer valves, tub fillers, shower valves, service saddles, or water distribution main gate valves that are 2 inches in diameter or larger. Now that the new law exempts these products from the use prohibition and the unlawful commerce provision in SDWA 1417(a)(1) and (3), do they still need to meet the old definition of lead free or could they contain more than 8.0% lead?

A. Once the amendments take effect on January 4, 2014, there will be nothing in the SDWA that would require any part of these products to meet the old (or new) definition of lead free. However, there may be State or local laws prohibiting these products from containing more than a certain percentage of lead, or other legal implications to increasing the lead content of these products, so manufacturers may want to seek legal advice before increasing the lead content of these products.

12. **Q.** I am a manufacturer of products that are not anticipated to be used in potable services but the products are not used exclusively in nonpotable services. Are the products exempt from the requirements of the Act under Section 1417 (a)(4)(A)?

A. No, only pipes, fittings or fixtures that are used exclusively in nonpotable services are exempt under 1417(a)(4)(A). If the item is used exclusively in nonpotable services it is also not anticipated to be used for human consumption, but the inverse is not necessarily true. Pipes, fittings or fixtures that are not anticipated to be used for human consumption but are physically capable of being used for potable services may not be used exclusively for nonpotable services in which case they would not be exempt under Section 1417(a)(4)(A).

13. **Q.** I am a manufacturer of products that are sold for use in nonpotable services but they could be connected to potable services. If I want to assure my products are used exclusively for nonpotable applications, what kind of labeling should I use?

A. If you choose to label your pipes, fittings or fixtures in order to establish that they are to be used exclusively for nonpotable services, the labeling should be clear and prominent;

otherwise, it may not be reasonable to assume that the product will be used exclusively for nonpotable services and not anticipated to be used for human consumption. EPA recommends that the labeling consist of both a product label and a packaging label because products can get separated from their packaging. Another reason for labeling both the package and the product is that one package may contain many individual products within it and purchasers may not be aware of the label on the bulk package. EPA further recommends that product labels consist of physically marking the product, a tag physically attached to each individual product or an individual bag that contains each individual product. Labels should clearly indicate that it is illegal for use in potable services and not anticipated for human consumption.

Effective Date

14. Q. I operate a hardware store that sells pipes, fittings or fixtures primarily to homeowners, contractors, and some small businesses that sell plumbing services. I recently purchased a large amount of pipes, fittings or fixtures that meet the old definition of lead free, but not the new definition of lead free. If my inventory of these fixtures has not sold by January 4, 2014, may I continue to sell them until I've sold my existing supply?

A. No. The changes to the law become effective on January 4, 2014. Congress provided a transition period of three years after enactment (2011) of the new requirements. The statute does not provide any further extensions or exceptions for back inventory, small businesses, or sales to end-users. However, back inventory that could be used in both potable and nonpotable services may still continue to qualify for the exemption, and, as a result, be sold, if the products are clearly labeled as illegal to use for potable services.

15. Q. I am a builder and I anticipate that I will have a project that is partially completed on January 4, 2014. Am I required to remove all the plumbing that is not compliant with the new definition of lead free?

A. Any plumbing installed prior to January 4, 2014 would not need to be replaced under SDWA so long as it met the lead free requirements applicable at the time of installation. Any pipe, fitting or fixture installed after January 4, 2014 must meet the new lead free definition. EPA recommends you check with your local building inspector to get more information on implementation of this requirement, including any documentation required to demonstrate the lead content and installation date.

Calculating Lead Content, Third Party Certification and Labeling Products

16. Q. I am a manufacturer of plumbing fittings. How do I determine whether my products meet the definition of lead free in SDWA?

A. Starting January 4, 2014, the statute requires that you use the method for calculating lead content in Section 1417(d)(2), which is described in the answer to question 1.

17. Q. I am a manufacturer of plumbing supplies. If I apply a coating to the wetted surface or use a lead removal technology to treat the surface, how does it affect my calculation of the lead content of the material used to produce the wetted component?

A. Section 1417 (d)(1)(B) defines lead free for pipes, fittings or fixtures to mean "not more than a weighted average of 0.25% lead" when used with respect to the wetted surfaces. The statutory provision for calculating lead content (Section 1417(d)(2)) provides that "[t]he lead content of the material used to produce wetted components is used to determine compliance with the lead free definition." That provision also provides that, for lead content of materials that are provided as a range, the maximum content of the range must be used. The "material used to produce wetted components" includes all of the materials used to produce any component that has a wetted surface. If a coating is applied to a pipe, fitting or fixture, you must calculate the lead content of both the alloy and the coating and use the maximum lead content. If a pipe, fitting or fixture is treated with a lead removal technology, you would need to calculate the lead content of the alloy used to produce the pipe, not just the surface of the pipe, fitting or fixture -- because the alloy is the material used to produce the pipe and the pipe is the wetted component. If the lead content of the material is provided as a range, you would use the maximum lead content.

18. Q. Now that the new definition of lead free no longer refers to pipes, fittings or fixtures "in compliance with standards established in accordance with subsection (e) of this section", could State or local law and regulations still prohibit the use of products that are not in compliance with certain voluntary standards?

A. As of January 4, 2014, pipes, fittings or fixtures are no longer required by the SDWA to be in compliance with voluntary standards (e.g., Section 9 of NSF/ANSI Standard 61 or NSF/ANSI Standard 372) because Congress removed Section 1417(d)(3) (which referenced Section 1417(e)) from the definition of lead free. State or local laws and regulations (e.g., plumbing codes) however, may still prohibit the use of products that are not in compliance with certain voluntary standards.

19. Q. I am a plumbing manufacturer. Does the SDWA require that my products be certified by a third party to demonstrate compliance with the new definition of lead free?

A. The SDWA does not require manufacturers to obtain third party certification of their products. However, EPA encourages manufacturers to use third party certification or to create a system to document compliance (e.g., self-certification) with Section 1417 of SDWA and to provide important information to subsequent purchasers or users of the product, including retail stores, plumbers and consumers. Additionally, a recent survey of States

found that 47 have requirements for water treatment and distribution system components to comply with NSF/ANSI Standard 61 and most of them require an ANSI-accredited third party certification.

20. Q. I am a manufacturer of pipes, fittings or fixtures. Am I required to label my products as being lead free?

A. There are no requirements in SDWA for a manufacturer to label these products as lead free; however, EPA encourages manufacturers to provide subsequent purchasers or users of the product, including retail stores, plumbers and consumers with information that clearly indicates the lead content in the products they are selling or distributing. Additionally, some States or local governments may require lead free labeling.

21. Q. Is there a role for third party certifications?

A. While the SDWA does not require third party certification, third party certification bodies or agencies may be used by manufacturers to inform consumers which products meet a voluntary standard. One such standard, NSF/ANSI 372, is consistent with the requirements of the Reduction of Lead in Drinking Water Act. A third party certification such as NSF/ANSI 372 could be a useful way to identify a product as meeting the requirements of Section 1417. Also, there may be State or local laws that require third party certification.

22. Q. I am installing a bathroom sink faucet (e.g., a plumbing fixture serving water intended for human consumption) and I want to be sure that the fixture meets the requirements of the Reduction of Lead in Drinking Water Act. How can I tell which product to purchase?

A. Any bathroom sink faucet for sale after January 4, 2014 must be lead free (containing not more than 0.25% weighted average lead content). While the statute does not require labeling, EPA encourages and expects many plumbing product manufacturers to label their products as lead free so that they can demonstrate compliance with SDWA as well as provide information to purchasers or users of the product.

Many State plumbing codes require the use of products that are in compliance with NSF/ANSI standards 61 and 372. NSF/ANSI Standard 372 is a certification process by which independent laboratories verify that the plumbing product is in compliance with the requirements of the 2011 Reduction of Lead in Drinking Water Act. Products will bear the mark of the laboratory that has independently certified that the product meets the standard. EPA published a brochure to assist the public with identifying the various marks that indicate a product has been certified as lead free to the new requirement of the Act: *"How to Identify Lead-Free Certification Marks for Drinking Water System & Plumbing Materials."* You can access the document at http://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=P100GRDZ.txt

Alternatively, a consumer could directly contact the manufacturer of the product to confirm that the model you wish to purchase meets the lead free requirements.

Repairs and Replacement Parts

23. Q. How does EPA interpret the new statutory provisions to apply to repairs, reinstallations, and replacement parts?

A. *Repairs of previously installed pipes, fitting or fixtures*
A pipe, fitting or fixture that was installed in a public water system or a facility providing water for human consumption prior to the effective date of the 2011 Act does not need to meet the new definition of lead free regardless of whether it is repaired. The repaired pipe, fitting or fixture is not being "used" in the repair or installation, or "introduced into commerce" and therefore, the requirements of Section 1417 are not triggered as a result of the repair. Parts used in repairs may need to meet the requirements of Section 1417 (see "Replacement Parts" below and FAQ #24, 26, 27 and 28).

The temporary removal of pipes, fittings, or fixtures for repairs and reinstallation to their original location would not trigger the requirements of Section 1417 because the pipes, fittings or fixtures are not being installed or "used in" repair. (See FAQ #29). Similarly, the temporary removal of pipes, fittings or fixtures for storage or calibration and reinstallation to their original location would not trigger the requirements of Section 1417. (See FAQ #30.)

Replacement Parts
After the effective date of the 2011 Act, any replacement parts that are pipes, fittings, or fixtures either installed or used in repairs of a public water system or a facility providing water for human consumption, or introduced into commerce, must meet the definition of lead free. (See FAQ #25)

However, where the replacement of pipes, fittings, or fixtures is part of a device (such as a water heater) made up of several component parts and the device meets the definition of lead free in the 2011 Act, the replacement parts themselves need not meet the new definition of lead free. As long as the overall device would meet it with the replacement part installed, then the requirements of Section 1417 would be met. Such replacement parts should be labeled as specifically for use in the device that meets the new definition of lead free. (See FAQ # 24.)

Also, the use or introduction into commerce of replacement parts that are <u>not</u> pipes, fittings, or fixtures does not trigger the requirements of Section 1417. EPA recommends that any replacement parts that are <u>not</u> pipes, fittings, or fixtures that come into contact with potable water meet the definition of lead free in the 2011 Act because of their potential to cause elevated levels of lead in drinking water, but they are not required to do so. (See FAQ #26.)

24. **Q.** I am a manufacturer of pipes fittings or fixtures that serve water intended for human consumption. These pipes, fittings or fixtures are made up of several component parts. If I sell or provide free replacement parts, **AND** the original pipe, fitting or fixture met the lead free requirement in the 2011 Act, must those replacement parts meet the new definition of lead free?

    A. If the original pipe, fitting or fixture met the lead free requirement in the 2011 Act, and the replacement parts are sold for use in that specific device, they would not make the fixture noncompliant, and therefore those parts do not need to meet the lead free requirement.

25. **Q.** I am a plumber who installs and repairs pipes, fittings or fixtures that provide water for human consumption. If one of these devices requires replacement after January 4, 2014 does the new pipe, fitting or fixture need to meet the new federal definition of lead free?

    A. Yes, the replacement of a pipe, fitting or fixture would trigger the requirements of Section 1417 and the new pipe, fitting or fixture would need to meet the new definition of lead free. Section 1417(a)(1) prohibits the use of a pipe, fitting or fixture that is not lead free in the installation or repair of any plumbing in a residential or non-residential facility providing water for human consumption.

26. **Q.** I am a plumber who installs and repairs plumbing in facilities providing water for human consumption. A pipe, fitting or fixture requires repair of a part that is not a pipe, fitting, or fixture. Does the new part need to meet the definition of lead free?

    A. No. The definition of lead free does not apply to component parts that are not "pipes, pipe fittings, plumbing fittings, and fixtures" (referred to in these FAQs as "pipes, fittings, and fixtures"). EPA recommends that the wetted components of any replacement parts that are not pipes, fittings, or fixtures also be lead free. (See FAQ #2). EPA also notes that solder and flux used to install or repair pipes, fittings and fixtures may not contain more than 0.2 percent lead (See FAQ #1).

27. **Q.** I am repairing, in place, a pipe, fitting or fixture, which provides water for human consumption. The pipe, fitting of fixture was installed ***prior to*** January 4, 2014 and I do not know whether it meets the new definition of lead free in the 2011 Act. Do the replacement parts need to meet the new definition of lead free?

    A. While the previously installed pipe, fitting or fixture does not need to meet the new definition of lead free as it was installed prior to the effective date of the new lead free requirements, the statutory language requires that any replacement parts that are pipes, fittings or fixtures must meet the lead free requirements. In addition, EPA recommends that

any replacement parts that are not pipes, fittings, or fixtures that come into contact with potable water should meet the definition of lead free in the 2011 Act.

28. Q. I am repairing a pipe, fitting or fixture, which provides water for human consumption. The pipe, fitting or fixture was installed ***after*** January 4, 2014 and meets the new definition of lead free. Do the replacement parts need to meet the new definition of lead free?

A. It is unlikely that somebody making a repair will be able to recalculate the weighted average of lead in the pipe, fitting or fixture as a whole. Therefore, if the repair calls for parts that are pipes, fitting, or fixtures, those parts must meet the new definition of lead free unless the repair is using parts specifically made by the vendor for use in repairing the specific pipe, fitting or fixture in question, ensuring that the new parts would have the same lead content as the existing parts that are being replaced.

29. Q. If I am repairing a pipe, fitting or fixture which was installed ***prior to*** January 4, 2014 and I need to temporarily remove it, does it need to meet the new definition of lead free after the repair has been completed?

A. No. The repaired pipe, fitting, or fixture does not need to meet the definition of lead free because it is not being "used in" a repair or installed for the first time or introduced into commerce. Just as a pipe, fitting, or fixture that does not meet the new definition of lead free may be repaired in place, a pipe, fitting, or fixture can be temporarily taken out of service for repair and returned to the same location without triggering the requirement to meet the definition of lead free in the 2011 Act. Any component parts used in the repair that are themselves pipes, fittings, or fixtures must meet the definition of lead free in the 2011 Act (see FAQ # 25).

30. Q. I operate a water system that temporarily removes pipes, fittings or fixtures (e.g. seasonal storage or calibration) and the pipe, fittings or fixtures are returned to their original location; must these pipes, fittings or fixtures meet the new definition of lead free after January 4, 2014?

A. No. Because the water system is simply returning an unaltered pipe, fitting or fixture to the same location it would not be required to meet the new definition of lead free.

Introduction Into Commerce

31. Q. Has EPA interpreted the term "introduction into commerce" in SDWA Section 1417(a)(3)?

A. Yes. In 1998, after Section 1417 was amended to prohibit the introduction into commerce of any pipes, pipe or plumbing fittings or fixtures, EPA issued guidance on the enforcement and implementation of Section 1417. In the guidance, EPA explained that it "interprets 'introduce into commerce' as used in Section 1417 of SDWA to cover not only the initial offering of products for sale but also the sale or distribution from an inventory of products."

(WSG #129, Sept. 24, 1998, at 2).

32. Q. If I give away free replacement parts, am I introducing those parts into commerce?

A. Yes. As noted, above, EPA has previously interpreted the phrase "introduce into commerce" as including the distribution of products, not just the sale of products, so giving away free products or parts would be covered by the Act.

TITLE XIV OF THE PUBLIC HEALTH SERVICE ACT

SAFETY OF PUBLIC WATER SYSTEMS (SAFE DRINKING WATER ACT)

Q:\COMP\ENVIR2\SDWA

December 31, 2002

[As Amended Through P.L. 107–377, December 31, 2002]

TABLE OF CONTENTS FOR TITLE XIV OF THE PUBLIC HEALTH SERVICE ACT ("SAFE DRINKING WATER ACT")[1]

[1] This table of contents is not part of title XIV of the Public Health Service Act but is set forth for the convenience of the users of this publication.

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TITLE XIV OF THE PUBLIC HEALTH SERVICE ACT (THE SAFE DRINKING WATER ACT) [1]

TITLE XIV—SAFETY OF PUBLIC WATER SYSTEMS

SHORT TITLE

SEC. 1400. This title may be cited as the "Safe Drinking Water Act".

PART A—DEFINITIONS

DEFINITIONS

SEC. 1401. For purposes of this title:

(1) The term "primary drinking water regulation" means a regulation which—

(A) applies to public water systems;

(B) specifies contaminants which, in the judgment of the Administrator, may have any adverse effect on the health of persons;

(C) specifies for each such contaminant either—

(i) a maximum contaminant level, if, in the judgment of the Administrator, it is economically and technologically feasible to ascertain the level of such contaminant in water in public water systems, or

(ii) if, in the judgment of the Administrator, it is not economically or technologically feasible to so ascertain the level of such contaminant, each treatment technique known to the Administrator which leads to a reduction in the level of such contaminant sufficient to satisfy the requirements of section 1412; and

(D) contains criteria and procedures to assure a supply of drinking water which dependably complies with such maximum contaminant levels; including accepted methods for quality control and testing procedures to insure compliance with such levels and to insure proper operation and maintenance of the system, and requirements as to (i) the minimum quality of water which may be taken into the system and (ii) siting for new facilities for public water

[1] This title, the "Safe Drinking Water Act", consists of title XIV of the Public Health Service Act (42 U.S.C. 300f–300j–9) as added by Public Law 93–523 (Dec. 16, 1974) and the amendments made by subsequent enactments.

systems. At any time after promulgation of a regulation referred to in this paragraph, the Administrator may add equally effective quality control and testing procedures by guidance published in the Federal Register. Such procedures shall be treated as an alternative for public water systems to the quality control and testing procedures listed in the regulation.

(2) The term "secondary drinking water regulation" means a regulation which applies to public water systems and which specifies the maximum contaminant levels which, in the judgment of the Administrator, are requisite to protect the public welfare. Such regulations may apply to any contaminant in drinking water (A) which may adversely affect the odor or appearance of such water and consequently may cause a substantial number of the persons served by the public water system providing such water to discontinue its use, or (B) which may otherwise adversely affect the public welfare. Such regulations may vary according to geographic and other circumstances.

(3) The term "maximum contaminant level" means the maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

(4) PUBLIC WATER SYSTEM.—

(A) IN GENERAL.—The term "public water system" means a system for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen service connections or regularly serves at least twenty-five individuals. Such term includes (i) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (ii) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system.

(B) CONNECTIONS.—

(i) IN GENERAL.—For purposes of subparagraph (A), a connection to a system that delivers water by a constructed conveyance other than a pipe shall not be considered a connection, if—

(I) the water is used exclusively for purposes other than residential uses (consisting of drinking, bathing, and cooking, or other similar uses);

(II) the Administrator or the State (in the case of a State exercising primary enforcement responsibility for public water systems) determines that alternative water to achieve the equivalent level of public health protection provided by the applicable national primary drinking water regulation is provided for residential or similar uses for drinking and cooking; or

(III) the Administrator or the State (in the case of a State exercising primary enforcement responsibility for public water systems) determines that the water provided for residential or similar uses for drinking, cooking, and bathing is cen-

trally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the applicable national primary drinking water regulations.

(ii) IRRIGATION DISTRICTS.—An irrigation district in existence prior to May 18, 1994, that provides primarily agricultural service through a piped water system with only incidental residential or similar use shall not be considered to be a public water system if the system or the residential or similar users of the system comply with subclause (II) or (III) of clause (i).

(C) TRANSITION PERIOD.—A water supplier that would be a public water system only as a result of modifications made to this paragraph by the Safe Drinking Water Act Amendments of 1996 shall not be considered a public water system for purposes of the Act[1] until the date that is two years after the date of enactment of this subparagraph. If a water supplier does not serve 15 service connections (as defined in subparagraphs (A) and (B)) or 25 people at any time after the conclusion of the 2-year period, the water supplier shall not be considered a public water system.

(5) The term "supplier of water" means any person who owns or operates a public water system.

(6) The term "contaminant" means any physical, chemical, biological, or radiological substance or matter in water.

(7) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(8) The term "Agency" means the Environmental Protection Agency.

(9) The term "Council" means the National Drinking Water Advisory Council established under section 1446.

(10) The term "municipality" means a city, town, or other public body created by or pursuant to State law, or an Indian tribe.

(11) The term "Federal agency" means any department, agency, or instrumentality of the United States.

(12) The term "person" means an individual, corporation, company, association, partnership, State, municipality, or Federal agency (and includes officers, employees, and agents of any corporation, company, association, State, municipality, or Federal agency).

(13)(A) Except as provided in subparagraph (B), the term "State" includes, in addition to the several States, only the District of Columbia, Guam, the Commonwealth of Puerto Rico, the Northern Mariana Islands, the Virgin Islands, American Samoa, and the Trust Territory of the Pacific Islands.

(B) For purposes of section 1452, the term "State" means each of the 50 States, the District of Columbia, and the Commonwealth of Puerto Rico.

[1] So in law. The phrase "the Act" probably intended to refer to "this Act".

(14) The term "Indian Tribe" means any Indian tribe having a Federally recognized governing body carrying out substantial governmental duties and powers over any area. For purposes of section 1452, the term includes any Native village (as defined in section 3(c) of the Alaska Native Claims Settlement Act (43 U.S.C. 1602(c))).

(15) COMMUNITY WATER SYSTEM.—The term "community water system" means a public water system that—

(A) serves at least 15 service connections used by year-round residents of the area served by the system; or

(B) regularly serves at least 25 year-round residents.

(16) NONCOMMUNITY WATER SYSTEM.—The term "noncommunity water system" means a public water system that is not a community water system.

[42 U.S.C. 300f]

PART B—PUBLIC WATER SYSTEMS

COVERAGE

SEC. 1411. Subject to sections 1415 and 1416, national primary drinking water regulations under this part shall apply to each public water system in each State; except that such regulations shall not apply to a public water system—

(1) which consists only of distribution and storage facilities (and does not have any collection and treatment facilities);

(2) which obtains all of its water from, but is not owned or operated by, a public water system to which such regulations apply;

(3) which does not sell water to any person; and

(4) which is not a carrier which conveys passengers in interstate commerce.

[42 U.S.C. 300g]

NATIONAL DRINKING WATER REGULATIONS

SEC. 1412. (a)(1) Effective on the enactment of the Safe Drinking Water Act Amendments of 1986, each national interim or revised primary drinking water regulation promulgated under this section before such enactment shall be deemed to be a national primary drinking water regulation under subsection (b). No such regulation shall be required to comply with the standards set forth in subsection (b)(4) unless such regulation is amended to establish a different maximum contaminant level after the enactment of such amendments.

(2) After the enactment of the Safe Drinking Water Act Amendments of 1986 each recommended maximum contaminant level published before the enactment of such amendments shall be treated as a maximum contaminant level goal.

(3) Whenever a national primary drinking water regulation is proposed under subsection (b) for any contaminant, the maximum contaminant level goal for such contaminant shall be proposed simultaneously. Whenever a national primary drinking water regulation is promulgated under subsection (b) for any contaminant, the

maximum contaminant level goal for such contaminant shall be published simultaneously.

(4) Paragraph (3) shall not apply to any recommended maximum contaminant level published before the enactment of the Safe Drinking Water Act Amendments of 1986.

(b) STANDARDS.—

(1) IDENTIFICATION OF CONTAMINANTS FOR LISTING.—

(A) GENERAL AUTHORITY.—The Administrator shall, in accordance with the procedures established by this subsection, publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for a contaminant (other than a contaminant referred to in paragraph (2) for which a national primary drinking water regulation has been promulgated as of the date of enactment of the Safe Drinking Water Act Amendments of 1996) if the Administrator determines that—

(i) the contaminant may have an adverse effect on the health of persons;

(ii) the contaminant is known to occur or there is a substantial likelihood that the contaminant will occur in public water systems with a frequency and at levels of public health concern; and

(iii) in the sole judgment of the Administrator, regulation of such contaminant presents a meaningful opportunity for health risk reduction for persons served by public water systems.

(B) REGULATION OF UNREGULATED CONTAMINANTS.—

(i) LISTING OF CONTAMINANTS FOR CONSIDERATION.—(I) Not later than 18 months after the date of enactment of the Safe Drinking Water Act Amendments of 1996 and every 5 years thereafter, the Administrator, after consultation with the scientific community, including the Science Advisory Board, after notice and opportunity for public comment, and after considering the occurrence data base established under section 1445(g), shall publish a list of contaminants which, at the time of publication, are not subject to any proposed or promulgated national primary drinking water regulation, which are known or anticipated to occur in public water systems, and which may require regulation under this title.

(II) The unregulated contaminants considered under subclause (I) shall include, but not be limited to, substances referred to in section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, and substances registered as pesticides under the Federal Insecticide, Fungicide, and Rodenticide Act.

(III) The Administrator's decision whether or not to select an unregulated contaminant for a list under this clause shall not be subject to judicial review.

(ii) DETERMINATION TO REGULATE.—(I) Not later than 5 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996, and every

5 years thereafter, the Administrator shall, after notice of the preliminary determination and opportunity for public comment, for not fewer than 5 contaminants included on the list published under clause (i), make determinations of whether or not to regulate such contaminants.

(II) A determination to regulate a contaminant shall be based on findings that the criteria of clauses (i), (ii), and (iii) of subparagraph (A) are satisfied. Such findings shall be based on the best available public health information, including the occurrence data base established under section 1445(g).

(III) The Administrator may make a determination to regulate a contaminant that does not appear on a list under clause (i) if the determination to regulate is made pursuant to subclause (II).

(IV) A determination under this clause not to regulate a contaminant shall be considered final agency action and subject to judicial review.

(iii) REVIEW.—Each document setting forth the determination for a contaminant under clause (ii) shall be available for public comment at such time as the determination is published.

(C) PRIORITIES.—In selecting unregulated contaminants for consideration under subparagraph (B), the Administrator shall select contaminants that present the greatest public health concern. The Administrator, in making such selection, shall take into consideration, among other factors of public health concern, the effect of such contaminants upon subgroups that comprise a meaningful portion of the general population (such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations) that are identifiable as being at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population.

(D) URGENT THREATS TO PUBLIC HEALTH.—The Administrator may promulgate an interim national primary drinking water regulation for a contaminant without making a determination for the contaminant under paragraph (4)(C), or completing the analysis under paragraph (3)(C), to address an urgent threat to public health as determined by the Administrator after consultation with and written response to any comments provided by the Secretary of Health and Human Services, acting through the director of the Centers for Disease Control and Prevention or the director of the National Institutes of Health. A determination for any contaminant in accordance with paragraph (4)(C) subject to an interim regulation under this subparagraph shall be issued, and a completed analysis meeting the requirements of paragraph (3)(C) shall be published, not later than 3 years after the date on which the regulation is promulgated and the regulation shall be repromul-

gated, or revised if appropriate, not later than 5 years after that date.

(E) REGULATION.—For each contaminant that the Administrator determines to regulate under subparagraph (B), the Administrator shall publish maximum contaminant level goals and promulgate, by rule, national primary drinking water regulations under this subsection. The Administrator shall propose the maximum contaminant level goal and national primary drinking water regulation for a contaminant not later than 24 months after the determination to regulate under subparagraph (B), and may publish such proposed regulation concurrent with the determination to regulate. The Administrator shall publish a maximum contaminant level goal and promulgate a national primary drinking water regulation within 18 months after the proposal thereof. The Administrator, by notice in the Federal Register, may extend the deadline for such promulgation for up to 9 months.

(F) HEALTH ADVISORIES AND OTHER ACTIONS.—The Administrator may publish health advisories (which are not regulations) or take other appropriate actions for contaminants not subject to any national primary drinking water regulation.

(2) SCHEDULES AND DEADLINES.—

(A) IN GENERAL.—In the case of the contaminants listed in the Advance Notice of Proposed Rulemaking published in volume 47, Federal Register, page 9352, and in volume 48, Federal Register, page 45502, the Administrator shall publish maximum contaminant level goals and promulgate national primary drinking water regulations—

(i) not later than 1 year after June 19, 1986, for not fewer than 9 of the listed contaminants;

(ii) not later than 2 years after June 19, 1986, for not fewer than 40 of the listed contaminants; and

(iii) not later than 3 years after June 19, 1986, for the remainder of the listed contaminants.

(B) SUBSTITUTION OF CONTAMINANTS.—If the Administrator identifies a drinking water contaminant the regulation of which, in the judgment of the Administrator, is more likely to be protective of public health (taking into account the schedule for regulation under subparagraph (A)) than a contaminant referred to in subparagraph (A), the Administrator may publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for the identified contaminant in lieu of regulating the contaminant referred to in subparagraph (A). Substitutions may be made for not more than 7 contaminants referred to in subparagraph (A). Regulation of a contaminant identified under this subparagraph shall be in accordance with the schedule applicable to the contaminant for which the substitution is made.

(C) DISINFECTANTS AND DISINFECTION BYPRODUCTS.—The Administrator shall promulgate an Interim Enhanced Surface Water Treatment Rule, a Final Enhanced Surface

Water Treatment Rule, a Stage I Disinfectants and Disinfection Byproducts Rule, and a Stage II Disinfectants and Disinfection Byproducts Rule in accordance with the schedule published in volume 59, Federal Register, page 6361 (February 10, 1994), in table III.13 of the proposed Information Collection Rule. If a delay occurs with respect to the promulgation of any rule in the schedule referred to in this subparagraph, all subsequent rules shall be completed as expeditiously as practicable but no later than a revised date that reflects the interval or intervals for the rules in the schedule.

(3) RISK ASSESSMENT, MANAGEMENT, AND COMMUNICATION.—

(A) USE OF SCIENCE IN DECISIONMAKING.—In carrying out this section, and, to the degree that an Agency action is based on science, the Administrator shall use—

(i) the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices; and

(ii) data collected by accepted methods or best available methods (if the reliability of the method and the nature of the decision justifies use of the data).

(B) PUBLIC INFORMATION.—In carrying out this section, the Administrator shall ensure that the presentation of information on public health effects is comprehensive, informative, and understandable. The Administrator shall, in a document made available to the public in support of a regulation promulgated under this section, specify, to the extent practicable—

(i) each population addressed by any estimate of public health effects;

(ii) the expected risk or central estimate of risk for the specific populations;

(iii) each appropriate upper-bound or lower-bound estimate of risk;

(iv) each significant uncertainty identified in the process of the assessment of public health effects and studies that would assist in resolving the uncertainty; and

(v) peer-reviewed studies known to the Administrator that support, are directly relevant to, or fail to support any estimate of public health effects and the methodology used to reconcile inconsistencies in the scientific data.

(C) HEALTH RISK REDUCTION AND COST ANALYSIS.—

(i) MAXIMUM CONTAMINANT LEVELS.—When proposing any national primary drinking water regulation that includes a maximum contaminant level, the Administrator shall, with respect to a maximum contaminant level that is being considered in accordance with paragraph (4) and each alternative maximum contaminant level that is being considered pursuant to paragraph (5) or (6)(A), publish, seek public comment on,

and use for the purposes of paragraphs (4), (5), and (6) an analysis of each of the following:

(I) Quantifiable and nonquantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur as the result of treatment to comply with each level.

(II) Quantifiable and nonquantifiable health risk reduction benefits for which there is a factual basis in the rulemaking record to conclude that such benefits are likely to occur from reductions in co-occurring contaminants that may be attributed solely to compliance with the maximum contaminant level, excluding benefits resulting from compliance with other proposed or promulgated regulations.

(III) Quantifiable and nonquantifiable costs for which there is a factual basis in the rulemaking record to conclude that such costs are likely to occur solely as a result of compliance with the maximum contaminant level, including monitoring, treatment, and other costs and excluding costs resulting from compliance with other proposed or promulgated regulations.

(IV) The incremental costs and benefits associated with each alternative maximum contaminant level considered.

(V) The effects of the contaminant on the general population and on groups within the general population such as infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations that are identified as likely to be at greater risk of adverse health effects due to exposure to contaminants in drinking water than the general population.

(VI) Any increased health risk that may occur as the result of compliance, including risks associated with co-occurring contaminants.

(VII) Other relevant factors, including the quality and extent of the information, the uncertainties in the analysis supporting subclauses (I) through (VI), and factors with respect to the degree and nature of the risk.

(ii) TREATMENT TECHNIQUES.—When proposing a national primary drinking water regulation that includes a treatment technique in accordance with paragraph (7)(A), the Administrator shall publish and seek public comment on an analysis of the health risk reduction benefits and costs likely to be experienced as the result of compliance with the treatment technique and alternative treatment techniques that are being considered, taking into account, as appropriate, the factors described in clause (i).

(iii) APPROACHES TO MEASURE AND VALUE BENEFITS.—The Administrator may identify valid approaches for the measurement and valuation of benefits under this subparagraph, including approaches to identify consumer willingness to pay for reductions in health risks from drinking water contaminants.

(iv) AUTHORIZATION.—There are authorized to be appropriated to the Administrator, acting through the Office of Ground Water and Drinking Water, to conduct studies, assessments, and analyses in support of regulations or the development of methods, $35,000,000 for each of fiscal years 1996 through 2003.

(4) GOALS AND STANDARDS.—

(A) MAXIMUM CONTAMINANT LEVEL GOALS.—Each maximum contaminant level goal established under this subsection shall be set at the level at which no known or anticipated adverse effects on the health of persons occur and which allows an adequate margin of safety.

(B) MAXIMUM CONTAMINANT LEVELS.—Except as provided in paragraphs (5) and (6), each national primary drinking water regulation for a contaminant for which a maximum contaminant level goal is established under this subsection shall specify a maximum contaminant level for such contaminant which is as close to the maximum contaminant level goal as is feasible.

(C) DETERMINATION.—At the time the Administrator proposes a national primary drinking water regulation under this paragraph, the Administrator shall publish a determination as to whether the benefits of the maximum contaminant level justify, or do not justify, the costs based on the analysis conducted under paragraph (3)(C).

(D) DEFINITION OF FEASIBLE.—For the purposes of this subsection, the term "feasible" means feasible with the use of the best technology, treatment techniques and other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration). For the purpose of this paragraph, granular activated carbon is feasible for the control of synthetic organic chemicals, and any technology, treatment technique, or other means found to be the best available for the control of synthetic organic chemicals must be at least as effective in controlling synthetic organic chemicals as granular activated carbon.

(E) FEASIBLE TECHNOLOGIES.—

(i) IN GENERAL.—Each national primary drinking water regulation which establishes a maximum contaminant level shall list the technology, treatment techniques, and other means which the Administrator finds to be feasible for purposes of meeting such maximum contaminant level, but a regulation under this subsection shall not require that any specified technology, treatment technique, or other means be used

for purposes of meeting such maximum contaminant level.

(ii) LIST OF TECHNOLOGIES FOR SMALL SYSTEMS.—The Administrator shall include in the list any technology, treatment technique, or other means that is affordable, as determined by the Administrator in consultation with the States, for small public water systems serving—

(I) a population of 10,000 or fewer but more than 3,300;

(II) a population of 3,300 or fewer but more than 500; and

(III) a population of 500 or fewer but more than 25;

and that achieves compliance with the maximum contaminant level or treatment technique, including packaged or modular systems and point-of-entry or point-of-use treatment units. Point-of-entry and point-of-use treatment units shall be owned, controlled and maintained by the public water system or by a person under contract with the public water system to ensure proper operation and maintenance and compliance with the maximum contaminant level or treatment technique and equipped with mechanical warnings to ensure that customers are automatically notified of operational problems. The Administrator shall not include in the list any point-of-use treatment technology, treatment technique, or other means to achieve compliance with a maximum contaminant level or treatment technique requirement for a microbial contaminant (or an indicator of a microbial contaminant). If the American National Standards Institute has issued product standards applicable to a specific type of point-of-entry or point-of-use treatment unit, individual units of that type shall not be accepted for compliance with a maximum contaminant level or treatment technique requirement unless they are independently certified in accordance with such standards. In listing any technology, treatment technique, or other means pursuant to this clause, the Administrator shall consider the quality of the source water to be treated.

(iii) LIST OF TECHNOLOGIES THAT ACHIEVE COMPLIANCE.—Except as provided in clause (v), not later than 2 years after the date of enactment of this clause and after consultation with the States, the Administrator shall issue a list of technologies that achieve compliance with the maximum contaminant level or treatment technique for each category of public water systems described in subclauses (I), (II), and (III) of clause (ii) for each national primary drinking water regulation promulgated prior to the date of enactment of this paragraph.

(iv) ADDITIONAL TECHNOLOGIES.—The Administrator may, at any time after a national primary

drinking water regulation has been promulgated, supplement the list of technologies describing additional or new or innovative treatment technologies that meet the requirements of this paragraph for categories of small public water systems described in subclauses (I), (II), and (III) of clause (ii) that are subject to the regulation.

(v) TECHNOLOGIES THAT MEET SURFACE WATER TREATMENT RULE.—Within one year after the date of enactment of this clause, the Administrator shall list technologies that meet the Surface Water Treatment Rule for each category of public water systems described in subclauses (I), (II), and (III) of clause (ii).

(5) ADDITIONAL HEALTH RISK CONSIDERATIONS.—

(A) IN GENERAL.—Notwithstanding paragraph (4), the Administrator may establish a maximum contaminant level for a contaminant at a level other than the feasible level, if the technology, treatment techniques, and other means used to determine the feasible level would result in an increase in the health risk from drinking water by—

(i) increasing the concentration of other contaminants in drinking water; or

(ii) interfering with the efficacy of drinking water treatment techniques or processes that are used to comply with other national primary drinking water regulations.

(B) ESTABLISHMENT OF LEVEL.—If the Administrator establishes a maximum contaminant level or levels or requires the use of treatment techniques for any contaminant or contaminants pursuant to the authority of this paragraph—

(i) the level or levels or treatment techniques shall minimize the overall risk of adverse health effects by balancing the risk from the contaminant and the risk from other contaminants the concentrations of which may be affected by the use of a treatment technique or process that would be employed to attain the maximum contaminant level or levels; and

(ii) the combination of technology, treatment techniques, or other means required to meet the level or levels shall not be more stringent than is feasible (as defined in paragraph (4)(D)).

(6) ADDITIONAL HEALTH RISK REDUCTION AND COST CONSIDERATIONS.—

(A) IN GENERAL.—Notwithstanding paragraph (4), if the Administrator determines based on an analysis conducted under paragraph (3)(C) that the benefits of a maximum contaminant level promulgated in accordance with paragraph (4) would not justify the costs of complying with the level, the Administrator may, after notice and opportunity for public comment, promulgate a maximum contaminant level for the contaminant that maximizes health risk reduction benefits at a cost that is justified by the benefits.

(B) EXCEPTION.—The Administrator shall not use the authority of this paragraph to promulgate a maximum contaminant level for a contaminant, if the benefits of compliance with a national primary drinking water regulation for the contaminant that would be promulgated in accordance with paragraph (4) experienced by—

(i) persons served by large public water systems; and

(ii) persons served by such other systems as are unlikely, based on information provided by the States, to receive a variance under section 1415(e) (relating to small system variances);

would justify the costs to the systems of complying with the regulation. This subparagraph shall not apply if the contaminant is found almost exclusively in small systems eligible under section 1415(e) for a small system variance.

(C) DISINFECTANTS AND DISINFECTION BYPRODUCTS.—The Administrator may not use the authority of this paragraph to establish a maximum contaminant level in a Stage I or Stage II national primary drinking water regulation (as described in paragraph (2)(C)) for contaminants that are disinfectants or disinfection byproducts, or to establish a maximum contaminant level or treatment technique requirement for the control of cryptosporidium. The authority of this paragraph may be used to establish regulations for the use of disinfection by systems relying on ground water sources as required by paragraph (8).

(D) JUDICIAL REVIEW.—A determination by the Administrator that the benefits of a maximum contaminant level or treatment requirement justify or do not justify the costs of complying with the level shall be reviewed by the court pursuant to section 1448 only as part of a review of a final national primary drinking water regulation that has been promulgated based on the determination and shall not be set aside by the court under that section unless the court finds that the determination is arbitrary and capricious.

(7)(A)[1] The Administrator is authorized to promulgate a national primary drinking water regulation that requires the use of a treatment technique in lieu of establishing a maximum contaminant level, if the Administrator makes a finding that it is not economically or technologically feasible to ascertain the level of the contaminant. In such case, the Administrator shall identify those treatment techniques which, in the Administrator's judgment, would prevent known or anticipated adverse effects on the health of persons to the extent feasible. Such regulations shall specify each treatment technique known to the Administrator which meets the requirements of this paragraph, but the Administrator may grant a variance from any specified treatment technique in accordance with section 1415(a)(3).

(B) Any schedule referred to in this subsection for the promulgation of a national primary drinking water regulation for any contaminant shall apply in the same manner if the regulation requires

[1] So in law. Indentation is incorrect.

a treatment technique in lieu of establishing a maximum contaminant level.

(C)(i) Not later than 18 months after the enactment of the Safe Drinking Water Act Amendments of 1986, the Administrator shall propose and promulgate national primary drinking water regulations specifying criteria under which filtration (including coagulation and sedimentation, as appropriate) is required as a treatment technique for public water systems supplied by surface water sources. In promulgating such rules, the Administrator shall consider the quality of source waters, protection afforded by watershed management, treatment practices (such as disinfection and length of water storage) and other factors relevant to protection of health.

(ii) In lieu of the provisions of section 1415 the Administrator shall specify procedures by which the State determines which public water systems within its jurisdiction shall adopt filtration under the criteria of clause (i). The State may require the public water system to provide studies or other information to assist in this determination. The procedures shall provide notice and opportunity for public hearing on this determination. If the State determines that filtration is required, the State shall prescribe a schedule for compliance by the public water system with the filtration requirement. A schedule shall require compliance within 18 months of a determination made under clause (iii).

(iii) Within 18 months from the time that the Administrator establishes the criteria and procedures under this subparagraph, a State with primary enforcement responsibility shall adopt any necessary regulations to implement this subparagraph. Within 12 months of adoption of such regulations the State shall make determinations regarding filtration for all the public water systems within its jurisdiction supplied by surface waters.

(iv) If a State does not have primary enforcement responsibility for public water systems, the Administrator shall have the same authority to make the determination in clause (ii) in such State as the State would have under that clause. Any filtration requirement or schedule under this subparagraph shall be treated as if it were a requirement of a national primary drinking water regulation.

(v) As an additional alternative to the regulations promulgated pursuant to clauses (i) and (iii), including the criteria for avoiding filtration contained in 40 CFR 141.71, a State exercising primary enforcement responsibility for public water systems may, on a case-by-case basis, and after notice and opportunity for public comment, establish treatment requirements as an alternative to filtration in the case of systems having uninhabited, undeveloped watersheds in consolidated ownership, and having control over access to, and activities in, those watersheds, if the State determines (and the Administrator concurs) that the quality of the source water and the alternative treatment requirements established by the State ensure greater removal or inactivation efficiencies of pathogenic organisms for which national primary drinking water regulations have been promulgated or that are of public health concern than would be achieved by the combination of filtration and chlorine disinfection (in compliance with this section).

(8) DISINFECTION.—At any time after the end of the 3-year period that begins on the date of enactment of the Safe Drink-

ing Water Act Amendments of 1996, but not later than the date on which the Administrator promulgates a Stage II rulemaking for disinfectants and disinfection byproducts (as described in paragraph (2)(C)), the Administrator shall also promulgate national primary drinking water regulations requiring disinfection as a treatment technique for all public water systems, including surface water systems and, as necessary, ground water systems. After consultation with the States, the Administrator shall (as part of the regulations) promulgate criteria that the Administrator, or a State that has primary enforcement responsibility under section 1413, shall apply to determine whether disinfection shall be required as a treatment technique for any public water system served by ground water. The Administrator shall simultaneously promulgate a rule specifying criteria that will be used by the Administrator (or delegated State authorities) to grant variances from this requirement according to the provisions of sections 1415(a)(1)(B) and 1415(a)(3). In implementing section 1442(e) the Administrator or the delegated State authority shall, where appropriate, give special consideration to providing technical assistance to small public water systems in complying with the regulations promulgated under this paragraph.

(9) REVIEW AND REVISION.—The Administrator shall, not less often than every 6 years, review and revise, as appropriate, each national primary drinking water regulation promulgated under this title. Any revision of a national primary drinking water regulation shall be promulgated in accordance with this section, except that each revision shall maintain, or provide for greater, protection of the health of persons.

(10) EFFECTIVE DATE.—A national primary drinking water regulation promulgated under this section (and any amendment thereto) shall take effect on the date that is 3 years after the date on which the regulation is promulgated unless the Administrator determines that an earlier date is practicable, except that the Administrator, or a State (in the case of an individual system), may allow up to 2 additional years to comply with a maximum contaminant level or treatment technique if the Administrator or State (in the case of an individual system) determines that additional time is necessary for capital improvements.

(11) No national primary drinking water regulation may require the addition of any substance for preventive health care purposes unrelated to contamination of drinking water.

(12) CERTAIN CONTAMINANTS.—

(A) ARSENIC.—

(i) SCHEDULE AND STANDARD.—Notwithstanding the deadlines set forth in paragraph (1), the Administrator shall promulgate a national primary drinking water regulation for arsenic pursuant to this subsection, in accordance with the schedule established by this paragraph.

(ii) STUDY PLAN.—Not later than 180 days after the date of enactment of this paragraph, the Administrator shall develop a comprehensive plan for study in

support of drinking water rulemaking to reduce the uncertainty in assessing health risks associated with exposure to low levels of arsenic. In conducting such study, the Administrator shall consult with the National Academy of Sciences, other Federal agencies, and interested public and private entities.

(iii) COOPERATIVE AGREEMENTS.—In carrying out the study plan, the Administrator may enter into cooperative agreements with other Federal agencies, State and local governments, and other interested public and private entities.

(iv) PROPOSED REGULATIONS.—The Administrator shall propose a national primary drinking water regulation for arsenic not later than January 1, 2000.

(v) FINAL REGULATIONS.—Not later than January 1, 2001, after notice and opportunity for public comment, the Administrator shall promulgate a national primary drinking water regulation for arsenic.

(vi) AUTHORIZATION.—There are authorized to be appropriated $2,500,000 for each of fiscal years 1997 through 2000 for the studies required by this paragraph.

(B) SULFATE.—

(i) ADDITIONAL STUDY.—Prior to promulgating a national primary drinking water regulation for sulfate, the Administrator and the Director of the Centers for Disease Control and Prevention shall jointly conduct an additional study to establish a reliable dose-response relationship for the adverse human health effects that may result from exposure to sulfate in drinking water, including the health effects that may be experienced by groups within the general population (including infants and travelers) that are potentially at greater risk of adverse health effects as the result of such exposure. The study shall be conducted in consultation with interested States, shall be based on the best available, peer-reviewed science and supporting studies conducted in accordance with sound and objective scientific practices, and shall be completed not later than 30 months after the date of enactment of the Safe Drinking Water Act Amendments of 1996.

(ii)[1] DETERMINATION.—The Administrator shall include sulfate among the 5 or more contaminants for which a determination is made pursuant to paragraph (3)(B) not later than 5 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996.

(iii)[1] PROPOSED AND FINAL RULE.—Notwithstanding the deadlines set forth in paragraph (2), the Administrator may, pursuant to the authorities of this subsection and after notice and opportunity for public comment, promulgate a final national primary drinking water regulation for

[1] So in law. Indentation is incorrect.

sulfate. Any such regulation shall include requirements for public notification and options for the provision of alternative water supplies to populations at risk as a means of complying with the regulation in lieu of a best available treatment technology or other means.

(13) RADON IN DRINKING WATER.—

(A) NATIONAL PRIMARY DRINKING WATER REGULATION.—Notwithstanding paragraph (2), the Administrator shall withdraw any national primary drinking water regulation for radon proposed prior to the date of enactment of this paragraph and shall propose and promulgate a regulation for radon under this section, as amended by the Safe Drinking Water Act Amendments of 1996.

(B) RISK ASSESSMENT AND STUDIES.—

(i) ASSESSMENT BY NAS.—Prior to proposing a national primary drinking water regulation for radon, the Administrator shall arrange for the National Academy of Sciences to prepare a risk assessment for radon in drinking water using the best available science in accordance with the requirements of paragraph (3). The risk assessment shall consider each of the risks associated with exposure to radon from drinking water and consider studies on the health effects of radon at levels and under conditions likely to be experienced through residential exposure. The risk assessment shall be peer-reviewed.

(ii) STUDY OF OTHER MEASURES.—The Administrator shall arrange for the National Academy of Sciences to prepare an assessment of the health risk reduction benefits associated with various mitigation measures to reduce radon levels in indoor air. The assessment may be conducted as part of the risk assessment authorized by clause (i) and shall be used by the Administrator to prepare the guidance and approve State programs under subparagraph (G).

(iii) OTHER ORGANIZATION.—If the National Academy of Sciences declines to prepare the risk assessment or studies required by this subparagraph, the Administrator shall enter into a contract or cooperative agreement with another independent, scientific organization to prepare such assessments or studies.

(C) HEALTH RISK REDUCTION AND COST ANALYSIS.—Not later than 30 months after the date of enactment of this paragraph, the Administrator shall publish, and seek public comment on, a health risk reduction and cost analysis meeting the requirements of paragraph (3)(C) for potential maximum contaminant levels that are being considered for radon in drinking water. The Administrator shall include a response to all significant public comments received on the analysis with the preamble for the proposed rule published under subparagraph (D).

(D) PROPOSED REGULATION.—Not later than 36 months after the date of enactment of this paragraph, the Administrator shall propose a maximum contaminant level goal

and a national primary drinking water regulation for radon pursuant to this section.

(E) FINAL REGULATION.—Not later than 12 months after the date of the proposal under subparagraph (D), the Administrator shall publish a maximum contaminant level goal and promulgate a national primary drinking water regulation for radon pursuant to this section based on the risk assessment prepared pursuant to subparagraph (B) and the health risk reduction and cost analysis published pursuant to subparagraph (C). In considering the risk assessment and the health risk reduction and cost analysis in connection with the promulgation of such a standard, the Administrator shall take into account the costs and benefits of control programs for radon from other sources.

(F) ALTERNATIVE MAXIMUM CONTAMINANT LEVEL.—If the maximum contaminant level for radon in drinking water promulgated pursuant to subparagraph (E) is more stringent than necessary to reduce the contribution to radon in indoor air from drinking water to a concentration that is equivalent to the national average concentration of radon in outdoor air, the Administrator shall, simultaneously with the promulgation of such level, promulgate an alternative maximum contaminant level for radon that would result in a contribution of radon from drinking water to radon levels in indoor air equivalent to the national average concentration of radon in outdoor air. If the Administrator promulgates an alternative maximum contaminant level under this subparagraph, the Administrator shall, after notice and opportunity for public comment and in consultation with the States, publish guidelines for State programs, including criteria for multimedia measures to mitigate radon levels in indoor air, to be used by the States in preparing programs under subparagraph (G). The guidelines shall take into account data from existing radon mitigation programs and the assessment of mitigation measures prepared under subparagraph (B).

(G) MULTIMEDIA RADON MITIGATION PROGRAMS.—

(i) IN GENERAL.—A State may develop and submit a multimedia program to mitigate radon levels in indoor air for approval by the Administrator under this subparagraph. If, after notice and the opportunity for public comment, such program is approved by the Administrator, public water systems in the State may comply with the alternative maximum contaminant level promulgated under subparagraph (F) in lieu of the maximum contaminant level in the national primary drinking water regulation promulgated under subparagraph (E).

(ii) ELEMENTS OF PROGRAMS.—State programs may rely on a variety of mitigation measures including public education, testing, training, technical assistance, remediation grant and loan or incentive programs, or other regulatory or nonregulatory measures. The effectiveness of elements in State programs shall

be evaluated by the Administrator based on the assessment prepared by the National Academy of Sciences under subparagraph (B) and the guidelines published by the Administrator under subparagraph (F).

(iii) APPROVAL.—The Administrator shall approve a State program submitted under this paragraph if the health risk reduction benefits expected to be achieved by the program are equal to or greater than the health risk reduction benefits that would be achieved if each public water system in the State complied with the maximum contaminant level promulgated under subparagraph (E). The Administrator shall approve or disapprove a program submitted under this paragraph within 180 days of receipt. A program that is not disapproved during such period shall be deemed approved. A program that is disapproved may be modified to address the objections of the Administrator and be resubmitted for approval.

(iv) REVIEW.—The Administrator shall periodically, but not less often than every 5 years, review each multimedia mitigation program approved under this subparagraph to determine whether it continues to meet the requirements of clause (iii) and shall, after written notice to the State and an opportunity for the State to correct any deficiency in the program, withdraw approval of programs that no longer comply with such requirements.

(v) EXTENSION.—If, within 90 days after the promulgation of an alternative maximum contaminant level under subparagraph (F), the Governor of a State submits a letter to the Administrator committing to develop a multimedia mitigation program under this subparagraph, the effective date of the national primary drinking water regulation for radon in the State that would be applicable under paragraph (10) shall be extended for a period of 18 months.

(vi) LOCAL PROGRAMS.—In the event that a State chooses not to submit a multimedia mitigation program for approval under this subparagraph or has submitted a program that has been disapproved, any public water system in the State may submit a program for approval by the Administrator according to the same criteria, conditions, and approval process that would apply to a State program. The Administrator shall approve a multimedia mitigation program if the health risk reduction benefits expected to be achieved by the program are equal to or greater than the health risk reduction benefits that would result from compliance by the public water system with the maximum contaminant level for radon promulgated under subparagraph (E).

(14) RECYCLING OF FILTER BACKWASH.—The Administrator shall promulgate a regulation to govern the recycling of filter

backwash water within the treatment process of a public water system. The Administrator shall promulgate such regulation not later than 4 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996 unless such recycling has been addressed by the Administrator's Enhanced Surface Water Treatment Rule prior to such date.

(15) VARIANCE TECHNOLOGIES.—

(A) IN GENERAL.—At the same time as the Administrator promulgates a national primary drinking water regulation for a contaminant pursuant to this section, the Administrator shall issue guidance or regulations describing the best treatment technologies, treatment techniques, or other means (referred to in this paragraph as "variance technology") for the contaminant that the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available and affordable, as determined by the Administrator in consultation with the States, for public water systems of varying size, considering the quality of the source water to be treated. The Administrator shall identify such variance technologies for public water systems serving—

(i) a population of 10,000 or fewer but more than 3,300;

(ii) a population of 3,300 or fewer but more than 500; and

(iii) a population of 500 or fewer but more than 25,

if, considering the quality of the source water to be treated, no treatment technology is listed for public water systems of that size under paragraph (4)(E). Variance technologies identified by the Administrator pursuant to this paragraph may not achieve compliance with the maximum contaminant level or treatment technique requirement of such regulation, but shall achieve the maximum reduction or inactivation efficiency that is affordable considering the size of the system and the quality of the source water. The guidance or regulations shall not require the use of a technology from a specific manufacturer or brand.

(B) LIMITATION.—The Administrator shall not identify any variance technology under this paragraph, unless the Administrator has determined, considering the quality of the source water to be treated and the expected useful life of the technology, that the variance technology is protective of public health.

(C) ADDITIONAL INFORMATION.—The Administrator shall include in the guidance or regulations identifying variance technologies under this paragraph any assumptions supporting the public health determination referred to in subparagraph (B), where such assumptions concern the public water system to which the technology may be applied, or its source waters. The Administrator shall provide any assumptions used in determining affordability, taking into consideration the number of persons served by such systems. The Administrator shall provide as much re-

liable information as practicable on performance, effectiveness, limitations, costs, and other relevant factors including the applicability of variance technology to waters from surface and underground sources.

(D) REGULATIONS AND GUIDANCE.—Not later than 2 years after the date of enactment of this paragraph and after consultation with the States, the Administrator shall issue guidance or regulations under subparagraph (A) for each national primary drinking water regulation promulgated prior to the date of enactment of this paragraph for which a variance may be granted under section 1415(e). The Administrator may, at any time after a national primary drinking water regulation has been promulgated, issue guidance or regulations describing additional variance technologies. The Administrator shall, not less often than every 7 years, or upon receipt of a petition supported by substantial information, review variance technologies identified under this paragraph. The Administrator shall issue revised guidance or regulations if new or innovative variance technologies become available that meet the requirements of this paragraph and achieve an equal or greater reduction or inactivation efficiency than the variance technologies previously identified under this subparagraph. No public water system shall be required to replace a variance technology during the useful life of the technology for the sole reason that a more efficient variance technology has been listed under this subparagraph.

(c) The Administrator shall publish proposed national secondary drinking water regulations within 270 days after the date of enactment of this title. Within 90 days after publication of any such regulation, he shall promulgate such regulation with such modifications as he deems appropriate. Regulations under this subsection may be amended from time to time.

(d) Regulations under this section shall be prescribed in accordance with section 553 of title 5, United States Code (relating to rulemaking), except that the Administrator shall provide opportunity for public hearing prior to promulgation of such regulations. In proposing and promulgating regulations under this section, the Administrator shall consult with the Secretary and the National Drinking Water Advisory Council.

(e) The Administrator shall request comments from the Science Advisory Board (established under the Environmental Research, Development, and Demonstration Act of 1978) prior to proposal of a maximum contaminant level goal and national primary drinking water regulation. The Board shall respond, as it deems appropriate, within the time period applicable for promulgation of the national primary drinking water standard concerned. This subsection shall, under no circumstances, be used to delay final promulgation of any national primary drinking water standard.

[42 U.S.C. 300g–1]

STATE PRIMARY ENFORCEMENT RESPONSIBILITY

SEC. 1413. (a) For purposes of this title, a State has primary enforcement responsibility for public water systems during any period for which the Administrator determines (pursuant to regulations prescribed under subsection (b)) that such State—

(1) has adopted drinking water regulations that are no less stringent than the national primary drinking water regulations promulgated by the Administrator under subsections (a) and (b) of section 1412 not later than 2 years after the date on which the regulations are promulgated by the Administrator, except that the Administrator may provide for an extension of not more than 2 years if, after submission and review of appropriate, adequate documentation from the State, the Administrator determines that the extension is necessary and justified;

(2) has adopted and is implementing adequate procedures for the enforcement of such State regulations, including conducting such monitoring and making such inspections as the Administrator may require by regulation;

(3) will keep such records and make such reports with respect to its activities under paragraphs (1) and (2) as the Administrator may require by regulation;

(4) if it permits variances or exemptions, or both, from the requirements of its drinking water regulations which meet the requirements of paragraph (1), permits such variances and exemptions under conditions and in a manner which is not less stringent than the conditions under, and the manner in, which variances and exemptions may be granted under sections 1415 and 1416;

(5) has adopted and can implement an adequate plan for the provision of safe drinking water under emergency circumstances including earthquakes, floods, hurricanes, and other natural disasters, as appropriate; and

(6) has adopted authority for administrative penalties (unless the constitution of the State prohibits the adoption of the authority) in a maximum amount—

(A) in the case of a system serving a population of more than 10,000, that is not less than $1,000 per day per violation; and

(B) in the case of any other system, that is adequate to ensure compliance (as determined by the State);

except that a State may establish a maximum limitation on the total amount of administrative penalties that may be imposed on a public water system per violation.

(b)(1) The Administrator shall, by regulation (proposed within 180 days of the date of the enactment of this title), prescribe the manner in which a State may apply to the Administrator for a determination that the requirements of paragraphs (1), (2), (3), and (4) of subsection (a) are satisfied with respect to the State, the manner in which the determination is made, the period for which the determination will be effective, and the manner in which the Administrator may determine that such requirements are no longer met. Such regulations shall require that before a determination of the Administrator that such requirements are met or are no longer

met with respect to a State may become effective, the Administrator shall notify such State of the determination and the reasons therefor and shall provide an opportunity for public hearing on the determination. Such regulations shall be promulgated (with such modifications as the Administrator deems appropriate) within 90 days of the publication of the proposed regulations in the Federal Register. The Administrator shall promptly notify in writing the chief executive officer of each State of the promulgation of regulations under this paragraph. Such notice shall contain a copy of the regulations and shall specify a State's authority under this title when it is determined to have primary enforcement responsibility for public water systems.

(2) When an application is submitted in accordance with the Administrator's regulations under paragraph (1), the Administrator shall within 90 days of the date on which such application is submitted (A) make the determination applied for, or (B) deny the application and notify the applicant in writing of the reasons for his denial.

(c) INTERIM PRIMARY ENFORCEMENT AUTHORITY.—A State that has primary enforcement authority under this section with respect to each existing national primary drinking water regulation shall be considered to have primary enforcement authority with respect to each new or revised national primary drinking water regulation during the period beginning on the effective date of a regulation adopted and submitted by the State with respect to the new or revised national primary drinking water regulation in accordance with subsection (b)(1) and ending at such time as the Administrator makes a determination under subsection (b)(2)(B) with respect to the regulation.

[42 U.S.C. 300g–2]

ENFORCEMENT OF DRINKING WATER REGULATIONS

SEC. 1414. (a)(1)(A) Whenever the Administrator finds during a period during which a State has primary enforcement responsibility for public water systems (within the meaning of section 1413(a)) that any public water system—

(i) for which a variance under section 1415 or an exemption under section 1416 is not in effect, does not comply with any applicable requirement, or

(ii) for which a variance under section 1415 or an exemption under section 1416 is in effect, does not comply with any schedule or other requirement imposed pursuant thereto,

he shall so notify the State and such public water system and provide such advice and technical assistance to such State and public water system as may be appropriate to bring the system into compliance with the requirement by the earliest feasible time.

(B) If, beyond the thirtieth day after the Administrator's notification under subparagraph (A), the State has not commenced appropriate enforcement action, the Administrator shall issue an order under subsection (g) requiring the public water system to comply with such applicable requirement or the Administrator shall commence a civil action under subsection (b).

(2) ENFORCEMENT IN NONPRIMACY STATES.—

(A) IN GENERAL.—If, on the basis of information available to the Administrator, the Administrator finds, with respect to a period in which a State does not have primary enforcement responsibility for public water systems, that a public water system in the State—

(i) for which a variance under section 1415 or an exemption under section 1416 is not in effect, does not comply with any applicable requirement; or

(ii) for which a variance under section 1415 or an exemption under section 1416 is in effect, does not comply with any schedule or other requirement imposed pursuant to the variance or exemption;

the Administrator shall issue an order under subsection (g) requiring the public water system to comply with the requirement, or commence a civil action under subsection (b).

(B) NOTICE.—If the Administrator takes any action pursuant to this paragraph, the Administrator shall notify an appropriate local elected official, if any, with jurisdiction over the public water system of the action prior to the time that the action is taken.

(b) The Administrator may bring a civil action in the appropriate United States district court to require compliance with any applicable requirement, with an order issued under subsection (g), or with any schedule or other requirement imposed pursuant to a variance or exemption granted under section 1415 or 1416 if—

(1) authorized under paragraph (1) or (2) of subsection (a), or

(2) if requested by (A) the chief executive officer of the State in which is located the public water system which is not in compliance with such regulation or requirement, or (B) the agency of such State which has jurisdiction over compliance by public water systems in the State with national primary drinking water regulations or State drinking water regulations.

The court may enter, in an action brought under this subsection, such judgment as protection of public health may require, taking into consideration the time necessary to comply and the availability of alternative water supplies; and, if the court determines that there has been a violation of the regulation or schedule or other requirement with respect to which the action was brought, the court may, taking into account the seriousness of the violation, the population at risk, and other appropriate factors, impose on the violator a civil penalty of not to exceed $25,000 for each day in which such violation occurs.

(c) NOTICE TO PERSONS SERVED.—

(1) IN GENERAL.—Each owner or operator of a public water system shall give notice of each of the following to the persons served by the system:

(A) Notice of any failure on the part of the public water system to—

(i) comply with an applicable maximum contaminant level or treatment technique requirement of, or a testing procedure prescribed by, a national primary drinking water regulation; or

(ii) perform monitoring required by section 1445(a).

(B) If the public water system is subject to a variance granted under subsection (a)(1)(A), (a)(2), or (e) of section 1415 for an inability to meet a maximum contaminant level requirement or is subject to an exemption granted under section 1416, notice of—

(i) the existence of the variance or exemption; and

(ii) any failure to comply with the requirements of any schedule prescribed pursuant to the variance or exemption.

(C) Notice of the concentration level of any unregulated contaminant for which the Administrator has required public notice pursuant to paragraph (2)(E).

(2) FORM, MANNER, AND FREQUENCY OF NOTICE.—

(A) IN GENERAL.—The Administrator shall, by regulation, and after consultation with the States, prescribe the manner, frequency, form, and content for giving notice under this subsection. The regulations shall—

(i) provide for different frequencies of notice based on the differences between violations that are intermittent or infrequent and violations that are continuous or frequent; and

(ii) take into account the seriousness of any potential adverse health effects that may be involved.

(B) STATE REQUIREMENTS.—

(i) IN GENERAL.—A State may, by rule, establish alternative notification requirements—

(I) with respect to the form and content of notice given under and in a manner in accordance with subparagraph (C); and

(II) with respect to the form and content of notice given under subparagraph (D).

(ii) CONTENTS.—The alternative requirements shall provide the same type and amount of information as required pursuant to this subsection and regulations issued under subparagraph (A).

(iii) RELATIONSHIP TO SECTION 1413.—Nothing in this subparagraph shall be construed or applied to modify the requirements of section 1413.

(C) VIOLATIONS WITH POTENTIAL TO HAVE SERIOUS ADVERSE EFFECTS ON HUMAN HEALTH.—Regulations issued under subparagraph (A) shall specify notification procedures for each violation by a public water system that has the potential to have serious adverse effects on human health as a result of short-term exposure. Each notice of violation provided under this subparagraph shall—

(i) be distributed as soon as practicable after the occurrence of the violation, but not later than 24 hours after the occurrence of the violation;

(ii) provide a clear and readily understandable explanation of—

(I) the violation;

(II) the potential adverse effects on human health;

(III) the steps that the public water system is taking to correct the violation; and

(IV) the necessity of seeking alternative water supplies until the violation is corrected;

(iii) be provided to the Administrator or the head of the State agency that has primary enforcement responsibility under section 1413 as soon as practicable, but not later than 24 hours after the occurrence of the violation; and

(iv) as required by the State agency in general regulations of the State agency, or on a case-by-case basis after the consultation referred to in clause (iii), considering the health risks involved—

(I) be provided to appropriate broadcast media;

(II) be prominently published in a newspaper of general circulation serving the area not later than 1 day after distribution of a notice pursuant to clause (i) or the date of publication of the next issue of the newspaper; or

(III) be provided by posting or door-to-door notification in lieu of notification by means of broadcast media or newspaper.

(D) WRITTEN NOTICE.—

(i) IN GENERAL.—Regulations issued under subparagraph (A) shall specify notification procedures for violations other than the violations covered by subparagraph (C). The procedures shall specify that a public water system shall provide written notice to each person served by the system by notice (I) in the first bill (if any) prepared after the date of occurrence of the violation, (II) in an annual report issued not later than 1 year after the date of occurrence of the violation, or (III) by mail or direct delivery as soon as practicable, but not later than 1 year after the date of occurrence of the violation.

(ii) FORM AND MANNER OF NOTICE.—The Administrator shall prescribe the form and manner of the notice to provide a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps that the system is taking to seek alternative water supplies, if any, until the violation is corrected.

(E) UNREGULATED CONTAMINANTS.—The Administrator may require the owner or operator of a public water system to give notice to the persons served by the system of the concentration levels of an unregulated contaminant required to be monitored under section 1445(a).

(3) REPORTS.—

(A) ANNUAL REPORT BY STATE.—

(i) IN GENERAL.—Not later than January 1, 1998, and annually thereafter, each State that has primary

enforcement responsibility under section 1413 shall prepare, make readily available to the public, and submit to the Administrator an annual report on violations of national primary drinking water regulations by public water systems in the State, including violations with respect to (I) maximum contaminant levels, (II) treatment requirements, (III) variances and exemptions, and (IV) monitoring requirements determined to be significant by the Administrator after consultation with the States.

(ii) DISTRIBUTION.—The State shall publish and distribute summaries of the report and indicate where the full report is available for review.

(B) ANNUAL REPORT BY ADMINISTRATOR.—Not later than July 1, 1998, and annually thereafter, the Administrator shall prepare and make available to the public an annual report summarizing and evaluating reports submitted by States pursuant to subparagraph (A) and notices submitted by public water systems serving Indian Tribes provided to the Administrator pursuant to subparagraph (C) or (D) of paragraph (2) and making recommendations concerning the resources needed to improve compliance with this title. The report shall include information about public water system compliance on Indian reservations and about enforcement activities undertaken and financial assistance provided by the Administrator on Indian reservations, and shall make specific recommendations concerning the resources needed to improve compliance with this title on Indian reservations.

(4) CONSUMER CONFIDENCE REPORTS BY COMMUNITY WATER SYSTEMS.—

(A) ANNUAL REPORTS TO CONSUMERS.—The Administrator, in consultation with public water systems, environmental groups, public interest groups, risk communication experts, and the States, and other interested parties, shall issue regulations within 24 months after the date of enactment of this paragraph to require each community water system to mail to each customer of the system at least once annually a report on the level of contaminants in the drinking water purveyed by that system (referred to in this paragraph as a "consumer confidence report"). Such regulations shall provide a brief and plainly worded definition of the terms "maximum contaminant level goal", "maximum contaminant level", "variances", and "exemptions" and brief statements in plain language regarding the health concerns that resulted in regulation of each regulated contaminant. The regulations shall also include a brief and plainly worded explanation regarding contaminants that may reasonably be expected to be present in drinking water, including bottled water. The regulations shall also provide for an Environmental Protection Agency toll-free hotline that consumers can call for more information and explanation.

(B) CONTENTS OF REPORT.—The consumer confidence reports under this paragraph shall include, but not be limited to, each of the following:

(i) Information on the source of the water purveyed.

(ii) A brief and plainly worded definition of the terms "maximum contaminant level goal", "maximum contaminant level", "variances", and "exemptions" as provided in the regulations of the Administrator.

(iii) If any regulated contaminant is detected in the water purveyed by the public water system, a statement setting forth (I) the maximum contaminant level goal, (II) the maximum contaminant level, (III) the level of such contaminant in such water system, and (IV) for any regulated contaminant for which there has been a violation of the maximum contaminant level during the year concerned, the brief statement in plain language regarding the health concerns that resulted in regulation of such contaminant, as provided by the Administrator in regulations under subparagraph (A).

(iv) Information on compliance with national primary drinking water regulations, as required by the Administrator, and notice if the system is operating under a variance or exemption and the basis on which the variance or exemption was granted.

(v) Information on the levels of unregulated contaminants for which monitoring is required under section 1445(a)(2) (including levels of cryptosporidium and radon where States determine they may be found).

(vi) A statement that the presence of contaminants in drinking water does not necessarily indicate that the drinking water poses a health risk and that more information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency hotline.

A public water system may include such additional information as it deems appropriate for public education. The Administrator may, for not more than 3 regulated contaminants other than those referred to in subclause (IV) of clause (iii), require a consumer confidence report under this paragraph to include the brief statement in plain language regarding the health concerns that resulted in regulation of the contaminant or contaminants concerned, as provided by the Administrator in regulations under subparagraph (A).

(C) COVERAGE.—The Governor of a State may determine not to apply the mailing requirement of subparagraph (A) to a community water system serving fewer than 10,000 persons. Any such system shall—

(i) inform, in the newspaper notice required by clause (iii) or by other means, its customers that the

system will not be mailing the report as required by subparagraph (A);

(ii) make the consumer confidence report available upon request to the public; and

(iii) publish the report referred to in subparagraph (A) annually in one or more local newspapers serving the area in which customers of the system are located.

(D) ALTERNATIVE TO PUBLICATION.—For any community water system which, pursuant to subparagraph (C), is not required to meet the mailing requirement of subparagraph (A) and which serves 500 persons or fewer, the community water system may elect not to comply with clause (i) or (iii) of subparagraph (C). If the community water system so elects, the system shall, at a minimum—

(i) prepare an annual consumer confidence report pursuant to subparagraph (B); and

(ii) provide notice at least once per year to each of its customers by mail, by door-to-door delivery, by posting or by other means authorized by the regulations of the Administrator that the consumer confidence report is available upon request.

(E) ALTERNATIVE FORM AND CONTENT.—A State exercising primary enforcement responsibility may establish, by rule, after notice and public comment, alternative requirements with respect to the form and content of consumer confidence reports under this paragraph.

(d) Whenever, on the basis of information available to him, the Administrator finds that within a reasonable time after national secondary drinking water regulations have been promulgated, one or more public water systems in a State do not comply with such secondary regulations, and that such noncompliance appears to result from a failure of such State to take reasonable action to assure that public water systems throughout such State meet such secondary regulations, he shall so notify the State.

(e) Nothing in this title shall diminish any authority of a State or political subdivision to adopt or enforce any law or regulation respecting drinking water regulations or public water systems, but no such law or regulation shall relieve any person of any requirement otherwise applicable under this title.

(f) If the Administrator makes a finding of noncompliance (described in subparagraph (A) or (B) of subsection (a)(1)) with respect to a public water system in a State which has primary enforcement responsibility, the Administrator may, for the purpose of assisting that State in carrying out such responsibility and upon the petition of such State or public water system or persons served by such system, hold, after appropriate notice, public hearings for the purpose of gathering information from technical or other experts, Federal, State, or other public officials, representatives of such public water system, persons served by such system, and other interested persons on—

(1) the ways in which such system can within the earliest feasible time be brought into compliance with the regulation or requirement with respect to which such finding was made, and

(2) the means for the maximum feasible protection of the public health during any period in which such system is not in compliance with a national primary drinking water regulation or requirement applicable to a variance or exemption.

On the basis of such hearings the Administrator shall issue recommendations which shall be sent to such State and public water system and shall be made available to the public and communications media.

(g)(1) In any case in which the Administrator is authorized to bring a civil action under this section or under section 1445 with respect to any applicable requirement, the Administrator also may issue an order to require compliance with such applicable requirement.

(2) An order issued under this subsection shall not take effect, in the case of a State having primary enforcement responsibility for public water systems in that State, until after the Administrator has provided the State with an opportunity to confer with the Administrator regarding the order. A copy of any order issued under this subsection shall be sent to the appropriate State agency of the State involved if the State has primary enforcement responsibility for public water systems in that State. Any order issued under this subsection shall state with reasonable specificity the nature of the violation. In any case in which an order under this subsection is issued to a corporation, a copy of such order shall be issued to appropriate corporate officers.

(3)(A) Any person who violates, or fails or refuses to comply with, an order under this subsection shall be liable to the United States for a civil penalty of not more than $25,000 per day of violation.

(B) In a case in which a civil penalty sought by the Administrator under this paragraph does not exceed $5,000, the penalty shall be assessed by the Administrator after notice and opportunity for a public hearing (unless the person against whom the penalty is assessed requests a hearing on the record in accordance with section 554 of title 5, United States Code). In a case in which a civil penalty sought by the Administrator under this paragraph exceeds $5,000, but does not exceed $25,000, the penalty shall be assessed by the Administrator after notice and opportunity for a hearing on the record in accordance with section 554 of title 5, United States Code.

(C) Whenever any civil penalty sought by the Administrator under this subsection for a violation of an applicable requirement exceeds $25,000, the penalty shall be assessed by a civil action brought by the Administrator in the appropriate United States district court (as determined under the provisions of title 28 of the United States Code).

(D) If any person fails to pay an assessment of a civil penalty after it has become a final and unappealable order, or after the appropriate court of appeals has entered final judgment in favor of the Administrator, the Attorney General shall recover the amount for which such person is liable in any appropriate district court of the United States. In any such action, the validity and appropriateness of the final order imposing the civil penalty shall not be subject to review.

(h) CONSOLIDATION INCENTIVE.—

(1) IN GENERAL.—An owner or operator of a public water system may submit to the State in which the system is located (if the State has primary enforcement responsibility under section 1413) or to the Administrator (if the State does not have primary enforcement responsibility) a plan (including specific measures and schedules) for—

(A) the physical consolidation of the system with 1 or more other systems;

(B) the consolidation of significant management and administrative functions of the system with 1 or more other systems; or

(C) the transfer of ownership of the system that may reasonably be expected to improve drinking water quality.

(2) CONSEQUENCES OF APPROVAL.—If the State or the Administrator approves a plan pursuant to paragraph (1), no enforcement action shall be taken pursuant to this part with respect to a specific violation identified in the approved plan prior to the date that is the earlier of the date on which consolidation is completed according to the plan or the date that is 2 years after the plan is approved.

(i) DEFINITION OF APPLICABLE REQUIREMENT.—In this section, the term "applicable requirement" means—

(1) a requirement of section 1412, 1414, 1415, 1416, 1417[1] 1433, 1441, or 1445;

(2) a regulation promulgated pursuant to a section referred to in paragraph (1);

(3) a schedule or requirement imposed pursuant to a section referred to in paragraph (1); and

(4) a requirement of, or permit issued under, an applicable State program for which the Administrator has made a determination that the requirements of section 1413 have been satisfied, or an applicable State program approved pursuant to this part.

[42 U.S.C. 300g–3]

VARIANCES

SEC. 1415. (a) Notwithstanding any other provision of this part, variances from national primary drinking water regulations may be granted as follows:

(1)(A) A State which has primary enforcement responsibility for public water systems may grant one or more variances from an applicable national primary drinking water regulation to one or more public water systems within its jurisdiction which, because of characteristics of the raw water sources which are reasonably available to the systems, cannot meet the requirements respecting the maximum contaminant levels of such drinking water regulation. A variance may be issued to a system on condition that the system install the best

[1] Lack of comma so in law. Section 403 of the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (P.L. 107–188; 116 Stat.594) amended section 1414(i)(1) by inserting "1433" after "1417". The amendment should probably have inserted "1433," after "1417,".

technology, treatment techniques, or other means, which the Administrator finds are available (taking costs into consideration), and based upon an evaluation satisfactory to the State that indicates that alternative sources of water are not reasonably available to the system. The Administrator shall propose and promulgate his finding of the best available technology, treatment techniques or other means available for each contaminant for purposes of this subsection at the time he proposes and promulgates a maximum contaminant level for each such contaminant. The Administrator's finding of best available technology, treatment techniques or other means for purposes of this subsection may vary depending on the number of persons served by the system or for other physical conditions related to engineering feasibility and costs of compliance with maximum contaminant levels as considered approprate by Administrator. Before a State may grant a variance under this subparagraph, the State must find that the variance will not result in an unreasonable risk to health. If a State grants a public water system a variance under this subparagraph, the State shall prescribe at the the[1] time the variance is granted, a schedule for—

(i) compliance (including increments of progress) by the public water system with each contaminant level requirement with respect to which the variance was granted, and

(ii) implementation by the public water system of such additional control measures as the State may require for each contaminant, subject to such contaminant level requirement, during the period ending on the date compliance with such requirement is required.

Before a schedule prescribed by a State pursuant to this subparagraph may take effect, the State shall provide notice and opportunity for a public hearing on the schedule. A notice given pursuant to the preceding sentence may cover the prescribing of more than one such schedule and a hearing held pursuant to such notice shall include each of the schedules covered by the notice. A schedule prescribed pursuant to this subparagraph for a public water system granted a variance shall require compliance by the system with each contaminant level requirement with respect to which the variance was granted as expeditiously as practicable (as the State may reasonably determine).

(B) A State which has primary enforcement responsibility for public water systems may grant to one or more public water systems within its jurisdiction one or more variances from any provision of a national primary drinking water regulation which requires the use of a specified treatment technique with respect to a contaminant if the public water system applying for the variance demonstrates to the satisfaction of the State that such treatment technique is not necessary to protect the health of persons because of the nature of the raw water source of such system. A variance granted under this

[1] Section 501(a)(3) of Public Law 104–182 inserted an additional "the" before the word "time".

subparagraph shall be conditioned on such monitoring and other requirements as the Administrator may prescribe.

(C) Before a variance proposed to be granted by a State under subparagraph (A) or (B) may take effect, such State shall provide notice and opportunity for public hearing on the proposed variance. A notice given pursuant to the preceding sentence may cover the granting of more than one variance and a hearing held pursuant to such notice shall include each of the variances covered by the notice. The State shall promptly notify the Administrator of all variances granted by it. Such notification shall contain the reason for the variance (and in the case of a variance under subparagraph (A), the basis for the finding required by that subparagraph before the granting of the variance) and documentation of the need for the variance.

(D) Each public water system's variance granted by a State under subparagraph (A) shall be conditioned by the State upon compliance by the public water system with the schedule prescribed by the State pursuant to that subparagraph. The requirements of each schedule prescribed by a State pursuant to that subparagraph shall be enforceable by the State under its laws. Any requirement of a schedule on which a variance granted under that subparagraph is conditioned may be enforced under section 1414 as if such requirement was part of a national primary drinking water regulation.

(E) Each schedule prescribed by a State pursuant to subparagraph (A) shall be deemed approved by the Administrator unless the variance for which it was prescribed is revoked by the Administrator under such subparagraph.

(F) Not later than 18 months after the effective date of the interim national primary drinking water regulations the Administrator shall complete a comprehensive review of the variances granted under subparagraph (A) (and schedules prescribed pursuant thereto) and under subparagraph (B) by the States during the one-year period beginning on such effective date. The Administrator shall conduct such subsequent reviews of variances and schedules as he deems necessary to carry out the purposes of this title, but each subsequent review shall be completed within each 3-year period following the completion of the first review under this subparagraph. Before conducting any review under this subparagraph, the Administrator shall publish notice of the proposed review in the Federal Register. Such notice shall (i) provide information respecting the location of data and other information respecting the variances to be reviewed (including data and other information concerning new scientific matters bearing on such variances), and (ii) advise of the opportunity to submit comments on the variances reviewed and on the need for continuing them. Upon completion of any such review, the Administrator shall publish in the Federal Register the results of his review together with findings responsive to comments submitted in connection with such review.

(G)(i) If the Administrator finds that a State has, in a substantial number of instances, abused its discretion in granting

variances under subparagraph (A) or (B) or that in a substantial number of cases the State has failed to prescribe schedules in accordance with subparagraph (A), the Administrator shall notify the State of his findings. In determining if a State has abused its discretion in granting variances in a substantial number of instances, the Administrator shall consider the number of persons who are affected by the variances and if the requirements applicable to the granting of the variances were complied with. A notice under this clause shall—

(I) identify each public water system with respect to which the finding was made,

(II) specify the reasons for the finding, and

(III) as appropriate, propose revocations of specific variances or propose revised schedules or other requirements for specific public water systems granted variances, or both.

(ii) The Administrator shall provide reasonable notice and public hearing on the provisions of each notice given pursuant to clause (i) of this subparagraph. After a hearing on a notice pursuant to such clause, the Administrator shall (I) rescind the finding for which the notice was given and promptly notify the State of such rescission, or (II) promulgate (with such modifications as he deems appropriate) such variance revocations and revised schedules or other requirements proposed in such notice as he deems appropriate. Not later than 180 days after the date a notice is given pursuant to clause (i) of this subparagraph, the Administrator shall complete the hearing on the notice and take the action required by the preceding sentence.

(iii) If a State is notified under clause (i) of this subparagraph of a finding of the Administrator made with respect to a variance granted a public water system within that State or to a schedule or other requirement for a variance and if, before a revocation of such variance or a revision of such schedule or other requirement promulgated by the Administrator takes effect, the State takes corrective action with respect to such variance or schedule or other requirement which the Administrator determines makes his finding inapplicable to such variance or schedule or other requirement, the Administrator shall rescind the application of his finding to that variance or schedule or other requirement. No variance revocation or revised schedule or other requirement may take effect before the expiration of 90 days following the date of the notice in which the revocation or revised schedule or other requirement was proposed.

(2) If a State does not have primary enforcement responsibility for public water systems, the Administrator shall have the same authority to grant variances in such State as the State would have under paragraph (1) if it had primary enforcement responsibility.

(3) The Administrator may grant a variance from any treatment technique requirement of a national primary drinking water regulation upon a showing by any person that an alternative treatment technique not included in such requirement is at least as efficient in lowering the level of the contaminant with respect to which such requirement was pre-

scribed. A variance under this paragraph shall be conditioned on the use of the alternative treatment technique which is the basis of the variance.

(b) Any schedule or other requirement on which a variance granted under paragraph (1)(B) or (2) of subsection (a) is conditioned may be enforced under section 1414 as if such schedule or other requirement was part of a national primary drinking water regulation.

(c) If an application for a variance under subsection (a) is made, the State receiving the application or the Administrator, as the case may be, shall act upon such application within a reasonable period (as determined under regulations prescribed by the Administrator) after the date of its submission.

(d) For purposes of this section, the term "treatment technique requirement" means a requirement in a national primary drinking water regulation which specifies for a contaminant (in accordance with section 1401(1)(C)(ii)) each treatment technique known to the Administrator which leads to a reduction in the level of such contaminant sufficient to satisfy the requirements of section 1412(b).

(e) SMALL SYSTEM VARIANCES.—

(1) IN GENERAL.—A State exercising primary enforcement responsibility for public water systems under section 1413 (or the Administrator in nonprimacy States) may grant a variance under this subsection for compliance with a requirement specifying a maximum contaminant level or treatment technique contained in a national primary drinking water regulation to—

(A) public water systems serving 3,300 or fewer persons; and

(B) with the approval of the Administrator pursuant to paragraph (9), public water systems serving more than 3,300 persons but fewer than 10,000 persons,

if the variance meets each requirement of this subsection.

(2) AVAILABILITY OF VARIANCES.—A public water system may receive a variance pursuant to paragraph (1), if—

(A) the Administrator has identified a variance technology under section 1412(b)(15) that is applicable to the size and source water quality conditions of the public water system;

(B) the public water system installs, operates, and maintains, in accordance with guidance or regulations issued by the Administrator, such treatment technology, treatment technique, or other means; and

(C) the State in which the system is located determines that the conditions of paragraph (3) are met.

(3) CONDITIONS FOR GRANTING VARIANCES.—A variance under this subsection shall be available only to a system—

(A) that cannot afford to comply, in accordance with affordability criteria established by the Administrator (or the State in the case of a State that has primary enforcement responsibility under section 1413), with a national primary drinking water regulation, including compliance through—

(i) treatment;

(ii) alternative source of water supply; or

(iii) restructuring or consolidation (unless the Administrator (or the State in the case of a State that has primary enforcement responsibility under section 1413) makes a written determination that restructuring or consolidation is not practicable); and

(B) for which the Administrator (or the State in the case of a State that has primary enforcement responsibility under section 1413) determines that the terms of the variance ensure adequate protection of human health, considering the quality of the source water for the system and the removal efficiencies and expected useful life of the treatment technology required by the variance.

(4) COMPLIANCE SCHEDULES.—A variance granted under this subsection shall require compliance with the conditions of the variance not later than 3 years after the date on which the variance is granted, except that the Administrator (or the State in the case of a State that has primary enforcement responsibility under section 1413) may allow up to 2 additional years to comply with a variance technology, secure an alternative source of water, restructure or consolidate if the Administrator (or the State) determines that additional time is necessary for capital improvements, or to allow for financial assistance provided pursuant to section 1452 or any other Federal or State program.

(5) DURATION OF VARIANCES.—The Administrator (or the State in the case of a State that has primary enforcement responsibility under section 1413) shall review each variance granted under this subsection not less often than every 5 years after the compliance date established in the variance to determine whether the system remains eligible for the variance and is conforming to each condition of the variance.

(6) INELIGIBILITY FOR VARIANCES.—A variance shall not be available under this subsection for—

(A) any maximum contaminant level or treatment technique for a contaminant with respect to which a national primary drinking water regulation was promulgated prior to January 1, 1986; or

(B) a national primary drinking water regulation for a microbial contaminant (including a bacterium, virus, or other organism) or an indicator or treatment technique for a microbial contaminant.

(7) REGULATIONS AND GUIDANCE.—

(A) IN GENERAL.—Not later than 2 years after the date of enactment of this subsection and in consultation with the States, the Administrator shall promulgate regulations for variances to be granted under this subsection. The regulations shall, at a minimum, specify—

(i) procedures to be used by the Administrator or a State to grant or deny variances, including requirements for notifying the Administrator and consumers of the public water system that a variance is proposed to be granted (including information regarding the contaminant and variance) and requirements for a

public hearing on the variance before the variance is granted;

(ii) requirements for the installation and proper operation of variance technology that is identified (pursuant to section 1412(b)(15)) for small systems and the financial and technical capability to operate the treatment system, including operator training and certification;

(iii) eligibility criteria for a variance for each national primary drinking water regulation, including requirements for the quality of the source water (pursuant to section 1412(b)(15)(A)); and

(iv) information requirements for variance applications.

(B) AFFORDABILITY CRITERIA.—Not later than 18 months after the date of enactment of the Safe Drinking Water Act Amendments of 1996, the Administrator, in consultation with the States and the Rural Utilities Service of the Department of Agriculture, shall publish information to assist the States in developing affordability criteria. The affordability criteria shall be reviewed by the States not less often than every 5 years to determine if changes are needed to the criteria.

(8) REVIEW BY THE ADMINISTRATOR.—

(A) IN GENERAL.—The Administrator shall periodically review the program of each State that has primary enforcement responsibility for public water systems under section 1413 with respect to variances to determine whether the variances granted by the State comply with the requirements of this subsection. With respect to affordability, the determination of the Administrator shall be limited to whether the variances granted by the State comply with the affordability criteria developed by the State.

(B) NOTICE AND PUBLICATION.—If the Administrator determines that variances granted by a State are not in compliance with affordability criteria developed by the State and the requirements of this subsection, the Administrator shall notify the State in writing of the deficiencies and make public the determination.

(9) APPROVAL OF VARIANCES.—A State proposing to grant a variance under this subsection to a public water system serving more than 3,300 and fewer than 10,000 persons shall submit the variance to the Administrator for review and approval prior to the issuance of the variance. The Administrator shall approve the variance if it meets each of the requirements of this subsection. The Administrator shall approve or disapprove the variance within 90 days. If the Administrator disapproves a variance under this paragraph, the Administrator shall notify the State in writing of the reasons for disapproval and the variance may be resubmitted with modifications to address the objections stated by the Administrator.

(10) OBJECTIONS TO VARIANCES.—

(A) BY THE ADMINISTRATOR.—The Administrator may review and object to any variance proposed to be granted

by a State, if the objection is communicated to the State not later than 90 days after the State proposes to grant the variance. If the Administrator objects to the granting of a variance, the Administrator shall notify the State in writing of each basis for the objection and propose a modification to the variance to resolve the concerns of the Administrator. The State shall make the recommended modification or respond in writing to each objection. If the State issues the variance without resolving the concerns of the Administrator, the Administrator may overturn the State decision to grant the variance if the Administrator determines that the State decision does not comply with this subsection.

(B) PETITION BY CONSUMERS.—Not later than 30 days after a State exercising primary enforcement responsibility for public water systems under section 1413 proposes to grant a variance for a public water system, any person served by the system may petition the Administrator to object to the granting of a variance. The Administrator shall respond to the petition and determine whether to object to the variance under subparagraph (A) not later than 60 days after the receipt of the petition.

(C) TIMING.—No variance shall be granted by a State until the later of the following:

(i) 90 days after the State proposes to grant a variance.

(ii) If the Administrator objects to the variance, the date on which the State makes the recommended modifications or responds in writing to each objection.

[42 U.S.C. 300g–4]

EXEMPTIONS

SEC. 1416. (a) A State which has primary enforcement responsibility may exempt any public water system within the State's jurisdiction from any requirement respecting a maximum contaminant level or any treatment technique requirement, or from both, of an applicable national primary drinking water regulation upon a finding that—

(1) due to compelling factors (which may include economic factors, including qualification of the public water system as a system serving a disadvantaged community pursuant to section 1452(d)), the public water system is unable to comply with such contaminant level or treatment technique requirement, or to implement measures to develop an alternative source of water supply,

(2) the public water system was in operation on the effective date of such contaminant level or treatment technique requirement, a system that was not in operation by that date, only if no reasonable alternative source of drinking water is available to such new system,

(3) the granting of the exemption will not result in an unreasonable risk to health;[1] and

(4) management or restructuring changes (or both) cannot reasonably be made that will result in compliance with this title or, if compliance cannot be achieved, improve the quality of the drinking water.

(b)(1) If a State grants a public water system an exemption under subsection (a), the State shall prescribe, at the time the exemption is granted, a schedule for—

(A) compliance (including increments of progress or measures to develop an alternative source of water supply) by the public water system with each contaminant level requirement or treatment technique requirement with respect to which the exemption was granted, and

(B) implementation by the public water system of such control measures as the State may require for each contaminant, subject to such contaminant level requirement or treatment technique requirement, during the period ending on the date compliance with such requirement is required.

Before a schedule prescribed by a State pursuant to this subsection may take effect, the State shall provide notice and opportunity for a public hearing on the schedule. A notice given pursuant to the preceding sentence may cover the prescribing of more than one such schedule and a hearing held pursuant to such notice shall include each of the schedules covered by the notice.

(2)(A) A schedule prescribed pursuant to this subsection for a public water system granted an exemption under subsection (a) shall require compliance by the system with each contaminant level and treatment technique requirement with respect to which the exemption was granted as expeditiously as practicable (as the State may reasonably determine) but not later than 3 years after the otherwise applicable compliance date established in section 1412(b)(10).

(B) No exemption shall be granted unless the public water system establishes that—

(i) the system cannot meet the standard without capital improvements which cannot be completed prior to the date established pursuant to section 1412(b)(10);

(ii) in the case of a system which needs financial assistance for the necessary improvement, the system has entered into an agreement to obtain such financial assistance or assistance pursuant to section 1452, or any other Federal or State program is reasonably likely to be available within the period of the exemption; or

(iii) the system has entered into an enforceable agreement to become a part of a regional public water system; and

the system is taking all practicable steps to meet the standard.

(C) In the case of a system which does not serve more than a population of 3,300 and which needs financial assistance for the necessary improvements, an exemption granted under clause (i) or (ii) of subparagraph (B) may be renewed for one or more additional

[1] So in law. The semicolon probably should have been a comma. See the amendment made by section 117(a)(2) of Public Law 104–182.

2-year periods, but not to exceed a total of 6 years, if the system establishes that it is taking all practicable steps to meet the requirements of subparagraph (B).

(D) LIMITATION.—A public water system may not receive an exemption under this section if the system was granted a variance under section 1415(e).

(3) Each public water system's exemption granted by a State under subsection (a) shall be conditioned by the State upon compliance by the public water system with the schedule prescribed by the State pursuant to this subsection. The requirements of each schedule prescribed by a State pursuant to this subsection shall be enforceable by the State under its laws. Any requirement of a schedule on which an exemption granted under this section is conditioned may be enforced under section 1414 as if such requirement was part of a national primary drinking water regulation.

(4) Each schedule prescribed by a State pursuant to this subsection shall be deemed approved by the Administrator unless the exemption for which it was prescribed is revoked by the Administrator under subsection (d)(2) or the schedule is revised by the Administrator under such subsection.

(c) Each State which grants an exemption under subsection (a) shall promptly notify the Administrator of the granting of such exemption. Such notification shall contain the reasons for the exemption (including the basis for the finding required by subsection (a)(3) before the exemption may be granted) and document the need for the exemption.

(d)(1) Not later than 18 months after the effective date of the interim national primary drinking water regulations the Administrator shall complete a comprehensive review of the exemptions granted (and schedules prescribed pursuant thereto) by the States during the one-year period beginning on such effective date. The Administrator shall conduct such subsequent reviews of exemptions and schedules as he deems necessary to carry out the purposes of this title, but each subsequent review shall be completed within each 3-year period following the completion of the first review under this subparagraph. Before conducting any review under this subparagraph, the Administrator shall publish notice of the proposed review in the Federal Register. Such notice shall (A) provide information respecting the location of data and other information respecting the exemptions to be reviewed (including data and other information concerning new scientific matters bearing on such exemptions), and (B) advise of the opportunity to submit comments on the exemptions reviewed and on the need for continuing them. Upon completion of any such review, the Administrator shall publish in the Federal Register the results of his review together with findings responsive to comments submitted in connection with such review.

(2)(A) If the Administrator finds that a State has, in a substantial number of instances, abused its discretion in granting exemptions under subsection (a) or failed to prescribe schedules in accordance with subsection (b), the Administrator shall notify the State of his finding. In determining if a State has abused its discretion in granting exemptions in a substantial number of instances, the Administrator shall consider the number of persons who are af-

fected by the exemptions and if the requirements applicable to the granting of the exemptions were complied with. A notice under this subparagraph shall—

(i) identify each exempt public water system with respect to which the finding was made,

(ii) specify the reasons for the finding, and

(iii) as appropriate, propose revocations of specific exemptions or propose revised schedules for specific exempt public water systems, or both.

(B) The Administrator shall provide reasonable notice and public hearing on the provisions of each notice given pursuant to subparagraph (A). After a hearing on a notice pursuant to subparagraph (A), the Administrator shall (i) rescind the finding for which the notice was given and promptly notify the State of such rescission, or (ii) promulgate (with such modifications as he deems appropriate) such exemption revocations and revised schedules proposed in such notice as he deems appropriate. Not later than 180 days after the date a notice is given pursuant to subparagraph (A), the Administrator shall complete the hearing on the notice and take the action required by the preceding sentence.

(C) If a State is notified under subparagraph (A) of a finding of the Administrator made with respect to an exemption granted a public water system within that State or to a schedule prescribed pursuant to such an exemption and if before a revocation of such exemption or a revision of such schedule promulgated by the Administrator takes effect the State takes corrective action with respect to such exemption or schedule which the Administrator determines makes his finding inapplicable to such exemption or schedule, the Administrator shall rescind the application of his finding to that exemption or schedule. No exemption revocation or revised schedule may take effect before the expiration of 90 days following the date of the notice in which the revocation or revised schedule was proposed.

(e) For purposes of this section, the term "treatment technique requirement" means a requirement in a national primary drinking water regulation which specifies for a contaminant (in accordance with section 1401(1)(C)(ii)) each treatment technique known to the Administrator which leads to a reduction in the level of such contaminant sufficient to satisfy the requirements of section 1412(b).

(f) If a State does not have primary enforcement responsibility for public water systems, the Administrator shall have the same authority to exempt public water systems in such State from maximum contaminant level requirements and treatment technique requirements under the same conditions and in the same manner as the State would be authorized to grant exemptions under this section if it had primary enforcement responsibility.

(g) If an application for an exemption under this section is made, the State receiving the application or the Administrator, as the case may be, shall act upon such application within a reasonable period (as determined under regulations prescribed by the Administrator) after the date of its submission.

[42 U.S.C. 300g–5]

PROHIBITION ON USE OF LEAD PIPES, SOLDER, AND FLUX

SEC. 1417. (a) IN GENERAL.—

(1) PROHIBITIONS.—

(A) IN GENERAL.—No person may use any pipe, any pipe or plumbing fitting or fixture, any solder, or any flux, after June 19, 1986, in the installation or repair of—

(i) any public water system; or

(ii) any plumbing in a residential or nonresidential facility providing water for human consumption,

that is not lead free (within the meaning of subsection (d)).

(B) LEADED JOINTS.—Subparagraph (A) shall not apply to leaded joints necessary for the repair of cast iron pipes.

(2) PUBLIC NOTICE REQUIREMENTS.—

(A) IN GENERAL.—Each owner or operator of a public water system shall identify and provide notice to persons that may be affected by lead contamination of their drinking water where such contamination results from either or both of the following:

(i) The lead content in the construction materials of the public water distribution system.

(ii) Corrosivity of the water supply sufficient to cause leaching of lead.

The notice shall be provided in such manner and form as may be reasonably required by the Administrator. Notice under this paragraph shall be provided notwithstanding the absence of a violation of any national drinking water standard.

(B) CONTENTS OF NOTICE.—Notice under this paragraph shall provide a clear and readily understandable explanation of—

(i) the potential sources of lead in the drinking water,

(ii) potential adverse health effects,

(iii) reasonably available methods of mitigating known or potential lead content in drinking water,

(iv) any steps the system is taking to mitigate lead content in drinking water, and

(v) the necessity for seeking alternative water supplies, if any.

(3) UNLAWFUL ACTS.—Effective 2 years after the date of enactment of this paragraph, it shall be unlawful—

(A) for any person to introduce into commerce any pipe, or any pipe or plumbing fitting or fixture, that is not lead free, except for a pipe that is used in manufacturing or industrial processing;

(B) for any person engaged in the business of selling plumbing supplies, except manufacturers, to sell solder or flux that is not lead free; or

(C) for any person to introduce into commerce any solder or flux that is not lead free unless the solder or flux bears a prominent label stating that it is illegal to use the solder or flux in the installation or repair of any plumbing providing water for human consumption.

(b) STATE ENFORCEMENT.—

(1) ENFORCEMENT OF PROHIBITION.—The requirements of subsection (a)(1) shall be enforced in all States effective 24 months after the enactment of this section. States shall enforce such requirements through State or local plumbing codes, or such other means of enforcement as the State may determine to be appropriate.

(2) ENFORCEMENT OF PUBLIC NOTICE REQUIREMENTS.—The requirements of subsection (a)(2) shall apply in all States effective 24 months after the enactment of this section.

(c) PENALTIES.—If the Administrator determines that a State is not enforcing the requirements of subsection (a) as required pursuant to subsection (b), the Administrator may withhold up to 5 percent of Federal funds available to that State for State program grants under section 1443(a).

(d) DEFINITION OF LEAD FREE.—For purposes of this section, the term "lead free"—

(1) when used with respect to solders and flux refers to solders and flux containing not more than 0.2 percent lead;

(2) when used with respect to pipes and pipe fittings refers to pipes and pipe fittings containing not more than 8.0 percent lead; and

(3) when used with respect to plumbing fittings and fixtures, refers to plumbing fittings and fixtures in compliance with standards established in accordance with subsection (e).

(e) PLUMBING FITTINGS AND FIXTURES.—

(1) IN GENERAL.—The Administrator shall provide accurate and timely technical information and assistance to qualified third-party certifiers in the development of voluntary standards and testing protocols for the leaching of lead from new plumbing fittings and fixtures that are intended by the manufacturer to dispense water for human ingestion.

(2) STANDARDS.—

(A) IN GENERAL.—If a voluntary standard for the leaching of lead is not established by the date that is 1 year after the date of enactment of this subsection, the Administrator shall, not later than 2 years after the date of enactment of this subsection, promulgate regulations setting a health-effects-based performance standard establishing maximum leaching levels from new plumbing fittings and fixtures that are intended by the manufacturer to dispense water for human ingestion. The standard shall become effective on the date that is 5 years after the date of promulgation of the standard.

(B) ALTERNATIVE REQUIREMENT.—If regulations are required to be promulgated under subparagraph (A) and have not been promulgated by the date that is 5 years after the date of enactment of this subsection, no person may import, manufacture, process, or distribute in commerce a new plumbing fitting or fixture, intended by the manufacturer to dispense water for human ingestion, that contains more than 4 percent lead by dry weight.

[42 U.S.C. 300g–6]

MONITORING OF CONTAMINANTS

SEC. 1418. (a) INTERIM MONITORING RELIEF AUTHORITY.—

(1) IN GENERAL.—A State exercising primary enforcement responsibility for public water systems may modify the monitoring requirements for any regulated or unregulated contaminants for which monitoring is required other than microbial contaminants (or indicators thereof), disinfectants and disinfection byproducts or corrosion byproducts for an interim period to provide that any public water system serving 10,000 persons or fewer shall not be required to conduct additional quarterly monitoring during an interim relief period for such contaminants if—

(A) monitoring, conducted at the beginning of the period for the contaminant concerned and certified to the State by the public water system, fails to detect the presence of the contaminant in the ground or surface water supplying the public water system; and

(B) the State, considering the hydrogeology of the area and other relevant factors, determines in writing that the contaminant is unlikely to be detected by further monitoring during such period.

(2) TERMINATION; TIMING OF MONITORING.—The interim relief period referred to in paragraph (1) shall terminate when permanent monitoring relief is adopted and approved for such State, or at the end of 36 months after the date of enactment of the Safe Drinking Water Act Amendments of 1996, whichever comes first. In order to serve as a basis for interim relief, the monitoring conducted at the beginning of the period must occur at the time determined by the State to be the time of the public water system's greatest vulnerability to the contaminant concerned in the relevant ground or surface water, taking into account in the case of pesticides the time of application of the pesticide for the source water area and the travel time for the pesticide to reach such waters and taking into account, in the case of other contaminants, seasonality of precipitation and contaminant travel time.

(b) PERMANENT MONITORING RELIEF AUTHORITY.—

(1) IN GENERAL.—Each State exercising primary enforcement responsibility for public water systems under this title and having an approved source water assessment program may adopt, in accordance with guidance published by the Administrator, tailored alternative monitoring requirements for public water systems in such State (as an alternative to the monitoring requirements for chemical contaminants set forth in the applicable national primary drinking water regulations) where the State concludes that (based on data available at the time of adoption concerning susceptibility, use, occurrence, or wellhead protection, or from the State's drinking water source water assessment program) such alternative monitoring would provide assurance that it complies with the Administrator's guidelines. The State program must be adequate to assure compliance with, and enforcement of, applicable national primary drinking water regulations. Alternative monitoring shall

not apply to regulated microbiological contaminants (or indicators thereof), disinfectants and disinfection byproducts, or corrosion byproducts. The preceding sentence is not intended to limit other authority of the Administrator under other provisions of this title to grant monitoring flexibility.

(2) GUIDELINES.—

(A) IN GENERAL.—The Administrator shall issue, after notice and comment and at the same time as guidelines are issued for source water assessment under section 1453, guidelines for States to follow in proposing alternative monitoring requirements under paragraph (1) for chemical contaminants. The Administrator shall publish such guidelines in the Federal Register. The guidelines shall assure that the public health will be protected from drinking water contamination. The guidelines shall require that a State alternative monitoring program apply on a contaminant-by-contaminant basis and that, to be eligible for such alternative monitoring program, a public water system must show the State that the contaminant is not present in the drinking water supply or, if present, it is reliably and consistently below the maximum contaminant level.

(B) DEFINITION.—For purposes of subparagraph (A), the phrase "reliably and consistently below the maximum contaminant level" means that, although contaminants have been detected in a water supply, the State has sufficient knowledge of the contamination source and extent of contamination to predict that the maximum contaminant level will not be exceeded. In determining that a contaminant is reliably and consistently below the maximum contaminant level, States shall consider the quality and completeness of data, the length of time covered and the volatility or stability of monitoring results during that time, and the proximity of such results to the maximum contaminant level. Wide variations in the analytical results, or analytical results close to the maximum contaminant level, shall not be considered to be reliably and consistently below the maximum contaminant level.

(3) EFFECT OF DETECTION OF CONTAMINANTS.—The guidelines issued by the Administrator under paragraph (2) shall require that if, after the monitoring program is in effect and operating, a contaminant covered by the alternative monitoring program is detected at levels at or above the maximum contaminant level or is no longer reliably or consistently below the maximum contaminant level, the public water system must either—

(A) demonstrate that the contamination source has been removed or that other action has been taken to eliminate the contamination problem; or

(B) test for the detected contaminant pursuant to the applicable national primary drinking water regulation.

(4) STATES NOT EXERCISING PRIMARY ENFORCEMENT RESPONSIBILITY.—The Governor of any State not exercising primary enforcement responsibility under section 1413 on the date of enactment of this section may submit to the Adminis-

trator a request that the Administrator modify the monitoring requirements established by the Administrator and applicable to public water systems in that State. After consultation with the Governor, the Administrator shall modify the requirements for public water systems in that State if the request of the Governor is in accordance with each of the requirements of this subsection that apply to alternative monitoring requirements established by States that have primary enforcement responsibility. A decision by the Administrator to approve a request under this clause shall be for a period of 3 years and may subsequently be extended for periods of 5 years.

(c) TREATMENT AS NPDWR.—All monitoring relief granted by a State to a public water system for a regulated contaminant under subsection (a) or (b) shall be treated as part of the national primary drinking water regulation for that contaminant.

(d) OTHER MONITORING RELIEF.—Nothing in this section shall be construed to affect the authority of the States under applicable national primary drinking water regulations to alter monitoring requirements through waivers or other existing authorities. The Administrator shall periodically review and, as appropriate, revise such authorities.

[42 U.S.C. 300g–7]

OPERATOR CERTIFICATION

SEC. 1419. (a) GUIDELINES.—Not later than 30 months after the date of enactment of the Safe Drinking Water Act Amendments of 1996 and in cooperation with the States, the Administrator shall publish guidelines in the Federal Register, after notice and opportunity for comment from interested persons, including States and public water systems, specifying minimum standards for certification (and recertification) of the operators of community and nontransient noncommunity public water systems. Such guidelines shall take into account existing State programs, the complexity of the system, and other factors aimed at providing an effective program at reasonable cost to States and public water systems, taking into account the size of the system.

(b) STATE PROGRAMS.—Beginning 2 years after the date on which the Administrator publishes guidelines under subsection (a), the Administrator shall withhold 20 percent of the funds a State is otherwise entitled to receive under section 1452 unless the State has adopted and is implementing a program for the certification of operators of community and nontransient noncommunity public water systems that meets the requirements of the guidelines published pursuant to subsection (a) or that has been submitted in compliance with subsection (c) and that has not been disapproved.

(c) EXISTING PROGRAMS.—For any State exercising primary enforcement responsibility for public water systems or any other State which has an operator certification program, the guidelines under subsection (a) shall allow the State to enforce such program in lieu of the guidelines under subsection (a) if the State submits the program to the Administrator within 18 months after the publication of the guidelines unless the Administrator determines (within 9 months after the State submits the program to the Adminis-

trator) that such program is not substantially equivalent to such guidelines. In making this determination, an existing State program shall be presumed to be substantially equivalent to the guidelines, notwithstanding program differences, based on the size of systems or the quality of source water, providing the State program meets the overall public health objectives of the guidelines. If disapproved, the program may be resubmitted within 6 months after receipt of notice of disapproval.

(d) EXPENSE REIMBURSEMENT.—

(1) IN GENERAL.—The Administrator shall provide reimbursement for the costs of training, including an appropriate per diem for unsalaried operators, and certification for persons operating systems serving 3,300 persons or fewer that are required to undergo training pursuant to this section.

(2) STATE GRANTS.—The reimbursement shall be provided through grants to States with each State receiving an amount sufficient to cover the reasonable costs for training all such operators in the State, as determined by the Administrator, to the extent required by this section. Grants received by a State pursuant to this paragraph shall first be used to provide reimbursement for training and certification costs of persons operating systems serving 3,300 persons or fewer. If a State has reimbursed all such costs, the State may, after notice to the Administrator, use any remaining funds from the grant for any of the other purposes authorized for grants under section 1452.

(3) AUTHORIZATION.—There are authorized to be appropriated to the Administrator to provide grants for reimbursement under this section $30,000,000 for each of fiscal years 1997 through 2003.

(4) RESERVATION.—If the appropriation made pursuant to paragraph (3) for any fiscal year is not sufficient to satisfy the requirements of paragraph (1), the Administrator shall, prior to any other allocation or reservation, reserve such sums as necessary from the funds appropriated pursuant to section 1452(m) to provide reimbursement for the training and certification costs mandated by this subsection.

[42 U.S.C. 300g–8]

CAPACITY DEVELOPMENT

SEC. 1420. (a) STATE AUTHORITY FOR NEW SYSTEMS.—A State shall receive only 80 percent of the allotment that the State is otherwise entitled to receive under section 1452 (relating to State loan funds) unless the State has obtained the legal authority or other means to ensure that all new community water systems and new nontransient, noncommunity water systems commencing operation after October 1, 1999, demonstrate technical, managerial, and financial capacity with respect to each national primary drinking water regulation in effect, or likely to be in effect, on the date of commencement of operations.

(b) SYSTEMS IN SIGNIFICANT NONCOMPLIANCE.—

(1) LIST.—Beginning not later than 1 year after the date of enactment of this section, each State shall prepare, periodically update, and submit to the Administrator a list of commu-

nity water systems and nontransient, noncommunity water systems that have a history of significant noncompliance with this title (as defined in guidelines issued prior to the date of enactment of this section or any revisions of the guidelines that have been made in consultation with the States) and, to the extent practicable, the reasons for noncompliance.

(2) REPORT.—Not later than 5 years after the date of enactment of this section and as part of the capacity development strategy of the State, each State shall report to the Administrator on the success of enforcement mechanisms and initial capacity development efforts in assisting the public water systems listed under paragraph (1) to improve technical, managerial, and financial capacity.

(3) WITHHOLDING.—The list and report under this subsection shall be considered part of the capacity development strategy of the State required under subsection (c) of this section for purposes of the withholding requirements of section 1452(a)(1)(G)(i) (relating to State loan funds).

(c) CAPACITY DEVELOPMENT STRATEGY.—

(1) IN GENERAL.—Beginning 4 years after the date of enactment of this section, a State shall receive only—

(A) 90 percent in fiscal year 2001;

(B) 85 percent in fiscal year 2002; and

(C) 80 percent in each subsequent fiscal year,

of the allotment that the State is otherwise entitled to receive under section 1452 (relating to State loan funds), unless the State is developing and implementing a strategy to assist public water systems in acquiring and maintaining technical, managerial, and financial capacity.

(2) CONTENT.—In preparing the capacity development strategy, the State shall consider, solicit public comment on, and include as appropriate—

(A) the methods or criteria that the State will use to identify and prioritize the public water systems most in need of improving technical, managerial, and financial capacity;

(B) a description of the institutional, regulatory, financial, tax, or legal factors at the Federal, State, or local level that encourage or impair capacity development;

(C) a description of how the State will use the authorities and resources of this title or other means to—

(i) assist public water systems in complying with national primary drinking water regulations;

(ii) encourage the development of partnerships between public water systems to enhance the technical, managerial, and financial capacity of the systems; and

(iii) assist public water systems in the training and certification of operators;

(D) a description of how the State will establish a baseline and measure improvements in capacity with respect to national primary drinking water regulations and State drinking water law; and

(E) an identification of the persons that have an interest in and are involved in the development and implemen-

tation of the capacity development strategy (including all appropriate agencies of Federal, State, and local governments, private and nonprofit public water systems, and public water system customers).

(3) REPORT.—Not later than 2 years after the date on which a State first adopts a capacity development strategy under this subsection, and every 3 years thereafter, the head of the State agency that has primary responsibility to carry out this title in the State shall submit to the Governor a report that shall also be available to the public on the efficacy of the strategy and progress made toward improving the technical, managerial, and financial capacity of public water systems in the State.

(4) REVIEW.—The decisions of the State under this section regarding any particular public water system are not subject to review by the Administrator and may not serve as the basis for withholding funds under section 1452.

(d) FEDERAL ASSISTANCE.—

(1) IN GENERAL.—The Administrator shall support the States in developing capacity development strategies.

(2) INFORMATIONAL ASSISTANCE.—

(A) IN GENERAL.—Not later than 180 days after the date of enactment of this section, the Administrator shall—

(i) conduct a review of State capacity development efforts in existence on the date of enactment of this section and publish information to assist States and public water systems in capacity development efforts; and

(ii) initiate a partnership with States, public water systems, and the public to develop information for States on recommended operator certification requirements.

(B) PUBLICATION OF INFORMATION.—The Administrator shall publish the information developed through the partnership under subparagraph (A)(ii) not later than 18 months after the date of enactment of this section.

(3) PROMULGATION OF DRINKING WATER REGULATIONS.—In promulgating a national primary drinking water regulation, the Administrator shall include an analysis of the likely effect of compliance with the regulation on the technical, financial, and managerial capacity of public water systems.

(4) GUIDANCE FOR NEW SYSTEMS.—Not later than 2 years after the date of enactment of this section, the Administrator shall publish guidance developed in consultation with the States describing legal authorities and other means to ensure that all new community water systems and new nontransient, noncommunity water systems demonstrate technical, managerial, and financial capacity with respect to national primary drinking water regulations.

(e) VARIANCES AND EXEMPTIONS.—Based on information obtained under subsection (c)(3), the Administrator shall, as appropriate, modify regulations concerning variances and exemptions for small public water systems to ensure flexibility in the use of the

variances and exemptions. Nothing in this subsection shall be interpreted, construed, or applied to affect or alter the requirements of section 1415 or 1416.

(f) SMALL PUBLIC WATER SYSTEMS TECHNOLOGY ASSISTANCE CENTERS.—

(1) GRANT PROGRAM.—The Administrator is authorized to make grants to institutions of higher learning to establish and operate small public water system technology assistance centers in the United States.

(2) RESPONSIBILITIES OF THE CENTERS.—The responsibilities of the small public water system technology assistance centers established under this subsection shall include the conduct of training and technical assistance relating to the information, performance, and technical needs of small public water systems or public water systems that serve Indian Tribes.

(3) APPLICATIONS.—Any institution of higher learning interested in receiving a grant under this subsection shall submit to the Administrator an application in such form and containing such information as the Administrator may require by regulation.

(4) SELECTION CRITERIA.—The Administrator shall select recipients of grants under this subsection on the basis of the following criteria:

(A) The small public water system technology assistance center shall be located in a State that is representative of the needs of the region in which the State is located for addressing the drinking water needs of small and rural communities or Indian Tribes.

(B) The grant recipient shall be located in a region that has experienced problems, or may reasonably be foreseen to experience problems, with small and rural public water systems.

(C) The grant recipient shall have access to expertise in small public water system technology management.

(D) The grant recipient shall have the capability to disseminate the results of small public water system technology and training programs.

(E) The projects that the grant recipient proposes to carry out under the grant are necessary and appropriate.

(F) The grant recipient has regional support beyond the host institution.

(5) CONSORTIA OF STATES.—At least 2 of the grants under this subsection shall be made to consortia of States with low population densities.

(6) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to make grants under this subsection $2,000,000 for each of the fiscal years 1997 through 1999, and $5,000,000 for each of the fiscal years 2000 through 2003.

(g) ENVIRONMENTAL FINANCE CENTERS.—

(1) IN GENERAL.—The Administrator shall provide initial funding for one or more university-based environmental finance centers for activities that provide technical assistance to State and local officials in developing the capacity of public

water systems. Any such funds shall be used only for activities that are directly related to this title.

(2) NATIONAL CAPACITY DEVELOPMENT CLEARINGHOUSE.—The Administrator shall establish a national public water system capacity development clearinghouse to receive and disseminate information with respect to developing, improving, and maintaining financial and managerial capacity at public water systems. The Administrator shall ensure that the clearinghouse does not duplicate other federally supported clearinghouse activities.

(3) CAPACITY DEVELOPMENT TECHNIQUES.—The Administrator may request an environmental finance center funded under paragraph (1) to develop and test managerial, financial, and institutional techniques for capacity development. The techniques may include capacity assessment methodologies, manual and computer based public water system rate models and capital planning models, public water system consolidation procedures, and regionalization models.

(4) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this subsection $1,500,000 for each of the fiscal years 1997 through 2003.

(5) LIMITATION.—No portion of any funds made available under this subsection may be used for lobbying expenses.

[42 U.S.C. 300g–9]

PART C—PROTECTION OF UNDERGROUND SOURCES OF DRINKING WATER

REGULATIONS FOR STATE PROGRAMS

SEC. 1421. (a)(1) The Administrator shall publish proposed regulations for State underground injection control programs within 180 days after the date of enactment of this title. Within 180 days after publication of such proposed regulations, he shall promulgate such regulations with such modifications as he deems appropriate. Any regulation under this subsection may be amended from time to time.

(2) Any regulation under this section shall be proposed and promulgated in accordance with section 553 of title 5, United States Code (relating to rulemaking), except that the Administrator shall provide opportunity for public hearing prior to promulgation of such regulations. In proposing and promulgating regulations under this section, the Administrator shall consult with the Secretary, the National Drinking Water Advisory Council, and other appropriate Federal entities and with interested State entities.

(b)(1) Regulations under subsection (a) for State underground injection programs shall contain minimum requirements for effective programs to prevent underground injection which endangers drinking water sources within the meaning of subsection (d)(2). Such regulations shall require that a State program, in order to be approved under section 1422—

(A) shall prohibit, effective on the date on which the applicable underground injection control program takes effect, any underground injection in such State which is not authorized by

a permit issued by the State (except that the regulations may permit a State to authorize underground injection by rule);

(B) shall require (i) in the case of a program which provides for authorization of underground injection by permit, that the applicant for the permit to inject must satisfy the State that the underground injection will not endanger drinking water sources, and (ii) in the case of a program which provides for such an authorization by rule, that no rule may be promulgated which authorizes any underground injection which endangers drinking water sources;

(C) shall include inspection, monitoring, recordkeeping, and reporting requirements; and

(D) shall apply (i) as prescribed by section 1447(b)[1], to underground injections by Federal agencies, and (ii) to underground injections by any other person whether or not occurring on property owned or leased by the United States.

(2) Regulations of the Administrator under this section for State underground injection control programs may not prescribe requirements which interfere with or impede—

(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or

(B) any underground injection for the secondary or tertiary recovery of oil or natural gas,

unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection.

(3)(A) The regulations of the Administrator under this section shall permit or provide for consideration of varying geologic, hydrological, or historical conditions in different States and in different areas within a State.

(B)(i) In prescribing regulations under this section the Administrator shall, to the extent feasible, avoid promulgation of requirements which would unnecessarily disrupt State underground injection control programs which are in effect and being enforced in a substantial number of States.

(ii) For the purpose of this subparagraph, a regulation prescribed by the Administrator under this section shall be deemed to disrupt a State underground injection control program only if it would be infeasible to comply with both such regulation and the State underground injection control program.

(iii) For the purpose of this subparagraph, a regulation prescribed by the Administrator under this section shall be deemed unnecessary only if, without such regulation, underground sources of drinking water will not be endangered by any underground injection.

(C) Nothing in this section shall be construed to alter or affect the duty to assure that underground sources of drinking water will not be endangered by any underground injection.

(c)(1) The Administrator may, upon application of the Governor of a State which authorizes underground injection by means of permits, authorize such State to issue (without regard to subsection

[1] So in law. The reference to "section 1447(b)" probably should refer to "section 1447(a)". See the amendment made by section 129 of Public Law 104–182.

(b)(1)(B)(i)) temporary permits for underground injection which may be effective until the expiration of four years after the date of enactment of this title, if—

(A) the Administrator finds that the State has demonstrated that it is unable and could not reasonably have been able to process all permit applications within the time available;

(B) the Administrator determines the adverse effect on the environment of such temporary permits is not unwarranted;

(C) such temporary permits will be issued only with respect to injection wells in operation on the date on which such State's permit program approved under this part first takes effect and for which there was inadequate time to process its permit application; and

(D) the Administrator determines the temporary permits require the use of adequate safeguards established by rules adopted by him.

(2) The Administrator may, upon application of the Governor of a State which authorizes underground injection by means of permits, authorize such State to issue (without regard to subsection (b)(1)(B)(i)), but after reasonable notice and hearing, one or more temporary permits each of which is applicable to a particular injection well and to the underground injection of a particular fluid and which may be effective until the expiration of four years after the date of enactment of this title, if the State finds, on the record of such hearing—

(A) that technology (or other means) to permit safe injection of the fluid in accordance with the applicable underground injection control program is not generally available (taking costs into consideration);

(B) that injection of the fluid would be less harmful to health than the use of other available means of disposing of waste or producing the desired product; and

(C) that available technology or other means have been employed (and will be employed) to reduce the volume and toxicity of the fluid and to minimize the potentially adverse effect of the injection on the public health.

(d) For purposes of this part:

(1) The term "underground injection" means the subsurface emplacement of fluids by well injection. Such term does not include the underground injection of natural gas for purposes of storage.

(2) Underground injection endangers drinking water sources if such injection may result in the presence in underground water which supplies or can reasonably be expected to supply any public water system of any contaminant, and if the presence of such contaminant may result in such system's not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons.

[42 U.S.C. 300h]

STATE PRIMARY ENFORCEMENT RESPONSIBILITY

SEC. 1422. (a) Within 180 days after the date of enactment of this title, the Administrator shall list in the Federal Register each State for which in his judgment a State underground injection control program may be necessary to assure that underground injection will not endanger drinking water sources. Such list may be amended from time to time.

(b)(1)(A) Each State listed under subsection (a) shall within 270 days after the date of promulgation of any regulation under section 1421 (or, if later, within 270 days after such State is first listed under subsection (a)) submit to the Administrator an application which contains a showing satisfactory to the Administrator that the State—

(i) has adopted after reasonable notice and public hearings, and will implement, an underground injection control program which meets the requirements of regulations in effect under section 1421; and

(ii) will keep such records and make such reports with respect to its activities under its underground injection control program as the Administrator may require by regulation.

The Administrator may, for good cause, extend the date for submission of an application by any State under this subparagraph for a period not to exceed an additional 270 days.

(B) Within 270 days of any amendment of a regulation under section 1421 revising or adding any requirement respecting State underground injection control programs, each State listed under subsection (a) shall submit (in such form and manner as the Administrator may require) a notice to the Administrator containing a showing satisfactory to him that the State underground injection control program meets the revised or added requirement.

(2) Within ninety days after the State's application under paragraph (1)(A) or notice under paragraph (1)(B) and after reasonable opportunity for presentation of views, the Administrator shall by rule either approve, disapprove, or approve in part and disapprove in part, the State's underground injection control program.

(3) If the Administrator approves the State's program under paragraph (2), the State shall have primary enforcement responsibility for underground water sources until such time as the Administrator determines, by rule, that such State no longer meets the requirements of clause (i) or (ii) of paragraph (1)(A) of this subsection.

(4) Before promulgating any rule under paragraph (2) or (3) of this subsection, the Administrator shall provide opportunity for public hearing respecting such rule.

(c) If the Administrator disapproves a State's program (or part thereof) under subsection (b)(2), if the Administrator determines under subsection (b)(3) that a State no longer meets the requirements of clause (i) or (ii) of subsection (b)(1)(A), or if a State fails to submit an application or notice before the date of expiration of the period specified in subsection (b)(1), the Administrator shall by regulation within 90 days after the date of such disapproval, determination, or expiration (as the case may be) prescribe (and may from time to time by regulation revise) a program applicable to

such State meeting the requirements of section 1421(b). Such program may not include requirements which interfere with or impede—

(1) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or

(2) any underground injection for the secondary or tertiary recovery of oil or natural gas,

unless such requirements are essential to assure that underground sources of drinking water will not be endangered by such injection. Such program shall apply in such State to the extent that a program adopted by such State which the Administrator determines meets such requirements is not in effect. Before promulgating any regulation under this section, the Administrator shall provide opportunity for public hearing respecting such regulation.

(d) For purposes of this title, the term "applicable underground injection control program" with respect to a State means the program (or most recent amendment thereof) (1) which has been adopted by the State and which has been approved under subsection (b), or (2) which has been prescribed by the Administrator under subsection (c).

(e) An Indian Tribe may assume primary enforcement responsibility for underground injection control under this section consistent with such regulations as the Administrator has prescribed pursuant to Part C and section 1451 of this Act. The area over which such Indian Tribe exercises governmental jurisdiction need not have been listed under subsection (a) of this section, and such Tribe need not submit an application to assume primary enforcement responsibility within the 270-day deadline noted in subsection (b)(1)(A) of this section. Until an Indian Tribe assumes primary enforcement responsibility, the currently applicable underground injection control program shall continue to apply. If an applicable underground injection control program does not exist for an Indian Tribe, the Administrator shall prescribe such a program pursuant to subsection (c) of this section, and consistent with section 1421(b), within 270 days after the enactment of the Safe Drinking Water Act Amendments of 1986, unless an Indian Tribe first obtains approval to assume primary enforcement responsibility for underground injection control.

[42 U.S.C. 300h–1]

ENFORCEMENT OF PROGRAM

SEC. 1423. (a)(1) Whenever the Administrator finds during a period during which a State has primary enforcement responsibility for underground water sources (within the meaning of section 1422(b)(3) or section 1425(c)) that any person who is subject to a requirement of an applicable underground injection control program in such State is violating such requirement, he shall so notify the State and the person violating such requirement. If beyond the thirtieth day after the Administrator's notification the State has not commenced appropriate enforcement action, the Administrator shall issue an order under subsection (c) requiring the person to

comply with such requirement or the Administrator shall commence a civil action under subsection (b).

(2) Whenever the Administrator finds during a period during which a State does not have primary enforcement responsibility for underground water sources that any person subject to any requirement of any applicable underground injection control program in such State is violating such requirement, the Administrator shall issue an order under subsection (c) requiring the person to comply with such requirement or the Administrator shall commence a civil action under subsection (b).

(b) CIVIL AND CRIMINAL ACTIONS.—Civil actions referred to in paragraphs (1) and (2) of subsection (a) shall be brought in the appropriate United States district court. Such court shall have jurisdiction to require compliance with any requirement of an applicable underground injection program or with an order issued under subsection (c). The court may enter such judgment as protection of public health may require. Any person who violates any requirement of an applicable underground injection control program or an order requiring compliance under subsection (c)—

(1) shall be subject to a civil penalty of not more than $25,000 for each day of such violation, and

(2) if such violation is willful, such person may, in addition to or in lieu of the civil penalty authorized by paragraph (1), be imprisoned for not more than 3 years, or fined in accordance with title 18 of the United States Code, or both.

(c) ADMINISTRATIVE ORDERS.—(1) In any case in which the Administrator is authorized to bring a civil action under this section with respect to any regulation or other requirement of this part other than those relating to—

(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production, or

(B) any underground injection for the secondary or tertiary recovery of oil or natural gas,

the Administrator may also issue an order under this subsection either assessing a civil penalty of not more than $10,000 for each day of violation for any past or current violation, up to a maximum administrative penalty of $125,000, or requiring compliance with such regulation or other requirement, or both.

(2) In any case in which the Administrator is authorized to bring a civil action under this section with respect to any regulation, or other requirement of this part relating to—

(A) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production, or

(B) any underground injection for the secondary or tertiary recovery of oil or natural gas,

the Administrator may also issue an order under this subsection either assessing a civil penalty of not more than $5,000 for each day of violation for any past or current violation, up to a maximum administrative penalty of $125,000, or requiring compliance with such regulation or other requirement, or both.

(3)(A) An order under this subsection shall be issued by the Administrator after opportunity (provided in accordance with this

subparagraph) for a hearing. Before issuing the order, the Administrator shall give to the person to whom it is directed written notice of the Administrator's proposal to issue such order and the opportunity to request, within 30 days of the date the notice is received by such person, a hearing on the order. Such hearing shall not be subject to section 554 or 556 of title 5, United States Code, but shall provide a reasonable opportunity to be heard and to present evidence.

(B) The Administrator shall provide public notice of, and reasonable opportunity to comment on, any proposed order.

(C) Any citizen who comments on any proposed order under subparagraph (B) shall be given notice of any hearing under this subsection and of any order. In any hearing held under subparagraph (A), such citizen shall have a reasonable opportunity to be heard and to present evidence.

(D) Any order issued under this subsection shall become effective 30 days following its issuance unless an appeal is taken pursuant to paragraph (6).

(4)(A) Any order issued under this subsection shall state with reasonable specificity the nature of the violation and may specify a reasonable time for compliance.

(B) In assessing any civil penalty under this subsection, the Administrator shall take into account appropriate factors, including (i) the seriousness of the violation; (ii) the economic benefit (if any) resulting from the violation; (iii) any history of such violations; (iv) any good-faith efforts to comply with the applicable requirements; (v) the economic impact of the penalty on the violator; and (vi) such other matters as justice may require.

(5) Any violation with respect to which the Administrator has commenced and is diligently prosecuting an action, or has issued an order under this subsection assessing a penalty, shall not be subject to an action under subsection (b) of this section or section 1424(c) or 1449, except that the foregoing limitation on civil actions under section 1449 of this Act shall not apply with respect to any violation for which—

(A) a civil action under section 1449(a)(1) has been filed prior to commencement of an action under this subsection, or

(B) a notice of violation under section 1449(b)(1) has been given before commencement of an action under this subsection and an action under section 1449(a)(1) of this Act is filed before 120 days after such notice is given.

(6) Any person against whom an order is issued or who commented on a proposed order pursuant to paragraph (3) may file an appeal of such order with the United States District Court for the District of Columbia or the district in which the violation is alleged to have occurred. Such an appeal may only be filed within the 30-day period beginning on the date the order is issued. Appellant shall simultaneously send a copy of the appeal by certified mail to the Administrator and to the Attorney General. The Administrator shall promptly file in such court a certified copy of the record on which such order was imposed. The district court shall not set aside or remand such order unless there is not substantial evidence on the record, taken as a whole, to support the finding of a violation or, unless the Administrator's assessment of penalty or re-

quirement for compliance constitutes an abuse of discretion. The district court shall not impose additional civil penalties for the same violation unless the Administrator's assessment of a penalty constitutes an abuse of discretion. Notwithstanding section 1448(a)(2), any order issued under paragraph (3) shall be subject to judicial review exclusively under this paragraph.

(7) If any person fails to pay an assessment of a civil penalty—

(A) after the order becomes effective under paragraph (3), or

(B) after a court, in an action brought under paragraph (6), has entered a final judgment in favor of the Administrator,

the Administrator may request the Attorney General to bring a civil action in an appropriate district court to recover the amount assessed (plus costs, attorneys' fees, and interest at currently prevailing rates from the date the order is effective or the date of such final judgment, as the case may be). In such an action, the validity, amount, and appropriateness of such penalty shall not be subject to review.

(8) The Administrator may, in connection with administrative proceedings under this subsection, issue subpoenas compelling the attendance and testimony of witnesses and subpoenas duces tecum, and may request the Attorney General to bring an action to enforce any subpoena under this section. The district courts shall have jurisdiction to enforce such subpoenas and impose sanction.

(d) Nothing in this title shall diminish any authority of a State or political subdivision to adopt or enforce any law or regulation respecting underground injection but no such law or regulation shall relieve any person of any requirement otherwise applicable under this title.

[42 U.S.C. 300h–2]

INTERIM REGULATION OF UNDERGROUND INJECTIONS

SEC. 1424. (a)(1) Any person may petition the Administrator to have an area of a State (or States) designated as an area in which no new underground injection well may be operated during the period beginning on the date of the designation and ending on the date on which the applicable underground injection control program covering such area takes effect unless a permit for the operation of such well has been issued by the Administrator under subsection (b). The Administrator may so designate an area within a State if he finds that the area has one aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health.

(2) Upon receipt of a petition under paragraph (1) of this subsection, the Administrator shall publish it in the Federal Register and shall provide an opportunity to interested persons to submit written data, views, or arguments thereon. Not later than the 30th day following the date of the publication of a petition under this paragraph in the Federal Register, the Administrator shall either make the designation for which the petition is submitted or deny the petition.

(b)(1) During the period beginning on the date an area is designated under subsection (a) and ending on the date the applicable

underground injection control program covering such area takes effect, no new underground injection well may be operated in such area unless the Administrator has issued a permit for such operation.

(2) Any person may petition the Administrator for the issuance of a permit for the operation of such a well in such an area. A petition submitted under this paragraph shall be submitted in such manner and contain such information as the Administrator may require by regulation. Upon receipt of such a petition, the Administrator shall publish it in the Federal Register. The Administrator shall give notice of any proceeding on a petition and shall provide opportunity for agency hearing. The Administrator shall act upon such petition on the record of any hearing held pursuant to the preceding sentence respecting such petition. Within 120 days of the publication in the Federal Register of a petition submitted under this paragraph, the Administrator shall either issue the permit for which the petition was submitted or shall deny its issuance.

(3) The Administrator may issue a permit for the operation of a new underground injection well in an area designated under subsection (a) only if he finds that the operation of such well will not cause contamination of the aquifer of such area so as to create a significant hazard to public health. The Administrator may condition the issuance of such a permit upon the use of such control measures in connection with the operation of such well, for which the permit is to be issued, as he deems necessary to assure that the operation of the well will not contaminate the aquifer of the designated area in which the well is located so as to create a significant hazard to public health.

(c) Any person who operates a new underground injection well in violation of subsection (b), (1) shall be subject to a civil penalty of not more than $5,000 for each day in which such violation occurs, or (2) if such violation is willful, such person may, in lieu of the civil penalty authorized by clause (1), be fined not more than $10,000 for each day in which such violation occurs. If the Administrator has reason to believe that any person is violating or will violate subsection (b), he may petition the United States district court to issue a temporary restraining order or injunction (including a mandatory injunction) to enforce such subsection.

(d) For purposes of this section, the term "new underground injection well" means an underground injection well whose operation was not approved by appropriate State and Federal agencies before the date of the enactment of this title.

(e) If the Administrator determines, on his own initiative or upon petition, that an area has an aquifer which is the sole or principal drinking water source for the area and which, if contaminated, would create a significant hazard to public health, he shall publish notice of that determination in the Federal Register. After the publication of any such notice, no commitment for Federal financial assistance (through a grant, contract, loan guarantee, or otherwise) may be entered into for any project which the Administrator determines may contaminate such aquifer through a recharge zone so as to create a significant hazard to public health, but a commitment for Federal financial assistance may, if authorized under another provision of law, be entered into to plan or de-

sign the project to assure that it will not so contaminate the aquifer.

[42 U.S.C. 300h–3]

OPTIONAL DEMONSTRATION BY STATES RELATING TO OIL OR NATURAL GAS

SEC. 1425. (a) For purposes of the Administrator's approval or disapproval under section 1422 of that portion of any State underground injection control program which relates to—

(1) the underground injection of brine or other fluids which are brought to the surface in connection with oil or natural gas production or natural gas storage operations, or

(2) any underground injection for the secondary or tertiary recovery of oil or natural gas,

in lieu of the showing required under subparagraph (A) of section 1422(b)(1) the State may demonstrate that such portion of the State program meets the requirements of subparagraphs (A) through (D) of section 1421(b)(1) and represents an effective program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources.

(b) If the Administrator revises or amends any requirement of a regulation under section 1421 relating to any aspect of the underground injection referred to in subsection (a), in the case of that portion of a State underground injection control program for which the demonstration referred to in subsection (a) has been made, in lieu of the showing required under section 1422(b)(1)(B) the State may demonstrate that, with respect to that aspect of such underground injection, the State program meets the requirements of subparagraphs (A) through (D) of section 1421(b)(1) and represents an effective program (including adequate recordkeeping and reporting) to prevent underground injection which endangers drinking water sources.

(c)(1) Section 1422(b)(3) shall not apply to that portion of any State underground injection control program approved by the Administrator pursuant to a demonstration under subsection (a) of this section (and under subsection (b) of this section where applicable).

(2) If pursuant to such a demonstration, the Administrator approves such portion of the State program, the State shall have primary enforcement responsibility with respect to that portion until such time as the Administrator determines, by rule, that such demonstration is no longer valid. Following such a determination, the Administrator may exercise the authority of subsection (c) of section 1422 in the same manner as provided in such subsection with respect to a determination described in such subsection.

(3) Before promulgating any rule under paragraph (2), the Administrator shall provide opportunity for public hearing respecting such rule.

[42 U.S.C. 300h–4]

REGULATION OF STATE PROGRAMS

SEC. 1426. (a)[1] Not later than 18 months after enactment of the Safe Drinking Water Act Amendments of 1986, the Administrator shall modify regulations issued under this Act for Class I injection wells to identify monitoring methods, in addition to those in effect on November 1, 1985, including groundwater monitoring. In accordance with such regulations, the Administrator, or delegated State authority, shall determine the applicability of such monitoring methods, wherever appropriate, at locations and in such a manner as to proivide the earliest possible detection of fluid migration into, or in the direction of, underground sources of drinking water from such wells, based on its assessment of the potential for fluid migration from the injection zone that may be harmful to human health or the environment. For purposes of this subsection, a class I injection well is defined in accordance with 40 CFR 146.05 as in effect on November 1, 1985.

[42 U.S.C. 300h–5]

SOLE SOURCE AQUIFER DEMONSTRATION PROGRAM

SEC. 1427. (a) PURPOSE.—The purpose of this section is to establish procedures for development, implementation, and assessment of demonstration programs designed to protect critical aquifer protection areas located within areas designated as sole or principal source aquifers under section 1424(e) of this Act.

(b) DEFINITION.—For purposes of this section, the term "critical aquifer protection area" means either of the following:

(1) All or part of an area located within an area for which an application or designation as a sole or principal source aquifer pursuant to section 1424(e), has been submitted and approved by the Administrator and which satisfies the criteria established by the Administrator under subsection (d).

(2) All or part of an area which is within an aquifer designated as a sole source aquifer as of the enactment of the Safe Drinking Water Act Amendments of 1986 and for which an areawide ground water quality protection plan has been approved under section 208 of the Clean Water Act prior to such enactment.

(c) APPLICATION.—Any State, municipal or local government or political subdivision thereof of any planning entity (including any interstate regional planning entity) that identifies a critical aquifer protection area over which it has authority or jurisdiction may apply to the Administrator for the selection of such area for a demonstration program under this section. Any applicant shall consult with other government or planning entities with authority or jurisdiction in such area prior to application. Applicants, other than the Governor, shall submit the application for a demonstration program jointly with the Governor.

(d) CRITERIA.—Not later than 1 year after the enactment of the Safe Drinking Water Act Amendments of 1986, the Administrator shall, by rule, establish criteria for identifying critical aquifer pro-

[1] So in law. The "(a)" in section 1426, as amended by section 501(f)(2) of Public Law 104–182, should be deleted because subsection (b) of such section was struck out by section 2021(f) of Public Law 104–66.

tection areas under this section. In establishing such criteria, the Administrator shall consider each of the following:

(1) The vulnerability of the aquifer to contamination due to hydrogeologic characteristics.

(2) The number of persons or the proportion of population using the ground water as a drinking water source.

(3) The economic, social and environmental benefits that would result to the area from maintenance of ground water of high quality.

(4) The economic, social and environmental costs that would result from degradation of the quality of the ground water.

(e) CONTENTS OF APPLICATION.—An application submitted to the Administrator by any applicant for demonstration program under this section shall meet each of the following requirements:

(1) The application shall propose boundaries for the critical aquifer protection area within its jurisdiction.

(2) The application shall designate or, if necessary, establish a planning entity (which shall be a public agency and which shall include representation of elected local and State governmental officials) to develop a comprehensive management plan (hereinafter in this section referred to as the "plan") for the critical protection area. Where a local government planning agency exists with adequate authority to carry out this section with respect to any proposed critical protection area, such agency shall be designated as the planning entity.

(3) The application shall establish procedures for public participation in the development of the plan, for review, approval, and adoption of the plan, and for assistance to municipalities and other public agencies with authority under State law to implement the plan.

(4) The application shall include a hydrogeologic assessment of surface and ground water resources within the critical protection area.

(5) The application shall include a comprehensive management plan for the proposed protection area.

(6) The application shall include the measures and schedule proposed for implementation of such plan.

(f) COMPREHENSIVE PLAN.—

(1) The objective of a comprehensive management plan submitted by an applicant under this section shall be to maintain the quality of the ground water in the critical protection area in a manner reasonably expected to protect human health, the environment and ground water resources. In order to achieve such objective, the plan may be designed to maintain, to the maximum extent possible, the natural vegetative and hydrogeological conditions. Each of the following elements shall be included in such a protection plan:

(A) A map showing the detailed boundary of the critical protection area.

(B) An identification of existing and potential point and nonpoint sources of ground water degradation.

(C) An assessment of the relationship between activities on the land surface and ground water quality.

(D) Specific actions and management practices to be implemented in the critical protection area to prevent adverse impacts on ground water quality.

(E) Identification of authority adequate to implement the plan, estimates of program costs, and sources of State matching funds.

(2) Such plan may also include the following:

(A) A determination of the quality of the existing ground water recharged through the special protection area and the natural recharge capabilities of the special protection area watershed.

(B) Requirements designed to maintain existing underground drinking water quality or improve underground drinking water quality if prevailing conditions fail to meet drinking water standards, pursuant to this Act and State law.

(C) Limits on Federal, State, and local government, financially assisted activities and projects which may contribute to degradation of such ground water or any loss of natural surface and subsurface infiltration of purification capability of the special protection watershed.

(D) A comprehensive statement of land use management including emergency contingency planning as it pertains to the maintenance of the quality of underground sources of drinking water or to the improvement of such sources if necessary to meet drinking water standards pursuant to this Act and State law.

(E) Actions in the special protection area which would avoid adverse impacts on water quality, recharge capabilities, or both.

(F) Consideration of specific techniques, which may include clustering, transfer of development rights, and other innovative measures sufficient to achieve the objectives of this section.

(G) Consideration of the establishment of a State institution to facilitate and assist funding a development transfer credit system.

(H) A program for State and local implementation of the plan described in this subsection in a manner that will insure the continued, uniform, consistent protection of the critical protection area in accord with the purposes of this section.

(I) Pollution abatement measures, if appropriate.

(g) PLANS UNDER SECTION 208 OF THE CLEAN WATER ACT.—A plan approved before the enactment of the Safe Drinking Water Act Amendments of 1986 under section 208 of the Clean Water Act to protect a sole source aquifer designated under section 1424(e) of this Act shall be considered a comprehensive management plan for the purposes of this section.

(h) CONSULTATION AND HEARINGS.—During the development of a comprehensive management plan under this section, the planning entity shall consult with, and consider the comments of, appropriate officials of any municipality and State or Federal agency which has jurisdiction over lands and waters within the special

protection area, other concerned organizations and technical and citizen advisory committees. The planning entity shall conduct public hearings at places within the special protection area for the purpose of providing the opportunity to comment on any aspect of the plan.

(i) APPROVAL OR DISAPPROVAL.—Within 120 days after receipt of an application under this section, the Administrator shall approve or disapprove the application. The approval or disapproval shall be based on a determination that the critical protection area satisfies the criteria established under subsection (d) and that a demonstration program for the area would provide protection for ground water quality consistent with the objectives stated in subsection (f). The Administrator shall provide to the Governor a written explanation of the reasons for the disapproval of any such application. Any petitioner may modify and resubmit any application which is not approved. Upon approval of an application, the Administrator may enter into a cooperative agreement with the applicant to establish a demonstration program under this section.

(j) GRANTS AND REIMBURSEMENT.—Upon entering a cooperative agreement under subsection (i), the Administrator may provide to the applicant, on a matching basis, a grant of 50 per centum of the costs of implementing the plan established under this section. The Administrator may also reimburse the applicant of an approved plan up to 50 per centum of the costs of developing such plan, except for plans approved under section 208 of the Clean Water Act. The total amount of grants under this section for any one aquifer, designated under section 1424(e), shall not exceed $4,000,000 in any one fiscal year.

(k) ACTIVITIES FUNDED UNDER OTHER LAW.—No funds authorized under this section may be used to fund activities funded under other sections of this Act or the Clean Water Act, the Solid Waste Disposal Act, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 or other environmental laws.

(l) SAVINGS PROVISION.—Nothing under this section shall be construed to amend, supersede or abrogate rights to quantities of water which have been established by interstate water compacts, Supreme Court decrees, or State water laws, or any requirement imposed or right provided under any Federal or State environmental or public health statute.

(m) AUTHORIZATION.—There are authorized to be appropriated to carry out this section not more than the following amounts:

Fiscal year:	*Amount*
1987	$10,000,000
1988	15,000,000
1989	17,500,000
1990	17,500,000
1991	17,500,000
1992–2003	15,000,000.

Matching grants under this section may also be used to implement or update any water quality management plan for a sole or principal source aquifer approved (before the date of the enactment of this section) by the Administrator under section 208 of the Federal Water Pollution Control Act.

[42 U.S.C. 300h–6]

STATE PROGRAMS TO ESTABLISH WELLHEAD PROTECTION AREAS

SEC. 1428. (a) STATE PROGRAMS.—The Governor ordir Governor's designee of each State shall, within 3 years of the date of enactment of the Safe Drinking Water Act Amendments of 1986, adopt and submit to the Administrator a State program to protect wellhead areas within their jurisdiction from contaminants which may have any adverse effect on the health of persons. Each State program under this section shall, at a minimum—

(1) specify the duties of State agencies, local governmental entities, and public water supply systems with respect to the development and implementation of programs required by this section;

(2) for each wellhead, determine the wellhead protection areas as defined in subsection (e) based on all reasonably available hydrogeologic information on ground water flow, recharge and discharge and other information the State deems necessary to adequately determine the wellhead protection area;

(3) identify within each wellhead protection area all potential anthropogenic sources of contaminants which may have any adverse effect on the health of persons;

(4) describe a program that contains, as appropriate, technical assistance, financial assistance, implementation of control measures, education, training, and demonstration projects to protect the water supply within wellhead protection areas from such contaminants;

(5) include contingency plans for the location and provision of alternate drinking water supplies for each public water system in the event of well or wellfield contamination by such contaminants; and

(6) include a requirement that consideration be given to all potential sources of such contaminants within the expected wellhead area of a new water well which serves a public water supply system.

(b) PUBLIC PARTICIPATION.—To the maximum extent possible, each State shall establish procedures, including but not limited to the establishment of technical and citizens' advisory committees, to encourage the public to participate in developing the protection program for wellhead areas and source water assessment programs under section 1453. Such procedures shall include notice and opportunity for public hearing on the State program before it is submitted to the Administrator.

(c) DISAPPROVAL.—

(1) IN GENERAL.—If, in the judgment of the Administrator, a State program or portion thereof under subsection (a) is not adequate to protect public water systems as required by subsection (a) or a State program under section 1453 or section 1418(b) does not meet the applicable requirements of section 1453 or section 1418(b), the Administrator shall disapprove such program or portion thereof. A State program developed pursuant to subsection (a) shall be deemed to be adequate unless the Administrator determines, within 9 months of the receipt of a State program, that such program (or portion thereof) is inadequate for the purpose of protecting public water sys-

tems as required by this section from contaminants that may have any adverse effect on the health of persons. A State program developed pursuant to section 1453 or section 1418(b) shall be deemed to meet the applicable requirements of section 1453 or section 1418(b) unless the Administrator determines within 9 months of the receipt of the program that such program (or portion thereof) does not meet such requirements. If the Administrator determines that a proposed State program (or any portion thereof) is disapproved, the Administrator shall submit a written statement of the reasons for such determination to the Governor of the State.

(2) MODIFICATION AND RESUBMISSION.—Within 6 months after receipt of the Administrator's written notice under paragraph (1) that any proposed State program (or portion thereof) is disapproved, the Governor or Governor's designee, shall modify the program based upon the recommendations of the Administrator and resubmit the modified program to the Administrator.

(d) FEDERAL ASSISTANCE.—After the date 3 years after the enactment of this section, no State shall receive funds authorized to be appropriated under this section except for the purpose of implementing the program and requirements of paragraphs (4) and (6) of subsection (a).

(e) DEFINITION OF WELLHEAD PROTECTION AREA.—As used in this section, the term "wellhead protection area" means the surface and subsurface area surrounding a water well or wellfield, supplying a public water system, through which contaminants are reasonably likely to move toward and reach such water well or wellfield. The extent of a wellhead protection area, within a State, necessary to provide protection from contaminants which may have any adverse effect on the health of persons is to be determined by the State in the program submitted under subsection (a). Not later than one year after the enactment of the Safe Drinking Water Act Amendments of 1986, the Administrator shall issue technical guidance which States may use in making such determinations. Such guidance may reflect such factors as the radius of influence around a well or wellfield, the depth of drawdown of the water table by such well or wellfield at any given point, the time or rate of travel of various contaminants in various hydrologic conditions, distance from the well or wellfield, or other factors affecting the likelihood of contaminants reaching the well or wellfield, taking into account available engineering pump tests or comparable data, field reconnaissance, topographic information, and the geology of the formation in which the well or wellfield is located.

(f) PROHIBITIONS.—

(1) ACTIVITIES UNDER OTHER LAWS.—No funds authorized to be appropriated under this section may be used to support activities authorized by the Federal Water Pollution Control Act, the Solid Waste Disposal Act, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, or other sections of this Act.

(2) INDIVIDUAL SOURCES.—No funds authorized to be appropriated under this section may be used to bring individual sources of contamination into compliance.

(g) IMPLEMENTATION.—Each State shall make every reasonable effort to implement the State wellhead area protection program under this section within 2 years of submitting the program to the Administrator. Each State shall submit to the Administrator a biennial status report describing the State's progress in implementing the program. Such report shall include amendments to the State program for water wells sited during the biennial period.

(h) FEDERAL AGENCIES.—Each department, agency, and instrumentality of the executive, legislative, and judicial branches of the Federal Government having jurisdiction over any potential source of contaminants identified by a State program pursuant to the provisions of subsection (a)(3) shall be subject to and comply with all requirements of the State program developed according to subsection (a)(4) applicable to such potential source of contaminants, both substantive and procedural, in the same manner, and to the same extent, as any other person is subject to such requirements, including payment of reasonable charges and fees. The President may exempt any potential source under the jurisdiction of any department, agency, or instrumentality in the executive branch if the President determines it to be in the paramount interest of the United States to do so. No such exemption shall be granted due to the lack of an appropriation unless the President shall have specifically requested such appropriation as part of the budgetary process and the Congress shall have failed to make available such requested appropriations.

(i) ADDITIONAL REQUIREMENT.—

(1) IN GENERAL.—In addition to the provisions of subsection (a) of this section, States in which there are more than 2,500 active wells at which annular injection is used as of January 1, 1986, shall include in their State program a certification that a State program exists and is being adequately enforced that provides protection from contaminants which may have any adverse effect on the health of persons and which are associated with the annular injection or surface disposal of brines associated with oil and gas production.

(2) DEFINITION.—For purposes of this subsection, the term "annular injection" means the reinjection of brines associated with the production of oil or gas between the production and surface casings of a conventional oil or gas producing well.

(3) REVIEW.—The Administrator shall conduct a review of each program certified under this subsection.

(4) DISAPPROVAL.—If a State fails to include the certification required by this subsection or if in the judgment of the Administrator the State program certified under this subsection is not being adequately enforced, the Administrator shall disapprove the State program submitted under subsection (a) of this section.

(j) COORDINATION WITH OTHER LAWS.—Nothing in this section shall authorize or require any department, agency, or other instrumentality of the Federal Government or State or local government to apportion, allocate or otherwise regulate the withdrawal or beneficial use of ground or surface waters, so as to abrogate or modify any existing rights to water established pursuant to State or Federal law, including interstate compacts.

(k) AUTHORIZATION OF APPROPRIATIONS.—Unless the State program is disapproved under this section, the Administrator shall make grants to the State for not less than 50 or more than 90 percent of the costs incurred by a State (as determined by the Administrator) in developing and implementing each State program under this section. For purposes of making such grants there is authorized to be appropriated not more than the following amounts:

Fiscal year:	*Amount*
1987	$20,000,000
1988	20,000,000
1989	35,000,000
1990	35,000,000
1991	35,000,000
1992–2003	30,000,000.

[42 U.S.C. 300h–7]

STATE GROUND WATER PROTECTION GRANTS

SEC. 1429. (a) IN GENERAL.—The Administrator may make a grant to a State for the development and implementation of a State program to ensure the coordinated and comprehensive protection of ground water resources within the State.

(b) GUIDANCE.—Not later than 1 year after the date of enactment of the Safe Drinking Water Act Amendments of 1996, and annually thereafter, the Administrator shall publish guidance that establishes procedures for application for State ground water protection program assistance and that identifies key elements of State ground water protection programs.

(c) CONDITIONS OF GRANTS.—

(1) IN GENERAL.—The Administrator shall award grants to States that submit an application that is approved by the Administrator. The Administrator shall determine the amount of a grant awarded pursuant to this paragraph on the basis of an assessment of the extent of ground water resources in the State and the likelihood that awarding the grant will result in sustained and reliable protection of ground water quality.

(2) INNOVATIVE PROGRAM GRANTS.—The Administrator may also award a grant pursuant to this subsection for innovative programs proposed by a State for the prevention of ground water contamination.

(3) ALLOCATION OF FUNDS.—The Administrator shall, at a minimum, ensure that, for each fiscal year, not less than 1 percent of funds made available to the Administrator by appropriations to carry out this section are allocated to each State that submits an application that is approved by the Administrator pursuant to this section.

(4) LIMITATION ON GRANTS.—No grant awarded by the Administrator may be used for a project to remediate ground water contamination.

(d) AMOUNT OF GRANTS.—The amount of a grant awarded pursuant to paragraph (1) shall not exceed 50 percent of the eligible costs of carrying out the ground water protection program that is the subject of the grant (as determined by the Administrator) for the 1-year period beginning on the date that the grant is awarded. The State shall pay a State share to cover the costs of the ground

water protection program from State funds in an amount that is not less than 50 percent of the cost of conducting the program.

(e) EVALUATIONS AND REPORTS.—Not later than 3 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996, and every 3 years thereafter, the Administrator shall evaluate the State ground water protection programs that are the subject of grants awarded pursuant to this section and report to the Congress on the status of ground water quality in the United States and the effectiveness of State programs for ground water protection.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section $15,000,000 for each of fiscal years 1997 through 2003.

[42 U.S.C. 300h–8]

PART D—EMERGENCY POWERS

EMERGENCY POWERS

SEC. 1431. (a) Notwithstanding any other provision of this title, the Administrator, upon receipt of information that a contaminant which is present in or is likely to enter a public water system or an underground source of drinking water, or that there is a threatened or potential terrorist attack (or other intentional act designed to disrupt the provision of safe drinking water or to impact adversely the safety of drinking water supplied to communities and individuals), which may present an imminent and substantial endangerment to the health of persons, and that appropriate State and local authorities have not acted to protect the health of such persons, may take such actions as he may deem necessary in order to protect the health of such persons. To the extent he determines it to be practicable in light of such imminent endangerment, he shall consult with the State and local authorities in order to confirm the correctness of the information on which action proposed to be taken under this subsection is based and to ascertain the action which such authorities are or will be taking. The action which the Administrator may take may include (but shall not be limited to) (1) issuing such orders as may be necessary to protect the health of persons who are or may be users of such system (including travelers), including orders requiring the provision of alternative water supplies by persons who caused or contributed to the endangerment, and (2) commencing a civil action for appropriate relief, including a restraining order or permanent or temporary injunction.

(b) Any person who violates or fails or refuses to comply with any order issued by the Administrator under subsection (a)(1) may, in an action brought in the appropriate United States district court to enforce such order, be subject to a civil penalty of not to exceed $15,000 for each day in which such violation occurs or failure to comply continues.

[42 U.S.C. 300i]

TAMPERING WITH PUBLIC WATER SYSTEMS

SEC. 1432. (a) TAMPERING.—Any person who tampers with a public water system shall be imprisoned for not more than 20 years, or fined in accordance with title 18 of the United States Code, or both.

(b) ATTEMPT OR THREAT.—Any person who attempts to tamper, or makes a threat to tamper, with a public drinking water system be imprisoned for not more than 10 years, or fined in accordance with title 18 of the United States Code, or both.

(c) CIVIL PENALTY.—The Administrator may bring a civil action in the appropriate United States district court (as determined under the provisions of title 28 of the United States Code) against any person who tampers, attempts to tamper, or makes a threat to tamper with a public water system. The court may impose on such person a civil penalty of not more than $1,000,000 for such tampering or not more than $100,000 for such attempt or threat.

(d) DEFINITION OF "TAMPER".—For purposes of this section, the term "tamper" means—

(1) to introduce a contaminant into a public water system with the intention of harming persons; or

(2) to otherwise interfere with the operation of a public water system with the intention of harming persons.

[42 U.S.C. 300i–1]

SEC. 1433. TERRORIST AND OTHER INTENTIONAL ACTS.

(a) VULNERABILITY ASSESSMENTS.—(1) Each community water system serving a population of greater than 3,300 persons shall conduct an assessment of the vulnerability of its system to a terrorist attack or other intentional acts intended to substantially disrupt the ability of the system to provide a safe and reliable supply of drinking water. The vulnerability assessment shall include, but not be limited to, a review of pipes and constructed conveyances, physical barriers, water collection, pretreatment, treatment, storage and distribution facilities, electronic, computer or other automated systems which are utilized by the public water system, the use, storage, or handling of various chemicals, and the operation and maintenance of such system. The Administrator, not later than August 1, 2002, after consultation with appropriate departments and agencies of the Federal Government and with State and local governments, shall provide baseline information to community water systems required to conduct vulnerability assessments regarding which kinds of terrorist attacks or other intentional acts are the probable threats to—

(A) substantially disrupt the ability of the system to provide a safe and reliable supply of drinking water; or

(B) otherwise present significant public health concerns.

(2) Each community water system referred to in paragraph (1) shall certify to the Administrator that the system has conducted an assessment complying with paragraph (1) and shall submit to the Administrator a written copy of the assessment. Such certification and submission shall be made prior to:

(A) March 31, 2003, in the case of systems serving a population of 100,000 or more.

(B) December 31, 2003, in the case of systems serving a population of 50,000 or more but less than 100,000.

(C) June 30, 2004, in the case of systems serving a population greater than 3,300 but less than 50,000.

(3) Except for information contained in a certification under this subsection identifying the system submitting the certification and the date of the certification, all information provided to the Administrator under this subsection and all information derived therefrom shall be exempt from disclosure under section 552 of title 5 of the United States Code.

(4) No community water system shall be required under State or local law to provide an assessment described in this section to any State, regional, or local governmental entity solely by reason of the requirement set forth in paragraph (2) that the system submit such assessment to the Administrator.

(5) Not later than November 30, 2002, the Administrator, in consultation with appropriate Federal law enforcement and intelligence officials, shall develop such protocols as may be necessary to protect the copies of the assessments required to be submitted under this subsection (and the information contained therein) from unauthorized disclosure. Such protocols shall ensure that—

(A) each copy of such assessment, and all information contained in or derived from the assessment, is kept in a secure location;

(B) only individuals designated by the Administrator may have access to the copies of the assessments; and

(C) no copy of an assessment, or part of an assessment, or information contained in or derived from an assessment shall be available to anyone other than an individual designated by the Administrator.

At the earliest possible time prior to November 30, 2002, the Administrator shall complete the development of such protocols for the purpose of having them in place prior to receiving any vulnerability assessments from community water systems under this subsection.

(6)(A) Except as provided in subparagraph (B), any individual referred to in paragraph (5)(B) who acquires the assessment submitted under paragraph (2), or any reproduction of such assessment, or any information derived from such assessment, and who knowingly or recklessly reveals such assessment, reproduction, or information other than—

(i) to an individual designated by the Administrator under paragraph (5),

(ii) for purposes of section 1445 or for actions under section 1431, or

(iii) for use in any administrative or judicial proceeding to impose a penalty for failure to comply with this section,

shall upon conviction be imprisoned for not more than one year or fined in accordance with the provisions of chapter 227 of title 18, United States Code, applicable to class A misdemeanors, or both, and shall be removed from Federal office or employment.

(B) Notwithstanding subparagraph (A), an individual referred to in paragraph (5)(B) who is an officer or employee of the United

States may discuss the contents of a vulnerability assessment submitted under this section with a State or local official.

(7) Nothing in this section authorizes any person to withhold any information from Congress or from any committee or subcommittee of Congress.

(b) EMERGENCY RESPONSE PLAN.—Each community water system serving a population greater than 3,300 shall prepare or revise, where necessary, an emergency response plan that incorporates the results of vulnerability assessments that have been completed. Each such community water system shall certify to the Administrator, as soon as reasonably possible after the enactment of this section, but not later than 6 months after the completion of the vulnerability assessment under subsection (a), that the system has completed such plan. The emergency response plan shall include, but not be limited to, plans, procedures, and identification of equipment that can be implemented or utilized in the event of a terrorist or other intentional attack on the public water system. The emergency response plan shall also include actions, procedures, and identification of equipment which can obviate or significantly lessen the impact of terrorist attacks or other intentional actions on the public health and the safety and supply of drinking water provided to communities and individuals. Community water systems shall, to the extent possible, coordinate with existing Local Emergency Planning Committees established under the Emergency Planning and Community Right-to-Know Act (42 U.S.C. 11001 et seq.) when preparing or revising an emergency response plan under this subsection.

(c) RECORD MAINTENANCE.—Each community water system shall maintain a copy of the emergency response plan completed pursuant to subsection (b) for 5 years after such plan has been certified to the Administrator under this section.

(d) GUIDANCE TO SMALL PUBLIC WATER SYSTEMS.—The Administrator shall provide guidance to community water systems serving a population of less than 3,300 persons on how to conduct vulnerability assessments, prepare emergency response plans, and address threats from terrorist attacks or other intentional actions designed to disrupt the provision of safe drinking water or significantly affect the public health or significantly affect the safety or supply of drinking water provided to communities and individuals.

(e) FUNDING.—(1) There are authorized to be appropriated to carry out this section not more than $160,000,000 for the fiscal year 2002 and such sums as may be necessary for the fiscal years 2003 through 2005.

(2) The Administrator, in coordination with State and local governments, may use funds made available under paragraph (1) to provide financial assistance to community water systems for purposes of compliance with the requirements of subsections (a) and (b) and to community water systems for expenses and contracts designed to address basic security enhancements of critical importance and significant threats to public health and the supply of drinking water as determined by a vulnerability assessment conducted under subsection (a). Such basic security enhancements may include, but shall not be limited to the following:

(A) the purchase and installation of equipment for detection of intruders;

(B) the purchase and installation of fencing, gating, lighting, or security cameras;

(C) the tamper-proofing of manhole covers, fire hydrants, and valve boxes;

(D) the rekeying of doors and locks;

(E) improvements to electronic, computer, or other automated systems and remote security systems;

(F) participation in training programs, and the purchase of training manuals and guidance materials, relating to security against terrorist attacks;

(G) improvements in the use, storage, or handling of various chemicals; and

(H) security screening of employees or contractor support services.

Funding under this subsection for basic security enhancements shall not include expenditures for personnel costs, or monitoring, operation, or maintenance of facilities, equipment, or systems.

(3) The Administrator may use not more than $5,000,000 from the funds made available under paragraph (1) to make grants to community water systems to assist in responding to and alleviating any vulnerability to a terrorist attack or other intentional acts intended to substantially disrupt the ability of the system to provide a safe and reliable supply of drinking water (including sources of water for such systems) which the Administrator determines to present an immediate and urgent security need.

(4) The Administrator may use not more than $5,000,000 from the funds made available under paragraph (1) to make grants to community water systems serving a population of less than 3,300 persons for activities and projects undertaken in accordance with the guidance provided to such systems under subsection (d).

[42 U.S.C. 300i–2]

SEC. 1434. CONTAMINANT PREVENTION, DETECTION AND RESPONSE.

(a) IN GENERAL.—The Administrator, in consultation with the Centers for Disease Control and, after consultation with appropriate departments and agencies of the Federal Government and with State and local governments, shall review (or enter into contracts or cooperative agreements to provide for a review of) current and future methods to prevent, detect and respond to the intentional introduction of chemical, biological or radiological contaminants into community water systems and source water for community water systems, including each of the following:

(1) Methods, means and equipment, including real time monitoring systems, designed to monitor and detect various levels of chemical, biological, and radiological contaminants or indicators of contaminants and reduce the likelihood that such contaminants can be successfully introduced into public water systems and source water intended to be used for drinking water.

(2) Methods and means to provide sufficient notice to operators of public water systems, and individuals served by such systems, of the introduction of chemical, biological or radio-

logical contaminants and the possible effect of such introduction on public health and the safety and supply of drinking water.

(3) Methods and means for developing educational and awareness programs for community water systems.

(4) Procedures and equipment necessary to prevent the flow of contaminated drinking water to individuals served by public water systems.

(5) Methods, means, and equipment which could negate or mitigate deleterious effects on public health and the safety and supply caused by the introduction of contaminants into water intended to be used for drinking water, including an examination of the effectiveness of various drinking water technologies in removing, inactivating, or neutralizing biological, chemical, and radiological contaminants.

(6) Biomedical research into the short-term and long-term impact on public health of various chemical, biological and radiological contaminants that may be introduced into public water systems through terrorist or other intentional acts.

(b) FUNDING.—For the authorization of appropriations to carry out this section, see section 1435(e).

[42 U.S.C. 300i–3]

SEC. 1435. SUPPLY DISRUPTION PREVENTION, DETECTION AND RESPONSE.

(a) DISRUPTION OF SUPPLY OR SAFETY.—The Administrator, in coordination with the appropriate departments and agencies of the Federal Government, shall review (or enter into contracts or cooperative agreements to provide for a review of) methods and means by which terrorists or other individuals or groups could disrupt the supply of safe drinking water or take other actions against water collection, pretreatment, treatment, storage and distribution facilities which could render such water significantly less safe for human consumption, including each of the following:

(1) Methods and means by which pipes and other constructed conveyances utilized in public water systems could be destroyed or otherwise prevented from providing adequate supplies of drinking water meeting applicable public health standards.

(2) Methods and means by which collection, pretreatment, treatment, storage and distribution facilities utilized or used in connection with public water systems and collection and pretreatment storage facilities used in connection with public water systems could be destroyed or otherwise prevented from providing adequate supplies of drinking water meeting applicable public health standards.

(3) Methods and means by which pipes, constructed conveyances, collection, pretreatment, treatment, storage and distribution systems that are utilized in connection with public water systems could be altered or affected so as to be subject to cross-contamination of drinking water supplies.

(4) Methods and means by which pipes, constructed conveyances, collection, pretreatment, treatment, storage and distribution systems that are utilized in connection with public

water systems could be reasonably protected from terrorist attacks or other acts intended to disrupt the supply or affect the safety of drinking water.

(5) Methods and means by which information systems, including process controls and supervisory control and data acquisition and cyber systems at community water systems could be disrupted by terrorists or other groups.

(b) ALTERNATIVE SOURCES.—The review under this section shall also include a review of the methods and means by which alternative supplies of drinking water could be provided in the event of the destruction, impairment or contamination of public water systems.

(c) REQUIREMENTS AND CONSIDERATIONS.—In carrying out this section and section 1434—

(1) the Administrator shall ensure that reviews carried out under this section reflect the needs of community water systems of various sizes and various geographic areas of the United States; and

(2) the Administrator may consider the vulnerability of, or potential for forced interruption of service for, a region or service area, including community water systems that provide service to the National Capital area.

(d) INFORMATION SHARING.—As soon as practicable after reviews carried out under this section or section 1434 have been evaluated, the Administrator shall disseminate, as appropriate as determined by the Administrator, to community water systems information on the results of the project through the Information Sharing and Analysis Center, or other appropriate means.

(e) FUNDING.—There are authorized to be appropriated to carry out this section and section 1434 not more than $15,000,000 for the fiscal year 2002 and such sums as may be necessary for the fiscal years 2003 through 2005.

[42 U.S.C. 300i–4]

PART E—GENERAL PROVISIONS

ASSURANCE OF AVAILABILITY OF ADEQUATE SUPPLIES OF CHEMICALS NECESSARY FOR TREATMENT OF WATER

SEC. 1441. (a) If any person who uses chlorine, activated carbon, lime, ammonia, soda ash, potassium permanganate, caustic soda, or other chemical or substance for the purpose of treating water in any public water system or in any public treatment works determines that the amount of such chemical or substance necessary to effectively treat such water is not reasonably available to him or will not be so available to him when required for the effective treatment of such water, such person may apply to the Administrator for a certification (hereinafter in this section referred to as a "certification of need") that the amount of such chemical or substance which such person requires to effectively treat such water is not reasonably available to him or will not be so available when required for the effective treatment of such water.

(b)(1) An application for a certification of need shall be in such form and submitted in such manner as the Administrator may require and shall (A) specify the persons the applicant determines

are able to provide the chemical or substance with respect to which the application is submitted, (B) specify the persons from whom the applicant has sought such chemical or substance, and (C) contain such other information as the Administrator may require.

(2) Upon receipt of an application under this section, the Administrator shall (A) publish in the Federal Register a notice of the receipt of the application and a brief summary of it, (B) notify in writing each person whom the President or his delegate (after consultation with the Administrator) determines could be made subject to an order required to be issued upon the issuance of the certification of need applied for in such application, and (C) provide an opportunity for the submission of written comments on such application. The requirements of the preceding sentence of this paragraph shall not apply when the Administrator for good cause finds (and incorporates the finding with a brief statement of reasons therefor in the order issued) that waiver of such requirements is necessary in order to protect the public health.

(3) Within 30 days after—

(A) the date a notice is published under paragraph (2) in the Federal Register with respect to an application submitted under this section for the issuance of a certification of need, or

(B) the date on which such application is received if as authorized by the second sentence of such paragraph no notice is published with respect to such application,

the Administrator shall take action either to issue or deny the issuance of a certification of need.

(c)(1) If the Administrator finds that the amount of a chemical or substance necessary for an applicant under an application submitted under this section to effectively treat water in a public water system or in a public treatment works is not reasonably available to the applicant or will not be so available to him when required for the effective treatment of such water, the Administrator shall issue a certification of need. Not later than seven days following the issuance of such certification, the President or his delegate shall issue an order requiring the provision to such person of such amounts of such chemical or substance as the Administrator deems necessary in the certification of need issued for such person. Such order shall apply to such manufacturers, producers, processors, distributors, and repackagers of such chemical or substance as the President or his delegate deems necessary and appropriate, except that such order may not apply to any manufacturer, producer, or processor of such chemical or substance who manufactures, produces, or processes (as the case may be) such chemical or substance solely for its own use. Persons subject to an order issued under this section shall be given a reasonable opportunity to consult with the President or his delegate with respect to the implementation of the order.

(2) Orders which are to be issued under paragraph (1) to manufacturers, producers, and processors of a chemical or substance shall be equitably apportioned, as far as practicable, among all manufacturers, producers, and processors of such chemical or substance; and orders which are to be issued under paragraph (1) to distributors and repackagers of a chemical or substance shall be equitably apportioned, as far as practicable, among all distributors

and repackagers of such chemical or substance. In apportioning orders issued under paragraph (1) to manufacturers, producers, processors, distributors, and repackagers of chlorine, the President or his delegate shall, in carrying out the requirements of the preceding sentence, consider—

(A) the geographical relationships and established commercial relationships between such manufacturers, producers, processors, distributors, and repackagers and the persons for whom the orders are issued;

(B) in the case of orders to be issued to producers of chlorine, the (i) amount of chlorine historically supplied by each such producer to treat water in public water systems and public treatment works, and (ii) share of each such producer of the total annual production of chlorine in the United States; and

(C) such other factors as the President or his delegate may determine are relevant to the apportionment of orders in accordance with the requirements of the preceding sentence.

(3) Subject to subsection (f), any person for whom a certification of need has been issued under this subsection may upon the expiration of the order issued under paragraph (1) upon such certification apply under this section for additional certifications.

(d) There shall be available as a defense to any action brought for breach of contract in a Federal or State court arising out of delay or failure to provide, sell, or offer for sale or exchange a chemical or substance subject to an order issued pursuant to subsection (c)(1), that such delay or failure was caused solely by compliance with such order.

(e)(1) Whoever knowingly fails to comply with any order issued pursuant to subsection (c)(1) shall be fined not more than $5,000 for each such failure to comply.

(2) Whoever fails to comply with any order issued pursuant to subsection (c)(1) shall be subject to a civil penalty of not more than $2,500 for each such failure to comply.

(3) Whenever the Administrator or the President or his delegate has reason to believe that any person is violating or will violate any order issued pursuant to subsection (c)(1), he may petition a United States district court to issue a temporary restraining order or preliminary or permanent injunction (including a mandatory injunction) to enforce the provisions of such order.

(f) No certification of need or order issued under this section may remain in effect for more than one year.

[42 U.S.C. 300j]

RESEARCH, TECHNICAL ASSISTANCE, INFORMATION, TRAINING OF PERSONNEL

SEC. 1442. (a)(1) The Administrator may conduct research, studies, and demonstrations relating to the causes, diagnosis, treatment, control, and prevention of physical and mental diseases and other impairments of man resulting directly or indirectly from contaminants in water, or to the provision of a dependably safe supply of drinking water, including—

(A) improved methods (i) to identify and measure the existence of contaminants in drinking water (including methods

which may be used by State and local health and water officials), and (ii) to identify the source of such contaminants;

(B) improved methods to identify and measure the health effects of contaminants in drinking water;

(C) new methods of treating raw water to prepare it for drinking, so as to improve the efficiency of water treatment and to remove contaminants from water;

(D) improved methods for providing a dependably safe supply of drinking water, including improvements in water purification and distribution, and methods of assessing the health related hazards of drinking water; and

(E) improved methods of protecting underground water sources of public water systems from contamination.

(2)[1] INFORMATION AND RESEARCH FACILITIES.—In carrying out this title, the Administrator is authorized to—

(A) collect and make available information pertaining to research, investigations, and demonstrations with respect to providing a dependably safe supply of drinking water, together with appropriate recommendations in connection with the information; and

(B) make available research facilities of the Agency to appropriate public authorities, institutions, and individuals engaged in studies and research relating to this title.

(3) The Administrator shall carry out a study of polychlorinated biphenyl contamination of actual or potential sources of drinking water, contamination of such sources by other substances known or suspected to be harmful to public health, the effects of such contamination, and means of removing, treating, or otherwise controlling such contamination. To assist in carrying out this paragraph, the Administrator is authorized to make grants to public agencies and private nonprofit institutions.

(4) The Administrator shall conduct a survey and study of—

(A) disposal of waste (including residential waste) which may endanger underground water which supplies, or can reasonably be expected to supply, any public water systems, and

(B) means of control of such waste disposal.

Not later than one year after the date of enactment of this title, he shall transmit to the Congress the results of such survey and study, together with such recommendations as he deems appropriate.

(5) The Administrator shall carry out a study of methods of underground injection which do not result in the degradation of underground drinking water sources.

(6) The Administrator shall carry out a study of methods of preventing, detecting, and dealing with surface spills of contaminants which may degrade underground water sources for public water systems.

(7) The Administrator shall carry out a study of virus contamination of drinking water sources and means of control of such contamination.

(8) The Administrator shall carry out a study of the nature and extent of the impact on underground water which supplies or can

[1] So in law. Indentation is incorrect.

reasonably be expected to supply public water systems of (A) abandoned injection or extraction wells; (B) intensive application of pesticides and fertilizers in underground water recharge areas; and (C) ponds, pools, lagoons, pits, or other surface disposal of contaminants in underground water recharge areas.

(9) The Administrator shall conduct a comprehensive study of public water supplies and drinking water sources to determine the nature, extent, sources of and means of control of contamination by chemicals or other substances suspected of being carcinogenic. Not later than six months after the date of enactment of this title, he shall transmit to the Congress the initial results of such study, together with such recommendations for further review and corrective action as he deems appropriate.

(10) The Administrator shall carry out a study of the reaction of chlorine and humic acids and the effects of the contaminants which result from such reaction on public health and on the safety of drinking water, including any carcinogenic effect.

(b) The Administrator is authorized to provide technical assistance and to make grants to States, or publicly owned water systems to assist in responding to and alleviating any emergency situation affecting public water systems (including sources of water for such systems) which the Administrator determines to present substantial danger to the public health. Grants provided under this subsection shall be used only to support those actions which (i) are necessary for preventing, limiting or mitigating danger to the public health in such emergency situation and (ii) would not, in the judgment of the Administrator, be taken without such emergency assistance. The Administrator may carry out the program authorized under this subparagraph as part of, and in accordance with the terms and conditions of, any other program of assistance for environmental emergencies which the Administrator is authorized to carry out under any other provision of law. No limitation on appropriations for any such other program shall apply to amounts appropriated under this subparagraph.

(c) The Administrator shall—

(1) provide training for, and make grants for training (including postgraduate training) of (A) personnel of State agencies which have primary enforcement responsibility and of agencies or units of local government to which enforcement responsibilities have been delegated by the State, and (B) personnel who manage or operate public water systems, and

(2) make grants for postgraduate training of individuals (including grants to educational institutions for traineeships) for purposes of qualifying such individuals to work as personnel referred to in paragraph (1).

Reasonable fees may be charged for training provided under paragraph (1)(B) to persons other than personnel of State or local agencies but such training shall be provided to personnel of State or local agencies without charge.

(d) There are authorized to be appropriated to carry out subsection (b) not more than $35,000,000 for the fiscal year 2002 and such sums as may be necessary for each fiscal year thereafter.

(e) TECHNICAL ASSISTANCE.—The Administrator may provide technical assistance to small public water systems to enable such

systems to achieve and maintain compliance with applicable national primary drinking water regulations. Such assistance may include circuit-rider and multi-State regional technical assistance programs, training, and preliminary engineering evaluations. The Administrator shall ensure that technical assistance pursuant to this subsection is available in each State. Each nonprofit organization receiving assistance under this subsection shall consult with the State in which the assistance is to be expended or otherwise made available before using assistance to undertake activities to carry out this subsection. There are authorized to be appropriated to the Administrator to be used for such technical assistance $15,000,000 for each of the fiscal years 1997 through 2003. No portion of any State loan fund established under section 1452 (relating to State loan funds) and no portion of any funds made available under this subsection may be used for lobbying expenses. Of the total amount appropriated under this subsection, 3 percent shall be used for technical assistance to public water systems owned or operated by Indian Tribes.

[42 U.S.C. 300j–1]

GRANTS FOR STATE PROGRAMS

SEC. 1443. (a)(1) From allotments made pursuant to paragraph (4), the Administrator may make grants to States to carry out public water system supervision programs.

(2) No grant may be made under paragraph (1) unless an application therefor has been submitted to the Administrator in such form and manner as he may require. The Administrator may not approve an application of a State for its first grant under paragraph (1) unless he determines that the State—

(A) has established or will establish within one year from the date of such grant a public water system supervision program, and

(B) will, within that one year, assume primary enforcement responsibility for public water systems within the State.

No grant may be made to a State under paragraph (1) for any period beginning more than one year after the date of the State's first grant unless the State has assumed and maintains primary enforcement responsibility for public water systems within the State. The prohibitions contained in the preceding two sentences shall not apply to such grants when made to Indian Tribes.

(3) A grant under paragraph (1) shall be made to cover not more than 75 per centum of the grant recipient's costs (as determined under regulations of the Administrator) in carrying out, during the one-year period beginning on the date the grant is made, a public water system supervision program.

(4) In each fiscal year the Administrator shall, in accordance with regulations, allot the sums appropriated for such year under paragraph (5) among the States on the basis of population, geographical area, number of public water systems, and other relevant factors. No State shall receive less than 1 per centum of the annual appropriation for grants under paragraph (1): *Provided,* That the Administrator may, by regulation, reduce such percentage in accordance with the criteria specified in this paragraph: *And pro-*

vided further, That such percentage shall not apply to grants allotted to Guam, American Samoa, or the Virgin Islands.

(5) The prohibition contained in the last sentence of paragraph (2) may be waived by the Administrator with respect to a grant to a State through fiscal year 1979 but such prohibition may only be waived if, in the judgment of the Administrator—

(A) the State is making a diligent effort to assume and maintain primary enforcement responsibility for public water systems within the State;

(B) the State has made significant progress toward assuming and maintaining such primary enforcement responsibility; and

(C) there is reason to believe the State will assume such primary enforcement responsibility by October 1, 1979.

The amount of any grant awarded for the fiscal years 1978 and 1979 pursuant to a waiver under this paragraph may not exceed 75 per centum of the allotment which the State would have received for such fiscal year if it had assumed and maintained such primary enforcement responsibility. The remaining 25 per centum of the amount allotted to such State for such fiscal year shall be retained by the Administrator, and the Administrator may award such amount to such State at such time as the State assumes such responsibility before the beginning of fiscal year 1980. At the beginning of each fiscal years 1979 and 1980 the amounts retained by the Administrator for any preceding fiscal year and not awarded by the beginning of fiscal year 1979 or 1980 to the States to which such amounts were originally allotted may be removed from the original allotment and reallotted for fiscal year 1979 or 1980 (as the case may be) to States which have assumed primary enforcement responsibility by the beginning of such fiscal year.

(6) The Administrator shall notify the State of the approval or disapproval of any application for a grant under this section—

(A) within ninety days after receipt of such application, or

(B) not later than the first day of the fiscal year for which the grant application is made, whichever is later.

(7) AUTHORIZATION.—For the purpose of making grants under paragraph (1), there are authorized to be appropriated $100,000,000 for each of fiscal years 1997 through 2003.

(8) RESERVATION OF FUNDS BY THE ADMINISTRATOR.—If the Administrator assumes the primary enforcement responsibility of a State public water system supervision program, the Administrator may reserve from funds made available pursuant to this subsection an amount equal to the amount that would otherwise have been provided to the State pursuant to this subsection. The Administrator shall use the funds reserved pursuant to this paragraph to ensure the full and effective administration of a public water system supervision program in the State.

(9) STATE LOAN FUNDS.—

(A) RESERVATION OF FUNDS.—For any fiscal year for which the amount made available to the Administrator by appropriations to carry out this subsection is less than the amount that the Administrator determines is necessary to supplement funds made available pursuant to paragraph

(8) to ensure the full and effective administration of a public water system supervision program in a State, the Administrator may reserve from the funds made available to the State under section 1452 (relating to State loan funds) an amount that is equal to the amount of the shortfall. This paragraph shall not apply to any State not exercising primary enforcement responsibility for public water systems as of the date of enactment of the Safe Drinking Water Act Amendments of 1996.

(B) DUTY OF ADMINISTRATOR.—If the Administrator reserves funds from the allocation of a State under subparagraph (A), the Administrator shall carry out in the State each of the activities that would be required of the State if the State had primary enforcement authority under section 1413.

(b)(1) From allotments made pursuant to paragraph (4), the Administrator may make grants to States to carry out underground water source protection programs.

(2) No grant may be made under paragraph (1) unless an application therefor has been submitted to the Administrator in such form and manner as he may require. No grant may be made to any State under paragraph (1) unless the State has assumed primary enforcement responsibility within two years after the date the Administrator promulgates regulations for State underground injection control programs under section 1421. The prohibition contained in the preceding sentence shall not apply to such grants when made to Indian Tribes.

(3) A grant under paragraph (1) shall be made to cover not more than 75 per centum of the grant recipient's costs (as determined under regulations of the Administrator) in carrying out, during the one-year period beginning on the date the grant is made, an underground water source protection program.

(4) In each fiscal year the Administrator shall, in accordance with regulations, allot the sums appropriated for such year under paragraph (5) among the States on the basis of population, geographical area, and other relevant factors.

(5) For purposes of making grants under paragraph (1) there are authorized to be appropriated $5,000,000 for the fiscal year ending June 30, 1976, $7,500,000 for the fiscal year ending June 30, 1977, $10,000,000 for each of the fiscal years 1978 and 1979, $7,795,000 for the fiscal year ending September 30, 1980, $18,000,000 for the fiscal year ending September 30, 1981, and $21,000,000 for the fiscal year ending September 30, 1982. For the purpose of making grants under paragraph (1) there are authorized to be appropriated not more than the following amounts:

Fiscal year:	*Amount*
1987	$19,700,000
1988	19,700,000
1989	20,850,000
1990	20,850,000
1991	20,850,000
1992–2003	15,000,000.

(c) For purposes of this section:

(1) The term "public water system supervision program" means a program for the adoption and enforcement of drinking water regulations (with such variances and exemptions from such regulations under conditions and in a manner which is not less stringent than the conditions under, and the manner in, which variances and exemptions may be granted under sections 1415 and 1416) which are no less stringent than the national primary drinking water regulations under section 1412, and for keeping records and making reports required by section 1413(a)(3).

(2) The term "underground water source protection program" means a program for the adoption and enforcement of a program which meets the requirements of regulations under section 1421 and for keeping records and making reports required by section 1422(b)(1)(A)(ii). Such term includes, where applicable, a program which meets the requirements of section 1425.

(d) NEW YORK CITY WATERSHED PROTECTION PROGRAM.—

(1) IN GENERAL.—The Administrator is authorized to provide financial assistance to the State of New York for demonstration projects implemented as part of the watershed program for the protection and enhancement of the quality of source waters of the New York City water supply system, including projects that demonstrate, assess, or provide for comprehensive monitoring and surveillance and projects necessary to comply with the criteria for avoiding filtration contained in 40 CFR 141.71. Demonstration projects which shall be eligible for financial assistance shall be certified to the Administrator by the State of New York as satisfying the purposes of this subsection. In certifying projects to the Administrator, the State of New York shall give priority to monitoring projects that have undergone peer review.

(2) REPORT.—Not later than 5 years after the date on which the Administrator first provides assistance pursuant to this paragraph, the Governor of the State of New York shall submit a report to the Administrator on the results of projects assisted.

(3) MATCHING REQUIREMENTS.—Federal assistance provided under this subsection shall not exceed 50 percent of the total cost of the protection program being carried out for any particular watershed or ground water recharge area.

(4) AUTHORIZATION.—There are authorized to be appropriated to the Administrator to carry out this subsection for each of fiscal years 1997 through 2003, $15,000,000 for the purpose of providing assistance to the State of New York to carry out paragraph (1).

[42 U.S.C. 300j–2]

SPECIAL STUDY AND DEMONSTRATION PROJECT GRANTS; GUARANTEED LOANS

SEC. 1444. (a) The Administrator may make grants to any person for the purposes of—

(1) assisting in the development and demonstration (including construction) of any project which will demonstrate a new or improved method, approach, or technology, for providing a dependably safe supply of drinking water to the public; and

(2) assisting in the development and demonstration (including construction) of any project which will investigate and demonstrate health implications involved in the reclamation, recycling, and reuse of waste waters for drinking and the processes and methods for the preparation of safe and acceptable drinking water.

(b) Grants made by the Administrator under this section shall be subject to the following limitations:

(1) Grants under this section shall not exceed 66⅔ per centum of the total cost of construction of any facility and 75 per centum of any other costs, as determined by the Administrator.

(2) Grants under this section shall not be made for any project involving the construction or modification of any facilities for any public water system in a State unless such project has been approved by the State agency charged with the responsibility for safety of drinking water (or if there is no such agency in a State, by the State health authority).

(3) Grants under this section shall not be made for any project unless the Administrator determines, after consulting the National Drinking Water Advisory Council, that such project will serve a useful purpose relating to the development and demonstration of new or improved techniques, methods, or technologies for the provision of safe water to the public for drinking.

(4) Priority for grants under this section shall be given where there are known or potential public health hazards which require advanced technology for the removal of particles which are too small to be removed by ordinary treatment technology.

(c) For the purposes of making grants under subsections (a) and (b) of this section there are authorized to be appropriated $7,500,000 for the fiscal year ending June 30, 1975; and $7,500,000 for the fiscal year ending June 30, 1976; and $10,000,000 for the fiscal year ending June 30, 1977.

(d) The Administrator during the fiscal years ending June 30, 1975, and June 30, 1976, shall carry out a program of guaranteeing loans made by private lenders to small public water systems for the purpose of enabling such systems to meet national primary drinking water regulations prescribed under section 1412. No such guarantee may be made with respect to a system unless (1) such system cannot reasonably obtain financial assistance necessary to comply with such regulations from any other source, and (2) the Administrator determines that any facilities constructed with a loan guaranteed under this subsection is not likely to be made obsolete by subsequent changes in primary regulations. The aggregate amount of indebtedness guaranteed with respect to any system may not exceed $50,000. The aggregate amount of indebtedness guaranteed

under this subsection may not exceed $50,000,000. The Administrator shall prescribe regulations to carry out this subsection.

[42 U.S.C. 300j–3]

RECORDS AND INSPECTIONS

SEC. 1445. (a)(1)(A) Every person who is subject to any requirement of this title or who is a grantee, shall establish and maintain such records, make such reports, conduct such monitoring, and provide such information as the Administrator may reasonably require by regulation to assist the Administrator in establishing regulations under this title, in determining whether such person has acted or is acting in compliance with this title, in administering any program of financial assistance under this title, in evaluating the health risks of unregulated contaminants, or in advising the public of such risks. In requiring a public water system to monitor under this subsection, the Administrator may take into consideration the system size and the contaminants likely to be found in the system's drinking water.

(B) Every person who is subject to a national primary drinking water regulation under section 1412 shall provide such information as the Administrator may reasonably require, after consultation with the State in which such person is located if such State has primary enforcement responsibility for public water systems, on a case-by-case basis, to determine whether such person has acted or is acting in compliance with this title.

(C) Every person who is subject to a national primary drinking water regulation under section 1412 shall provide such information as the Administrator may reasonably require to assist the Administrator in establishing regulations under section 1412 of this title, after consultation with States and suppliers of water. The Administrator may not require under this subparagraph the installation of treatment equipment or process changes, the testing of treatment technology, or the analysis or processing of monitoring samples, except where the Administrator provides the funding for such activities. Before exercising this authority, the Administrator shall first seek to obtain the information by voluntary submission.

(D) The Administrator shall not later than 2 years after the date of enactment of this subparagraph, after consultation with public health experts, representatives of the general public, and officials of State and local governments, review the monitoring requirements for not fewer than 12 contaminants identified by the Administrator, and promulgate any necessary modifications.

(2) MONITORING PROGRAM FOR UNREGULATED CONTAMINANTS.—

(A) ESTABLISHMENT.—The Administrator shall promulgate regulations establishing the criteria for a monitoring program for unregulated contaminants. The regulations shall require monitoring of drinking water supplied by public water systems and shall vary the frequency and schedule for monitoring requirements for systems based on the number of persons served by the system, the source of supply, and the contaminants likely to be found, ensuring

that only a representative sample of systems serving 10,000 persons or fewer are required to monitor.

(B) MONITORING PROGRAM FOR CERTAIN UNREGULATED CONTAMINANTS.—

(i) INITIAL LIST.—Not later than 3 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996 and every 5 years thereafter, the Administrator shall issue a list pursuant to subparagraph (A) of not more than 30 unregulated contaminants to be monitored by public water systems and to be included in the national drinking water occurrence data base maintained pursuant to subsection (g).

(ii) GOVERNORS' PETITION.—The Administrator shall include among the list of contaminants for which monitoring is required under this paragraph each contaminant recommended in a petition signed by the Governor of each of 7 or more States, unless the Administrator determines that the action would prevent the listing of other contaminants of a higher public health concern.

(C) MONITORING PLAN FOR SMALL AND MEDIUM SYSTEMS.—

(i) IN GENERAL.—Based on the regulations promulgated by the Administrator, each State may develop a representative monitoring plan to assess the occurrence of unregulated contaminants in public water systems that serve a population of 10,000 or fewer in that State. The plan shall require monitoring for systems representative of different sizes, types, and geographic locations in the State.

(ii) GRANTS FOR SMALL SYSTEM COSTS.—From funds reserved under section 1452(o) or appropriated under subparagraph (H), the Administrator shall pay the reasonable cost of such testing and laboratory analysis as are necessary to carry out monitoring under the plan.

(D) MONITORING RESULTS.—Each public water system that conducts monitoring of unregulated contaminants pursuant to this paragraph shall provide the results of the monitoring to the primary enforcement authority for the system.

(E) NOTIFICATION.—Notification of the availability of the results of monitoring programs required under paragraph (2)(A) shall be given to the persons served by the system.

(F) WAIVER OF MONITORING REQUIREMENT.—The Administrator shall waive the requirement for monitoring for a contaminant under this paragraph in a State, if the State demonstrates that the criteria for listing the contaminant do not apply in that State.

(G) ANALYTICAL METHODS.—The State may use screening methods approved by the Administrator under subsection (i) in lieu of monitoring for particular contaminants under this paragraph.

(H) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this paragraph $10,000,000 for each of the fiscal years 1997 through 2003.

(b)(1) Except as provided in paragraph (2), the Administrator, or representatives of the Administrator duly designated by him, upon presenting appropriate credentials and a written notice to any supplier of water or other person subject to (A) a national primary drinking water regulation prescribed under section 1412, (B) an applicable underground injection control program, or (C) any requirement to monitor an unregulated contaminant pursuant to subsection (a), or person in charge of any of the property of such supplier or other person referred to in clause (A), (B), or (C), is authorized to enter any establishment, facility, or other property of such supplier or other person in order to determine whether such supplier or other person has acted or is acting in compliance with this title, including for this purpose, inspection, at reasonable times, of records, files, papers, processes, controls, and facilities, or in order to test any feature of a public water system, including its raw water source. The Administrator or the Comptroller General (or any representative designated by either) shall have access for the purpose of audit and examination to any records, reports, or information of a grantee which are required to be maintained under subsection (a) or which are pertinent to any financial assistance under this title.

(2) No entry may be made under the first sentence of paragraph (1) in an establishment, facility, or other property of a supplier of water or other person subject to a national primary drinking water regulation if the establishment, facility, or other property is located in a State which has primary enforcement responsibility for public water systems unless, before written notice of such entry is made, the Administrator (or his representative) notifies the State agency charged with responsibility for safe drinking water of the reasons for such entry. The Administrator shall, upon a showing by the State agency that such an entry will be detrimental to the administration of the State's program of primary enforcement responsibility, take such showing into consideration in determining whether to make such entry. No State agency which receives notice under this paragraph of an entry proposed to be made under paragraph (1) may use the information contained in the notice to inform the person whose property is proposed to be entered of the proposed entry; and if a State agency so uses such information, notice to the agency under this paragraph is not required until such time as the Administrator determines the agency has provided him satisfactory assurances that it will no longer so use information contained in a notice under this paragraph.

(c) Whoever fails or refuses to comply with any requirement of subsection (a) or to allow the Administrator, the Comptroller General, or representatives of either, to enter and conduct any audit or inspection authorized by subsection (b) shall be subject to a civil penalty of not to exceed $25,000.

(d)(1) Subject to paragraph (2), upon a showing satisfactory to the Administrator by any person that any information required under this section from such person, if made public, would divulge trade secrets or secret processes of such person, the Administrator

shall consider such information confidential in accordance with the purposes of section 1905 of title 18 of the United States Code. If the applicant fails to make a showing satisfactory to the Administrator, the Administrator shall give such applicant thirty days' notice before releasing the information to which the application relates (unless the public health or safety requires an earlier release of such information).

(2) Any information required under this section (A) may be disclosed to other officers, employees, or authorized representatives of the United States concerned with carrying out this title or to committees of the Congress, or when relevant in any proceeding under this title, and (B) shall be disclosed to the extent it deals with the level of contaminants in drinking water. For purposes of this subsection the term "information required under this section" means any papers, books, documents, or information, or any particular part thereof, reported to or otherwise obtained by the Administrator under this section.

(e) For purposes of this section, (1) the term "grantee" means any person who applies for or receives financial assistance, by grant, contract, or loan guarantee under this title, and (2) the term "person" includes a Federal agency.

(f) INFORMATION REGARDING DRINKING WATER COOLERS.—The Administrator may utilize the authorities of this section for purposes of part F. Any person who manufactures, imports, sells, or distributes drinking water coolers in interstate commerce shall be treated as a supplier of water for purposes of applying the provisions of this section in the case of persons subject to part F.

(g) OCCURRENCE DATA BASE.—

(1) IN GENERAL.—Not later than 3 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996, the Administrator shall assemble and maintain a national drinking water contaminant occurrence data base, using information on the occurrence of both regulated and unregulated contaminants in public water systems obtained under subsection (a)(1)(A) or subsection (a)(2) and reliable information from other public and private sources.

(2) PUBLIC INPUT.—In establishing the occurrence data base, the Administrator shall solicit recommendations from the Science Advisory Board, the States, and other interested parties concerning the development and maintenance of a national drinking water contaminant occurrence data base, including such issues as the structure and design of the data base, data input parameters and requirements, and the use and interpretation of data.

(3) USE.—The data shall be used by the Administrator in making determinations under section 1412(b)(1) with respect to the occurrence of a contaminant in drinking water at a level of public health concern.

(4) PUBLIC RECOMMENDATIONS.—The Administrator shall periodically solicit recommendations from the appropriate officials of the National Academy of Sciences and the States, and any person may submit recommendations to the Administrator, with respect to contaminants that should be included in the national drinking water contaminant occurrence data base, in-

cluding recommendations with respect to additional unregulated contaminants that should be listed under subsection (a)(2). Any recommendation submitted under this clause shall be accompanied by reasonable documentation that—

(A) the contaminant occurs or is likely to occur in drinking water; and

(B) the contaminant poses a risk to public health.

(5) PUBLIC AVAILABILITY.—The information from the data base shall be available to the public in readily accessible form.

(6) REGULATED CONTAMINANTS.—With respect to each contaminant for which a national primary drinking water regulation has been established, the data base shall include information on the detection of the contaminant at a quantifiable level in public water systems (including detection of the contaminant at levels not constituting a violation of the maximum contaminant level for the contaminant).

(7) UNREGULATED CONTAMINANTS.—With respect to contaminants for which a national primary drinking water regulation has not been established, the data base shall include—

(A) monitoring information collected by public water systems that serve a population of more than 10,000, as required by the Administrator under subsection (a);

(B) monitoring information collected from a representative sampling of public water systems that serve a population of 10,000 or fewer; and

(C) other reliable and appropriate monitoring information on the occurrence of the contaminants in public water systems that is available to the Administrator.

(h) AVAILABILITY OF INFORMATION ON SMALL SYSTEM TECHNOLOGIES.—For purposes of sections 1412(b)(4)(E) and 1415(e) (relating to small system variance program), the Administrator may request information on the characteristics of commercially available treatment systems and technologies, including the effectiveness and performance of the systems and technologies under various operating conditions. The Administrator may specify the form, content, and submission date of information to be submitted by manufacturers, States, and other interested persons for the purpose of considering the systems and technologies in the development of regulations or guidance under sections 1412(b)(4)(E) and 1415(e).

(i) SCREENING METHODS.—The Administrator shall review new analytical methods to screen for regulated contaminants and may approve such methods as are more accurate or cost-effective than established reference methods for use in compliance monitoring.

[42 U.S.C. 300j–4]

NATIONAL DRINKING WATER ADVISORY COUNCIL

SEC. 1446. (a) There is established a National Drinking Water Advisory Council which shall consist of fifteen members appointed by the Administrator after consultation with the Secretary. Five members shall be appointed from the general public; five members shall be appointed from appropriate State and local agencies concerned with water hygiene and public water supply; and five mem-

bers shall be appointed from representatives of private organizations or groups demonstrating an active interest in the field of water hygiene and public water supply, of which two such members shall be associated with small, rural public water systems. Each member of the Council shall hold office for a term of three years, except that—

(1) any member appointed to fill a vacancy occurring prior to the expiration of the term for which his predecessor was appointed shall be appointed for the remainder of such term; and

(2) the terms of the members first taking office shall expire as follows: Five shall expire three years after the date of enactment of this title, five shall expire two years after such date, and five shall expire one year after such date, as designated by the Administrator at the time of appointment.

The members of the Council shall be eligible for reappointment.

(b) The Council shall advise, consult with, and make recommendations to, the Administrator on matters relating to activities, functions, and policies of the Agency under this title.

(c) Members of the Council appointed under this section shall, while attending meetings or conferences of the Council or otherwise engaged in business of the Council, receive compensation and allowances at a rate to be fixed by the Administrator, but not exceeding the daily equivalent of the annual rate of basic pay in effect for grade GS–18 of the General Schedule for each day (including traveltime) during which they are engaged in the actual performance of duties vested in the Council. While away from their homes or regular places of business in the performance of services for the Council, members of the Council shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in the Government service are allowed expenses under section 5703(b) of title 5 of the United States Code.

(d) Section 14(a) of the Federal Advisory Committee Act (relating to termination) shall not apply to the Council.

[42 U.S.C. 300j–5]

FEDERAL AGENCIES

SEC. 1447. (a) IN GENERAL.—Each department, agency, and instrumentality of the executive, legislative, and judicial branches of the Federal Government—

(1) owning or operating any facility in a wellhead protection area;

(2) engaged in any activity at such facility resulting, or which may result, in the contamination of water supplies in any such area;

(3) owning or operating any public water system; or

(4) engaged in any activity resulting, or which may result in, underground injection which endangers drinking water (within the meaning of section 1421(d)(2)),

shall be subject to, and comply with, all Federal, State, interstate, and local requirements, both substantive and procedural (including any requirement for permits or reporting or any provisions for injunctive relief and such sanctions as may be imposed by a court to

enforce such relief), respecting the protection of such wellhead areas, respecting such public water systems, and respecting any underground injection in the same manner and to the same extent as any person is subject to such requirements, including the payment of reasonable service charges. The Federal, State, interstate, and local substantive and procedural requirements referred to in this subsection include, but are not limited to, all administrative orders and all civil and administrative penalties and fines, regardless of whether such penalties or fines are punitive or coercive in nature or are imposed for isolated, intermittent, or continuing violations. The United States hereby expressly waives any immunity otherwise applicable to the United States with respect to any such substantive or procedural requirement (including, but not limited to, any injunctive relief, administrative order or civil or administrative penalty or fine referred to in the preceding sentence, or reasonable service charge). The reasonable service charges referred to in this subsection include, but are not limited to, fees or charges assessed in connection with the processing and issuance of permits, renewal of permits, amendments to permits, review of plans, studies, and other documents, and inspection and monitoring of facilities, as well as any other nondiscriminatory charges that are assessed in connection with a Federal, State, interstate, or local regulatory program respecting the protection of wellhead areas or public water systems or respecting any underground injection. Neither the United States, nor any agent, employee, or officer thereof, shall be immune or exempt from any process or sanction of any State or Federal Court [1] with respect to the enforcement of any such injunctive relief. No agent, employee, or officer of the United States shall be personally liable for any civil penalty under any Federal, State, interstate, or local law concerning the protection of wellhead areas or public water systems or concerning underground injection with respect to any act or omission within the scope of the official duties of the agent, employee, or officer. An agent, employee, or officer of the United States shall be subject to any criminal sanction (including, but not limited to, any fine or imprisonment) under any Federal or State requirement adopted pursuant to this title, but no department, agency, or instrumentality of the executive, legislative, or judicial branch of the Federal Government shall be subject to any such sanction. The President may exempt any facility of any department, agency, or instrumentality in the executive branch from compliance with such a requirement if he determines it to be in the paramount interest of the United States to do so. No such exemption shall be granted due to lack of appropriation unless the President shall have specifically requested such appropriation as a part of the budgetary process and the Congress shall have failed to make available such requested appropriation. Any exemption shall be for a period not in excess of 1 year, but additional exemptions may be granted for periods not to exceed 1 year upon the President's making a new determination. The President shall report each January to the Congress all exemptions from the require-

[1] So in law. The word "Court" should be lowercase.

ments of this section granted during the preceding calendar year, together with his reason for granting each such exemption.

(b) ADMINISTRATIVE PENALTY ORDERS.—

(1) IN GENERAL.—If the Administrator finds that a Federal agency has violated an applicable requirement under this title, the Administrator may issue a penalty order assessing a penalty against the Federal agency.

(2) PENALTIES.—The Administrator may, after notice to the agency, assess a civil penalty against the agency in an amount not to exceed $25,000 per day per violation.

(3) PROCEDURE.—Before an administrative penalty order issued under this subsection becomes final, the Administrator shall provide the agency an opportunity to confer with the Administrator and shall provide the agency notice and an opportunity for a hearing on the record in accordance with chapters 5 and 7 of title 5, United States Code.

(4) PUBLIC REVIEW.—

(A) IN GENERAL.—Any interested person may obtain review of an administrative penalty order issued under this subsection. The review may be obtained in the United States District Court for the District of Columbia or in the United States District Court for the district in which the violation is alleged to have occurred by the filing of a complaint with the court within the 30-day period beginning on the date the penalty order becomes final. The person filing the complaint shall simultaneously send a copy of the complaint by certified mail to the Administrator and the Attorney General.

(B) RECORD.—The Administrator shall promptly file in the court a certified copy of the record on which the order was issued.

(C) STANDARD OF REVIEW.—The court shall not set aside or remand the order unless the court finds that there is not substantial evidence in the record, taken as a whole, to support the finding of a violation or that the assessment of the penalty by the Administrator constitutes an abuse of discretion.

(D) PROHIBITION ON ADDITIONAL PENALTIES.—The court may not impose an additional civil penalty for a violation that is subject to the order unless the court finds that the assessment constitutes an abuse of discretion by the Administrator.

(c) LIMITATION ON STATE USE OF FUNDS COLLECTED FROM FEDERAL GOVERNMENT.—Unless a State law in effect on the date of enactment of the Safe Drinking Water Act Amendments of 1996 or a State constitution requires the funds to be used in a different manner, all funds collected by a State from the Federal Government from penalties and fines imposed for violation of any substantive or procedural requirement referred to in subsection (a) shall be used by the State only for projects designed to improve or protect the environment or to defray the costs of environmental protection or enforcement.

(d)(1) Nothing in the Safe Drinking Water Amendments of 1977 shall be construed to alter or affect the status of American In-

dian lands or water rights nor to waive any sovereignty over Indian lands guaranteed by treaty or statute.

(2) For the purposes of this Act, the term "Federal agency" shall not be construed to refer to or include any American Indian tribe, nor to the Secretary of the Interior in his capacity as trustee of Indian lands.

(e) WASHINGTON AQUEDUCT.—The Secretary of the Army shall not pass the cost of any penalty assessed under this title on to any customer, user, or other purchaser of drinking water from the Washington Aqueduct system, including finished water from the Dalecarlia or McMillan treatment plant.

[42 U.S.C. 300j–6]

JUDICIAL REVIEW

SEC. 1448. (a) A petition for review of—

(1) actions pertaining to the establishment of national primary drinking water regulations (including maximum contaminant level goals) may be filed only in the United States Court of Appeals for the District of Columbia circuit; and

(2) any other final action of the Administrator under this Act may be filed in the circuit in which the petitioner resides or transacts business which is directly affected by the action.

Any such petition shall be filed within the 45-day period beginning on the date of the promulgation of the regulation or any other final Agency action with respect to which review is sought or on the date of the determination with respect to which review is sought, and may be filed after the expiration of such 45-day period if the petition is based solely on grounds arising after the expiration of such period. Action of the Administrator with respect to which review could have been obtained under this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement or in any civil action to enjoin enforcement. In any petition concerning the assessment of a civil penalty pursuant to section 1414(g)(3)(B), the petitioner shall simultaneously send a copy of the complaint by certified mail to the Administrator and the Attorney General. The court shall set aside and remand the penalty order if the court finds that there is not substantial evidence in the record to support the finding of a violation or that the assessment of the penalty by the Administrator constitutes an abuse of discretion.

(b) The United States district courts shall have jurisdiction of actions brought to review (1) the granting of, or the refusing to grant, a variance or exemption under section 1415 or 1416 or (2) the requirements of any schedule prescribed for a variance or exemption under such section or the failure to prescribe such a schedule. Such an action may only be brought upon a petition for review filed with the court within the 45-day period beginning on the date the action sought to be reviewed is taken or, in the case of a petition to review the refusal to grant a variance or exemption or the failure to prescribe a schedule, within the 45-day period beginning on the date action is required to be taken on the variance, exemption, or schedule, as the case may be. A petition for such review may be filed after the expiration of such period if the petition is

based solely on grounds arising after the expiration of such period. Action with respect to which review could have been obtained under this subsection shall not be subject to judicial review in any civil or criminal proceeding for enforcement or in any civil action to enjoin enforcement.

(c) In any judicial proceeding in which review is sought of a determination under this title required to be made on the record after notice and opportunity for hearing, if any party applies to the court for leave to adduce additional evidence and shows to the satisfaction of the court that such additional evidence is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, in such manner and upon such terms and conditions as the court may deem proper. The Administrator may modify his findings as to the facts, or make new findings, by reason of the additional evidence so taken, and he shall file such modified or new findings, and his recommendation, if any, for the modification or setting aside of his original determination, with the return of such additional evidence.

[42 U.S.C. 300j–7]

CITIZEN'S CIVIL ACTION

SEC. 1449. (a) Except as provided in subsection (b) of this section, any person may commence a civil action on his own behalf—

(1) against any person (including (A) the United States, and (B) any other governmental instrumentality or agency to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any requirement prescribed by or under this title;

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this title which is not discretionary with the Administrator; or

(3) for the collection of a penalty by the United States Government (and associated costs and interest) against any Federal agency that fails, by the date that is 18 months after the effective date of a final order to pay a penalty assessed by the Administrator under section 1429(b)[1], to pay the penalty.

No action may be brought under paragraph (1) against a public water system for a violation of a requirement prescribed by or under this title which occurred within the 27-month period beginning on the first day of the month in which this title is enacted. The United States district courts shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce in an action brought under this subsection any requirement prescribed by or under this title or to order the Administrator to perform an act, or duty described in paragraph (2), as the case may be.

(b) No civil action may be commenced—

(1) under subsection (a)(1) of this section respecting violation of a requirement prescribed by or under this title—

[1] So in law. The reference to "section 1429(b)" probably should be to "1447(b)".

(A) prior to sixty days after the plaintiff has given notice of such violation (i) to the Administrator, (ii) to any alleged violator of such requirement and (iii) to the State in which the violation occurs, or

(B) if the Administrator, the Attorney General, or the State has commenced and is diligently prosecuting a civil action in a court of the United States to require compliance with such requirement, but in any such action in a court of the United States any person may intervene as a matter of right; or

(2) under subsection (a)(2) of this section prior to sixty days after the plaintiff has given notice of such action to the Administrator; or

(3) under subsection (a)(3) prior to 60 days after the plaintiff has given notice of such action to the Attorney General and to the Federal agency.

Notice required by this subsection shall be given in such manner as the Administrator shall prescribe by regulation. No person may commence a civil action under subsection (a) to require a State to prescribe a schedule under section 1415 or 1416 for a variance or exemption, unless such person shows to the satisfaction of the court that the State has in a substantial number of cases failed to prescribe such schedules.

(c) In any action under this section, the Administrator or the Attorney General, if not a party, may intervene as a matter of right.

(d) The court, in issuing any final order in any action brought under subsection (a) of this section, may award costs of litigation (including reasonable attorney and expert witness fees) to any party whenever the court determines such an award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

(e) Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any requirement prescribed by or under this title or to seek any other relief. Nothing in this section or in any other law of the United States shall be construed to prohibit, exclude, or restrict any State or local government from—

(1) bringing any action or obtaining any remedy or sanction in any State or local court, or

(2) bringing any administrative action or obtaining any administrative remedy or sanction,

against any agency of the United States under State or local law to enforce any requirement respecting the provision of safe drinking water or respecting any underground injection control program. Nothing in this section shall be construed to authorize judicial review of regulations or orders of the Administrator under this title, except as provided in section 1448. For provisions providing for application of certain requirements to such agencies in the same manner as to nongovernmental entities, see section 1447.

[42 U.S.C. 300j–8]

GENERAL PROVISIONS

SEC. 1450. (a)(1) The Administrator is authorized to prescribe such regulations as are necessary or appropriate to carry out his functions under this title.

(2) The Administrator may delegate any of his functions under this title (other than prescribing regulations) to any officer or employee of the Agency.

(b) The Administrator, with the consent of the head of any other agency of the United States, may utilize such officers and employees of such agency as he deems necessary to assist him in carrying out the purposes of this title.

(c) Upon the request of a State or interstate agency, the Administrator may assign personnel of the Agency to such State or interstate agency for the purposes of carrying out the provisions of this title.

(d)(1) The Administrator may make payments of grants under this title (after necessary adjustment on account of previously made underpayments or overpayments) in advance or by way of reimbursement, and in such installments and on such conditions as he may determine.

(2) Financial assistance may be made available in the form of grants only to individuals and nonprofit agencies or institutions. For purposes of this paragraph, the term "nonprofit agency or institution" means an agency or institution no part of the net earnings of which inure, or may lawfully inure, to the benefit of any private shareholder or individual.

(e) The Administrator shall take such action as may be necessary to assure compliance with provisions of the Act of March 3, 1931 (known as the Davis-Bacon Act; 40 U.S.C. 276a–276a(5)). The Secretary of Labor shall have, with respect to the labor standards specified in this subsection, the authority and functions set forth in Reorganization Plan Numbered 14 of 1950 (15 F.R. 3176; 64 Stat. 1267) and section 2 of the Act of June 13, 1934 (40 U.S.C. 276c).

(f) The Administrator shall request the Attorney General to appear and represent him in any civil action instituted under this title to which the Administrator is a party. Unless, within a reasonable time, the Attorney General notifies the Administrator that he will appear in such action, attorneys appointed by the Administrator shall appear and represent him.

(g) The provisions of this title shall not be construed as affecting any authority of the Administrator under part G of title III of this Act.

(h) Not later than April 1 of each year, the Administrator shall submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Energy and Commerce of the House of Representatives a report respecting the activities of the Agency under this title and containing such recommendations for legislation as he considers necessary. The report of the Administrator under this subsection which is due not later than April 1, 1975, and each subsequent report of the Administrator under this subsection shall include a statement on the actual and anticipated cost to public water systems in each State of compliance with the requirements of this title. The Office of Management

and Budget may review any report required by this subsection before its submission to such committees of Congress, but the Office may not revise any such report, require any revision in any such report, or delay its submission beyond the day prescribed for its submission, and may submit to such committees of Congress its comments respecting any such report.

(i)(1) No employer may discharge any employee or otherwise discriminate against any employee with respect to his compensation, terms, conditions, or privileges of employment because the employee (or any person acting pursuant to a request of the employee) has—

(A) commenced, caused to be commenced, or is about to commence or cause to be commenced a proceeding under this title or a proceeding for the administration or enforcement of drinking water regulations or underground injection control programs of a State,

(B) testified or is about to testify in any such proceeding, or

(C) assisted or participated or is about to assist or participate in any manner in such a proceeding or in any other action to carry out the purposes of this title.

(2)(A) Any employee who believes that he has been discharged or otherwise discriminated against by any person in violation of paragraph (1) may, within 30 days after such violation occurs, file (or have any person file on his behalf) a complaint with the Secretary of Labor (hereinafter in this subsection referred to as the "Secretary") alleging such discharge or discrimination. Upon receipt of such a complaint, the Secretary shall notify the person named in the complaint of the filing of the complaint.

(B)(i) Upon receipt of a complaint filed under subparagraph (A), the Secretary shall conduct an investigation of the violation alleged in the complaint. Within 30 days of the receipt of such complaint, the Secretary shall complete such investigation and shall notify in writing the complainant (and any person acting in his behalf) and the person alleged to have committed such violation of the results of the investigation conducted pursuant to this subparagraph. Within 90 days of the receipt of such complaint the Secretary shall, unless the proceeding on the complaint is terminated by the Secretary on the basis of a settlement entered into by the Secretary and the person alleged to have committed such violation, issue an order either providing the relief prescribed by clause (ii) or denying the complaint. An order of the Secretary shall be made on the record after notice and opportunity for agency hearing. The Secretary may not enter into a settlement terminating a proceeding on a complaint without the participation and consent of the complainant.

(ii) If in response to a complaint filed under subparagraph (A) the Secretary determines that a violation of paragraph (1) has occurred, the Secretary shall order (I) the person who committed such violation to take affirmative action to abate the violation, (II) such person to reinstate the complainant to his former position together with the compensation (including back pay), terms, conditions, and privileges of his employment, (III) compensatory damages, and (IV) where appropriate, exemplary damages. If such an

order is issued, the Secretary, at the request of the complainant, shall assess against the person against whom the order is issued a sum equal to the aggregate amount of all costs and expenses (including attorneys' fees) reasonably incurred, as determined by the Secretary, by the complainant for, or in connection with, the bringing of the complaint upon which the order was issued.

(3)(A) Any person adversely affected or aggrieved by an order issued under paragraph (2) may obtain review of the order in the United States Court of Appeals for the circuit in which the violation, with respect to which the order was issued, allegedly occurred. The petition for review must be filed within sixty days from the issuance of the Secretary's order. Review shall conform to chapter 7 of title 5 of the United States Code. The commencement of proceedings under this subparagraph shall not, unless ordered by the court, operate as a stay of the Secretary's order.

(B) An order of the Secretary with respect to which review could have been obtained under subparagraph (A) shall not be subject to judicial review in any criminal or other civil proceeding.

(4) Whenever a person has failed to comply with an order issued under paragraph (2)(B), the Secretary shall file a civil action in the United States District Court for the district in which the violation was found to occur to enforce such order. In actions brought under this paragraph, the district courts shall have jurisdiction to grant all appropriate relief including, but not limited to, injunctive relief, compensatory, and exemplary damages.

(5) Any nondiscretionary duty imposed by this section is enforceable in mandamus proceeding brought under section 1361 of title 28 of the United States Code.

(6) Paragraph (1) shall not apply with respect to any employee who, acting without direction from his employer (or the employer's agent), deliberately causes a violation of any requirement of this title.

[42 U.S.C. 300j–9]

INDIAN TRIBES

SEC. 1451. (a) IN GENERAL.—Subject to the provisions of subsection (b), the Administrator—

(1) is authorized to treat Indian Tribes as States under this title,

(2) may delegate to such Tribes primary enforcement responsibility for public water systems and for underground injection control, and

(3) may provide such Tribes grant and contract assistance to carry out functions provided by this title.

(b) EPA REGULATIONS.—

(1) SPECIFIC PROVISIONS.—The Administrator shall, within 18 months after the enactment of the Safe Drinking Water Act Amendments of 1986, promulgate final regulations specifying those provisions of this title for which it is appropriate to treat Indian Tribes as States. Such treatment shall be authorized only if:

(A) the Indian Tribes is recognized by the Secretary of the Interior and has a governing body carrying out substantial governmental duties and powers;

(B) the functions to be exercised by the Indian Tribe are within the area of the Tribal Government's jurisdiction; and

(C) the Indian Tribe is reasonably expected to be capable, in the Administrator's judgment, of carrying out the functions to be exercised in a manner consistent with the terms and purposes of this title and of all applicable regulations.

(2) PROVISIONS WHERE TREATMENT AS STATE INAPPROPRIATE.—For any provision of this title where treatment of Indian Tribes as identical to States is inappropriate, administratively infeasible or otherwise inconsistent with the purposes of this title, the Administrator may include in the regulations promulgated under this section, other means for administering such provision in a manner that will achieve the purpose of the provision. Nothing in this section shall be construed to allow Indian Tribes to assume or maintain primary enforcement responsibility for public water systems or for underground injection control in a manner less protective of the health of persons than such responsibility may be assumed or maintained by a State. An Indian tribe shall not be required to exercise criminal enforcement jurisdiction for purposes of complying with the preceding sentence.

[42 U.S.C. 300j–11]

STATE REVOLVING LOAN FUNDS

SEC. 1452. (a) GENERAL AUTHORITY.—

(1) GRANTS TO STATES TO ESTABLISH STATE LOAN FUNDS.—

(A) IN GENERAL.—The Administrator shall offer to enter into agreements with eligible States to make capitalization grants, including letters of credit, to the States under this subsection to further the health protection objectives of this title, promote the efficient use of fund resources, and for other purposes as are specified in this title.

(B) ESTABLISHMENT OF FUND.—To be eligible to receive a capitalization grant under this section, a State shall establish a drinking water treatment revolving loan fund (referred to in this section as a "State loan fund") and comply with the other requirements of this section. Each grant to a State under this section shall be deposited in the State loan fund established by the State, except as otherwise provided in this section and in other provisions of this title. No funds authorized by other provisions of this title to be used for other purposes specified in this title shall be deposited in any State loan fund.

(C) EXTENDED PERIOD.—The grant to a State shall be available to the State for obligation during the fiscal year for which the funds are authorized and during the following fiscal year, except that grants made available from

funds provided prior to fiscal year 1997 shall be available for obligation during each of the fiscal years 1997 and 1998.

(D) ALLOTMENT FORMULA.—Except as otherwise provided in this section, funds made available to carry out this section shall be allotted to States that have entered into an agreement pursuant to this section (other than the District of Columbia) in accordance with—

(i) for each of fiscal years 1995 through 1997, a formula that is the same as the formula used to distribute public water system supervision grant funds under section 1443 in fiscal year 1995, except that the minimum proportionate share established in the formula shall be 1 percent of available funds and the formula shall be adjusted to include a minimum proportionate share for the State of Wyoming and the District of Columbia; and

(ii) for fiscal year 1998 and each subsequent fiscal year, a formula that allocates to each State the proportional share of the State needs identified in the most recent survey conducted pursuant to subsection (h), except that the minimum proportionate share provided to each State shall be the same as the minimum proportionate share provided under clause (i).

(E) REALLOTMENT.—The grants not obligated by the last day of the period for which the grants are available shall be reallotted according to the appropriate criteria set forth in subparagraph (D), except that the Administrator may reserve and allocate 10 percent of the remaining amount for financial assistance to Indian Tribes in addition to the amount allotted under subsection (i) and none of the funds reallotted by the Administrator shall be reallotted to any State that has not obligated all sums allotted to the State pursuant to this section during the period in which the sums were available for obligation.

(F) NONPRIMACY STATES.—The State allotment for a State not exercising primary enforcement responsibility for public water systems shall not be deposited in any such fund but shall be allotted by the Administrator under this subparagraph. Pursuant to section 1443(a)(9)(A) such sums allotted under this subparagraph shall be reserved as needed by the Administrator to exercise primary enforcement responsibility under this title in such State and the remainder shall be reallotted to States exercising primary enforcement responsibility for public water systems for deposit in such funds. Whenever the Administrator makes a final determination pursuant to section 1413(b) that the requirements of section 1413(a) are no longer being met by a State, additional grants for such State under this title shall be immediately terminated by the Administrator. This subparagraph shall not apply to any State not exercising primary enforcement responsibility for public water systems as of the date of enactment of the Safe Drinking Water Act Amendments of 1996.

(G) OTHER PROGRAMS.—

(i) NEW SYSTEM CAPACITY.—Beginning in fiscal year 1999, the Administrator shall withhold 20 percent of each capitalization grant made pursuant to this section to a State unless the State has met the requirements of section 1420(a) (relating to capacity development) and shall withhold 10 percent for fiscal year 2001, 15 percent for fiscal year 2002, and 20 percent for fiscal year 2003 if the State has not complied with the provisions of section 1420(c) (relating to capacity development strategies). Not more than a total of 20 percent of the capitalization grants made to a State in any fiscal year may be withheld under the preceding provisions of this clause. All funds withheld by the Administrator pursuant to this clause shall be reallotted by the Administrator on the basis of the same ratio as is applicable to funds allotted under subparagraph (D). None of the funds reallotted by the Administrator pursuant to this paragraph shall be allotted to a State unless the State has met the requirements of section 1420 (relating to capacity development).

(ii) OPERATOR CERTIFICATION.—The Administrator shall withhold 20 percent of each capitalization grant made pursuant to this section unless the State has met the requirements of 1419[1] (relating to operator certification). All funds withheld by the Administrator pursuant to this clause shall be reallotted by the Administrator on the basis of the same ratio as applicable to funds allotted under subparagraph (D). None of the funds reallotted by the Administrator pursuant to this paragraph shall be allotted to a State unless the State has met the requirements of section 1419 (relating to operator certification).

(2) USE OF FUNDS.—Except as otherwise authorized by this title, amounts deposited in a State loan fund, including loan repayments and interest earned on such amounts, shall be used only for providing loans or loan guarantees, or as a source of reserve and security for leveraged loans, the proceeds of which are deposited in a State loan fund established under paragraph (1), or other financial assistance authorized under this section to community water systems and nonprofit noncommunity water systems, other than systems owned by Federal agencies. Financial assistance under this section may be used by a public water system only for expenditures (not including monitoring, operation, and maintenance expenditures) of a type or category which the Administrator has determined, through guidance, will facilitate compliance with national primary drinking water regulations applicable to the system under section 1412 or otherwise significantly further the health protection objectives of this title. The funds may also be

[1] So in law. The reference to "1419" probably should be to "section 1419". See the amendment made by section 130 of Public Law 104–182.

used to provide loans to a system referred to in section 1401(4)(B) for the purpose of providing the treatment described in section 1401(4)(B)(i)(III). The funds shall not be used for the acquisition of real property or interests therein, unless the acquisition is integral to a project authorized by this paragraph and the purchase is from a willing seller. Of the amount credited to any State loan fund established under this section in any fiscal year, 15 percent shall be available solely for providing loan assistance to public water systems which regularly serve fewer than 10,000 persons to the extent such funds can be obligated for eligible projects of public water systems.

(3) LIMITATION.—

(A) IN GENERAL.—Except as provided in subparagraph (B), no assistance under this section shall be provided to a public water system that—

(i) does not have the technical, managerial, and financial capability to ensure compliance with the requirements of this title; or

(ii) is in significant noncompliance with any requirement of a national primary drinking water regulation or variance.

(B) RESTRUCTURING.—A public water system described in subparagraph (A) may receive assistance under this section if—

(i) the use of the assistance will ensure compliance; and

(ii) if subparagraph (A)(i) applies to the system, the owner or operator of the system agrees to undertake feasible and appropriate changes in operations (including ownership, management, accounting, rates, maintenance, consolidation, alternative water supply, or other procedures) if the State determines that the measures are necessary to ensure that the system has the technical, managerial, and financial capability to comply with the requirements of this title over the long term.

(C) REVIEW.—Prior to providing assistance under this section to a public water system that is in significant noncompliance with any requirement of a national primary drinking water regulation or variance, the State shall conduct a review to determine whether subparagraph (A)(i) applies to the system.

(b) INTENDED USE PLANS.—

(1) IN GENERAL.—After providing for public review and comment, each State that has entered into a capitalization agreement pursuant to this section shall annually prepare a plan that identifies the intended uses of the amounts available to the State loan fund of the State.

(2) CONTENTS.—An intended use plan shall include—

(A) a list of the projects to be assisted in the first fiscal year that begins after the date of the plan, including a description of the project, the expected terms of financial assistance, and the size of the community served;

(B) the criteria and methods established for the distribution of funds; and

(C) a description of the financial status of the State loan fund and the short-term and long-term goals of the State loan fund.

(3) USE OF FUNDS.—

(A) IN GENERAL.—An intended use plan shall provide, to the maximum extent practicable, that priority for the use of funds be given to projects that—

(i) address the most serious risk to human health;

(ii) are necessary to ensure compliance with the requirements of this title (including requirements for filtration); and

(iii) assist systems most in need on a per household basis according to State affordability criteria.

(B) LIST OF PROJECTS.—Each State shall, after notice and opportunity for public comment, publish and periodically update a list of projects in the State that are eligible for assistance under this section, including the priority assigned to each project and, to the extent known, the expected funding schedule for each project.

(c) FUND MANAGEMENT.—Each State loan fund under this section shall be established, maintained, and credited with repayments and interest. The fund corpus shall be available in perpetuity for providing financial assistance under this section. To the extent amounts in the fund are not required for current obligation or expenditure, such amounts shall be invested in interest bearing obligations.

(d) ASSISTANCE FOR DISADVANTAGED COMMUNITIES.—

(1) LOAN SUBSIDY.—Notwithstanding any other provision of this section, in any case in which the State makes a loan pursuant to subsection (a)(2) to a disadvantaged community or to a community that the State expects to become a disadvantaged community as the result of a proposed project, the State may provide additional subsidization (including forgiveness of principal).

(2) TOTAL AMOUNT OF SUBSIDIES.—For each fiscal year, the total amount of loan subsidies made by a State pursuant to paragraph (1) may not exceed 30 percent of the amount of the capitalization grant received by the State for the year.

(3) DEFINITION OF DISADVANTAGED COMMUNITY.—In this subsection, the term "disadvantaged community" means the service area of a public water system that meets affordability criteria established after public review and comment by the State in which the public water system is located. The Administrator may publish information to assist States in establishing affordability criteria.

(e) STATE CONTRIBUTION.—Each agreement under subsection (a) shall require that the State deposit in the State loan fund from State moneys an amount equal to at least 20 percent of the total amount of the grant to be made to the State on or before the date on which the grant payment is made to the State, except that a State shall not be required to deposit such amount into the fund prior to the date on which each grant payment is made for fiscal

years 1994, 1995, 1996, and 1997 if the State deposits the State contribution amount into the State loan fund prior to September 30, 1999.

(f) TYPES OF ASSISTANCE.—Except as otherwise limited by State law, the amounts deposited into a State loan fund under this section may be used only—

(1) to make loans, on the condition that—

(A) the interest rate for each loan is less than or equal to the market interest rate, including an interest free loan;

(B) principal and interest payments on each loan will commence not later than 1 year after completion of the project for which the loan was made, and each loan will be fully amortized not later than 20 years after the completion of the project, except that in the case of a disadvantaged community (as defined in subsection (d)(3)), a State may provide an extended term for a loan, if the extended term—

(i) terminates not later than the date that is 30 years after the date of project completion; and

(ii) does not exceed the expected design life of the project;

(C) the recipient of each loan will establish a dedicated source of revenue (or, in the case of a privately owned system, demonstrate that there is adequate security) for the repayment of the loan; and

(D) the State loan fund will be credited with all payments of principal and interest on each loan;

(2) to buy or refinance the debt obligation of a municipality or an intermunicipal or interstate agency within the State at an interest rate that is less than or equal to the market interest rate in any case in which a debt obligation is incurred after July 1, 1993;

(3) to guarantee, or purchase insurance for, a local obligation (all of the proceeds of which finance a project eligible for assistance under this section) if the guarantee or purchase would improve credit market access or reduce the interest rate applicable to the obligation;

(4) as a source of revenue or security for the payment of principal and interest on revenue or general obligation bonds issued by the State if the proceeds of the sale of the bonds will be deposited into the State loan fund; and

(5) to earn interest on the amounts deposited into the State loan fund.

(g) ADMINISTRATION OF STATE LOAN FUNDS.—

(1) COMBINED FINANCIAL ADMINISTRATION.—Notwithstanding subsection (c), a State may (as a convenience and to avoid unnecessary administrative costs) combine, in accordance with State law, the financial administration of a State loan fund established under this section with the financial administration of any other revolving fund established by the State if otherwise not prohibited by the law under which the State loan fund was established and if the Administrator determines that—

(A) the grants under this section, together with loan repayments and interest, will be separately accounted for and used solely for the purposes specified in subsection (a); and

(B) the authority to establish assistance priorities and carry out oversight and related activities (other than financial administration) with respect to assistance remains with the State agency having primary responsibility for administration of the State program under section 1413, after consultation with other appropriate State agencies (as determined by the State): *Provided*, That in nonprimacy States eligible to receive assistance under this section, the Governor shall determine which State agency will have authority to establish priorities for financial assistance from the State loan fund.

(2) COST OF ADMINISTERING FUND.—Each State may annually use up to 4 percent of the funds allotted to the State under this section to cover the reasonable costs of administration of the programs under this section, including the recovery of reasonable costs expended to establish a State loan fund which are incurred after the date of enactment of this section, and to provide technical assistance to public water systems within the State. For fiscal year 1995 and each fiscal year thereafter, each State may use up to an additional 10 percent of the funds allotted to the State under this section—

(A) for public water system supervision programs under section 1443(a);

(B) to administer or provide technical assistance through source water protection programs;

(C) to develop and implement a capacity development strategy under section 1420(c); and

(D) for an operator certification program for purposes of meeting the requirements of section 1419,

if the State matches the expenditures with at least an equal amount of State funds. At least half of the match must be additional to the amount expended by the State for public water supervision in fiscal year 1993. An additional 2 percent of the funds annually allotted to each State under this section may be used by the State to provide technical assistance to public water systems serving 10,000 or fewer persons in the State. Funds utilized under subparagraph (B) shall not be used for enforcement actions.

(3) GUIDANCE AND REGULATIONS.—The Administrator shall publish guidance and promulgate regulations as may be necessary to carry out the provisions of this section, including—

(A) provisions to ensure that each State commits and expends funds allotted to the State under this section as efficiently as possible in accordance with this title and applicable State laws;

(B) guidance to prevent waste, fraud, and abuse; and

(C) guidance to avoid the use of funds made available under this section to finance the expansion of any public water system in anticipation of future population growth.

The guidance and regulations shall also ensure that the States, and public water systems receiving assistance under this section, use accounting, audit, and fiscal procedures that conform to generally accepted accounting standards.

(4) STATE REPORT.—Each State administering a loan fund and assistance program under this subsection shall publish and submit to the Administrator a report every 2 years on its activities under this section, including the findings of the most recent audit of the fund and the entire State allotment. The Administrator shall periodically audit all State loan funds established by, and all other amounts allotted to, the States pursuant to this section in accordance with procedures established by the Comptroller General.

(h) NEEDS SURVEY.—The Administrator shall conduct an assessment of water system capital improvement needs of all eligible public water systems in the United States and submit a report to the Congress containing the results of the assessment within 180 days after the date of enactment of the Safe Drinking Water Act Amendments of 1996 and every 4 years thereafter.

(i) INDIAN TRIBES.—

(1) IN GENERAL.—1½ percent of the amounts appropriated annually to carry out this section may be used by the Administrator to make grants to Indian Tribes and Alaska Native villages that have not otherwise received either grants from the Administrator under this section or assistance from State loan funds established under this section. The grants may only be used for expenditures by tribes and villages for public water system expenditures referred to in subsection (a)(2).

(2) USE OF FUNDS.—Funds reserved pursuant to paragraph (1) shall be used to address the most significant threats to public health associated with public water systems that serve Indian Tribes, as determined by the Administrator in consultation with the Director of the Indian Health Service and Indian Tribes.

(3) ALASKA NATIVE VILLAGES.—In the case of a grant for a project under this subsection in an Alaska Native village, the Administrator is also authorized to make grants to the State of Alaska for the benefit of Native villages. An amount not to exceed 4 percent of the grant amount may be used by the State of Alaska for project management.

(4) NEEDS ASSESSMENT.—The Administrator, in consultation with the Director of the Indian Health Service and Indian Tribes, shall, in accordance with a schedule that is consistent with the needs surveys conducted pursuant to subsection (h), prepare surveys and assess the needs of drinking water treatment facilities to serve Indian Tribes, including an evaluation of the public water systems that pose the most significant threats to public health.

(j) OTHER AREAS.—Of the funds annually available under this section for grants to States, the Administrator shall make allotments in accordance with section 1443(a)(4) for the Virgin Islands, the Commonwealth of the Northern Mariana Islands, American Samoa, and Guam. The grants allotted as provided in this subsection may be provided by the Administrator to the governments

of such areas, to public water systems in such areas, or to both, to be used for the public water system expenditures referred to in subsection (a)(2). The grants, and grants for the District of Columbia, shall not be deposited in State loan funds. The total allotment of grants under this section for all areas described in this subsection in any fiscal year shall not exceed 0.33 percent of the aggregate amount made available to carry out this section in that fiscal year.

(k) OTHER AUTHORIZED ACTIVITIES.—

(1) IN GENERAL.—Notwithstanding subsection (a)(2), a State may take each of the following actions:

(A) Provide assistance, only in the form of a loan, to one or more of the following:

(i) Any public water system described in subsection (a)(2) to acquire land or a conservation easement from a willing seller or grantor, if the purpose of the acquisition is to protect the source water of the system from contamination and to ensure compliance with national primary drinking water regulations.

(ii) Any community water system to implement local, voluntary source water protection measures to protect source water in areas delineated pursuant to section 1453, in order to facilitate compliance with national primary drinking water regulations applicable to the system under section 1412 or otherwise significantly further the health protection objectives of this title. Funds authorized under this clause may be used to fund only voluntary, incentive-based mechanisms.

(iii) Any community water system to provide funding in accordance with section 1454(a)(1)(B)(i).

(B) Provide assistance, including technical and financial assistance, to any public water system as part of a capacity development strategy developed and implemented in accordance with section 1420(c).

(C) Make expenditures from the capitalization grant of the State for fiscal years 1996 and 1997 to delineate and assess source water protection areas in accordance with section 1453, except that funds set aside for such expenditure shall be obligated within 4 fiscal years.

(D) Make expenditures from the fund for the establishment and implementation of wellhead protection programs under section 1428.

(2) LIMITATION.—For each fiscal year, the total amount of assistance provided and expenditures made by a State under this subsection may not exceed 15 percent of the amount of the capitalization grant received by the State for that year and may not exceed 10 percent of that amount for any one of the following activities:

(A) To acquire land or conservation easements pursuant to paragraph (1)(A)(i).

(B) To provide funding to implement voluntary, incentive-based source water quality protection measures pursuant to clauses (ii) and (iii) of paragraph (1)(A).

(C) To provide assistance through a capacity development strategy pursuant to paragraph (1)(B).

(D) To make expenditures to delineate or assess source water protection areas pursuant to paragraph (1)(C).

(E) To make expenditures to establish and implement wellhead protection programs pursuant to paragraph (1)(D).

(3) STATUTORY CONSTRUCTION.—Nothing in this section creates or conveys any new authority to a State, political subdivision of a State, or community water system for any new regulatory measure, or limits any authority of a State, political subdivision of a State or community water system.

(l) SAVINGS.—The failure or inability of any public water system to receive funds under this section or any other loan or grant program, or any delay in obtaining the funds, shall not alter the obligation of the system to comply in a timely manner with all applicable drinking water standards and requirements of this title.

(m) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out the purposes of this section $599,000,000 for the fiscal year 1994 and $1,000,000,000 for each of the fiscal years 1995 through 2003. To the extent amounts authorized to be appropriated under this subsection in any fiscal year are not appropriated in that fiscal year, such amounts are authorized to be appropriated in a subsequent fiscal year (prior to the fiscal year 2004). Such sums shall remain available until expended.

(n) HEALTH EFFECTS STUDIES.—From funds appropriated pursuant to this section for each fiscal year, the Administrator shall reserve $10,000,000 for health effects studies on drinking water contaminants authorized by the Safe Drinking Water Act Amendments of 1996. In allocating funds made available under this subsection, the Administrator shall give priority to studies concerning the health effects of cryptosporidium (as authorized by section 1458(c)), disinfection byproducts (as authorized by section 1458(c)), and arsenic (as authorized by section 1412(b)(12)(A)), and the implementation of a plan for studies of subpopulations at greater risk of adverse effects (as authorized by section 1458(a)).

(o) MONITORING FOR UNREGULATED CONTAMINANTS.—From funds appropriated pursuant to this section for each fiscal year beginning with fiscal year 1998, the Administrator shall reserve $2,000,000 to pay the costs of monitoring for unregulated contaminants under section 1445(a)(2)(C).

(p) DEMONSTRATION PROJECT FOR STATE OF VIRGINIA.—Notwithstanding the other provisions of this section limiting the use of funds deposited in a State loan fund from any State allotment, the State of Virginia may, as a single demonstration and with the approval of the Virginia General Assembly and the Administrator, conduct a program to demonstrate alternative approaches to intergovernmental coordination to assist in the financing of new drinking water facilities in the following rural communities in southwestern Virginia where none exists on the date of enactment of the Safe Drinking Water Act Amendments of 1996 and where such communities are experiencing economic hardship: Lee County, Wise County, Scott County, Dickenson County, Russell County, Buchanan County, Tazewell County, and the city of Norton, Virginia.

The funds allotted to that State and deposited in the State loan fund may be loaned to a regional endowment fund for the purpose set forth in this subsection under a plan to be approved by the Administrator. The plan may include an advisory group that includes representatives of such counties.

(q) SMALL SYSTEM TECHNICAL ASSISTANCE.—The Administrator may reserve up to 2 percent of the total funds appropriated pursuant to subsection (m) for each of the fiscal years 1997 through 2003 to carry out the provisions of section 1442(e) (relating to technical assistance for small systems), except that the total amount of funds made available for such purpose in any fiscal year through appropriations (as authorized by section 1442(e)) and reservations made pursuant to this subsection shall not exceed the amount authorized by section 1442(e).

(r) EVALUATION.—The Administrator shall conduct an evaluation of the effectiveness of the State loan funds through fiscal year 2001. The evaluation shall be submitted to the Congress at the same time as the President submits to the Congress, pursuant to section 1108 of title 31, United States Code, an appropriations request for fiscal year 2003 relating to the budget of the Environmental Protection Agency.

[42 U.S.C. 300j–12]

SOURCE WATER QUALITY ASSESSMENT

SEC. 1453. (a) SOURCE WATER ASSESSMENT.—

(1) GUIDANCE.—Within 12 months after the date of enactment of the Safe Drinking Water Act Amendments of 1996, after notice and comment, the Administrator shall publish guidance for States exercising primary enforcement responsibility for public water systems to carry out directly or through delegation (for the protection and benefit of public water systems and for the support of monitoring flexibility) a source water assessment program within the State's boundaries. Each State adopting modifications to monitoring requirements pursuant to section 1418(b) shall, prior to adopting such modifications, have an approved source water assessment program under this section and shall carry out the program either directly or through delegation.

(2) PROGRAM REQUIREMENTS.—A source water assessment program under this subsection shall—

(A) delineate the boundaries of the assessment areas in such State from which one or more public water systems in the State receive supplies of drinking water, using all reasonably available hydrogeologic information on the sources of the supply of drinking water in the State and the water flow, recharge, and discharge and any other reliable information as the State deems necessary to adequately determine such areas; and

(B) identify for contaminants regulated under this title for which monitoring is required under this title (or any unregulated contaminants selected by the State, in its discretion, which the State, for the purposes of this subsection, has determined may present a threat to public

health), to the extent practical, the origins within each delineated area of such contaminants to determine the susceptibility of the public water systems in the delineated area to such contaminants.

(3) APPROVAL, IMPLEMENTATION, AND MONITORING RELIEF.—A State source water assessment program under this subsection shall be submitted to the Administrator within 18 months after the Administrator's guidance is issued under this subsection and shall be deemed approved 9 months after the date of such submittal unless the Administrator disapproves the program as provided in section 1428(c). States shall begin implementation of the program immediately after its approval. The Administrator's approval of a State program under this subsection shall include a timetable, established in consultation with the State, allowing not more than 2 years for completion after approval of the program. Public water systems seeking monitoring relief in addition to the interim relief provided under section 1418(a) shall be eligible for monitoring relief, consistent with section 1418(b), upon completion of the assessment in the delineated source water assessment area or areas concerned.

(4) TIMETABLE.—The timetable referred to in paragraph (3) shall take into consideration the availability to the State of funds under section 1452 (relating to State loan funds) for assessments and other relevant factors. The Administrator may extend any timetable included in a State program approved under paragraph (3) to extend the period for completion by an additional 18 months.

(5) DEMONSTRATION PROJECT.—The Administrator shall, as soon as practicable, conduct a demonstration project, in consultation with other Federal agencies, to demonstrate the most effective and protective means of assessing and protecting source waters serving large metropolitan areas and located on Federal lands.

(6) USE OF OTHER PROGRAMS.—To avoid duplication and to encourage efficiency, the program under this section may make use of any of the following:

(A) Vulnerability assessments, sanitary surveys, and monitoring programs.

(B) Delineations or assessments of ground water sources under a State wellhead protection program developed pursuant to this section.

(C) Delineations or assessments of surface or ground water sources under a State pesticide management plan developed pursuant to the Pesticide and Ground Water State Management Plan Regulation (subparts I and J of part 152 of title 40, Code of Federal Regulations), promulgated under section 3(d) of the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136a(d)).

(D) Delineations or assessments of surface water sources under a State watershed initiative or to satisfy the watershed criterion for determining if filtration is required under the Surface Water Treatment Rule (section 141.70 of title 40, Code of Federal Regulations).

(E) Delineations or assessments of surface or ground water sources under programs or plans pursuant to the Federal Water Pollution Control Act.

(7) PUBLIC AVAILABILITY.—The State shall make the results of the source water assessments conducted under this subsection available to the public.

(b) APPROVAL AND DISAPPROVAL.—For provisions relating to program approval and disapproval, see section 1428(c).

[42 U.S.C. 300j–13]

SOURCE WATER PETITION PROGRAM

SEC. 1454. (a) PETITION PROGRAM.—

(1) IN GENERAL.—

(A) ESTABLISHMENT.—A State may establish a program under which an owner or operator of a community water system in the State, or a municipal or local government or political subdivision of a State, may submit a source water quality protection partnership petition to the State requesting that the State assist in the local development of a voluntary, incentive-based partnership, among the owner, operator, or government and other persons likely to be affected by the recommendations of the partnership, to—

(i) reduce the presence in drinking water of contaminants that may be addressed by a petition by considering the origins of the contaminants, including to the maximum extent practicable the specific activities that affect the drinking water supply of a community;

(ii) obtain financial or technical assistance necessary to facilitate establishment of a partnership, or to develop and implement recommendations of a partnership for the protection of source water to assist in the provision of drinking water that complies with national primary drinking water regulations with respect to contaminants addressed by a petition; and

(iii) develop recommendations regarding voluntary and incentive-based strategies for the long-term protection of the source water of community water systems.

(B) FUNDING.—Each State may—

(i) use funds set aside pursuant to section 1452(k)(1)(A)(iii) by the State to carry out a program described in subparagraph (A), including assistance to voluntary local partnerships for the development and implementation of partnership recommendations for the protection of source water such as source water quality assessment, contingency plans, and demonstration projects for partners within a source water area delineated under section 1453(a); and

(ii) provide assistance in response to a petition submitted under this subsection using funds referred to in subsection (b)(2)(B).

(2) OBJECTIVES.—The objectives of a petition submitted under this subsection shall be to—

(A) facilitate the local development of voluntary, incentive-based partnerships among owners and operators of community water systems, governments, and other persons in source water areas; and

(B) obtain assistance from the State in identifying resources which are available to implement the recommendations of the partnerships to address the origins of drinking water contaminants that may be addressed by a petition (including to the maximum extent practicable the specific activities contributing to the presence of the contaminants) that affect the drinking water supply of a community.

(3) CONTAMINANTS ADDRESSED BY A PETITION.—A petition submitted to a State under this subsection may address only those contaminants—

(A) that are pathogenic organisms for which a national primary drinking water regulation has been established or is required under section 1412; or

(B) for which a national primary drinking water regulation has been promulgated or proposed and that are detected by adequate monitoring methods in the source water at the intake structure or in any collection, treatment, storage, or distribution facilities by the community water systems at levels—

(i) above the maximum contaminant level; or

(ii) that are not reliably and consistently below the maximum contaminant level.

(4) CONTENTS.—A petition submitted under this subsection shall, at a minimum—

(A) include a delineation of the source water area in the State that is the subject of the petition;

(B) identify, to the maximum extent practicable, the origins of the drinking water contaminants that may be addressed by a petition (including to the maximum extent practicable the specific activities contributing to the presence of the contaminants) in the source water area delineated under section 1453;

(C) identify any deficiencies in information that will impair the development of recommendations by the voluntary local partnership to address drinking water contaminants that may be addressed by a petition;

(D) specify the efforts made to establish the voluntary local partnership and obtain the participation of—

(i) the municipal or local government or other political subdivision of the State with jurisdiction over the source water area delineated under section 1453; and

(ii) each person in the source water area delineated under section 1453—

(I) who is likely to be affected by recommendations of the voluntary local partnership; and

(II) whose participation is essential to the success of the partnership;

(E) outline how the voluntary local partnership has or will, during development and implementation of recommendations of the voluntary local partnership, identify, recognize and take into account any voluntary or other activities already being undertaken by persons in the source water area delineated under section 1453 under Federal or State law to reduce the likelihood that contaminants will occur in drinking water at levels of public health concern; and

(F) specify the technical, financial, or other assistance that the voluntary local partnership requests of the State to develop the partnership or to implement recommendations of the partnership.

(b) APPROVAL OR DISAPPROVAL OF PETITIONS.—

(1) IN GENERAL.—After providing notice and an opportunity for public comment on a petition submitted under subsection (a), the State shall approve or disapprove the petition, in whole or in part, not later than 120 days after the date of submission of the petition.

(2) APPROVAL.—The State may approve a petition if the petition meets the requirements established under subsection (a). The notice of approval shall, at a minimum, include for informational purposes—

(A) an identification of technical, financial, or other assistance that the State will provide to assist in addressing the drinking water contaminants that may be addressed by a petition based on—

(i) the relative priority of the public health concern identified in the petition with respect to the other water quality needs identified by the State;

(ii) any necessary coordination that the State will perform of the program established under this section with programs implemented or planned by other States under this section; and

(iii) funds available (including funds available from a State revolving loan fund established under title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.)) or section 1452;

(B) a description of technical or financial assistance pursuant to Federal and State programs that is available to assist in implementing recommendations of the partnership in the petition, including—

(i) any program established under the Federal Water Pollution Control Act (33 U.S.C. 1251 et seq.);

(ii) the program established under section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990 (16 U.S.C. 1455b);

(iii) the agricultural water quality protection program established under chapter 2 of subtitle D of title XII of the Food Security Act of 1985 (16 U.S.C. 3838 et seq.);

(iv) the sole source aquifer protection program established under section 1427;

(v) the community wellhead protection program established under section 1428;

(vi) any pesticide or ground water management plan;

(vii) any voluntary agricultural resource management plan or voluntary whole farm or whole ranch management plan developed and implemented under a process established by the Secretary of Agriculture; and

(viii) any abandoned well closure program; and

(C) a description of activities that will be undertaken to coordinate Federal and State programs to respond to the petition.

(3) DISAPPROVAL.—If the State disapproves a petition submitted under subsection (a), the State shall notify the entity submitting the petition in writing of the reasons for disapproval. A petition may be resubmitted at any time if—

(A) new information becomes available;

(B) conditions affecting the source water that is the subject of the petition change; or

(C) modifications are made in the type of assistance being requested.

(c) GRANTS TO SUPPORT STATE PROGRAMS.—

(1) IN GENERAL.—The Administrator may make a grant to each State that establishes a program under this section that is approved under paragraph (2). The amount of each grant shall not exceed 50 percent of the cost of administering the program for the year in which the grant is available.

(2) APPROVAL.—In order to receive grant assistance under this subsection, a State shall submit to the Administrator for approval a plan for a source water quality protection partnership program that is consistent with the guidance published under subsection (d). The Administrator shall approve the plan if the plan is consistent with the guidance published under subsection (d).

(d) GUIDANCE.—

(1) IN GENERAL.—Not later than 1 year after the date of enactment of this section, the Administrator, in consultation with the States, shall publish guidance to assist—

(A) States in the development of a source water quality protection partnership program; and

(B) municipal or local governments or political subdivisions of a State and community water systems in the development of source water quality protection partnerships and in the assessment of source water quality.

(2) CONTENTS OF THE GUIDANCE.—The guidance shall, at a minimum—

(A) recommend procedures for the approval or disapproval by a State of a petition submitted under subsection (a);

(B) recommend procedures for the submission of petitions developed under subsection (a);

(C) recommend criteria for the assessment of source water areas within a State; and

(D) describe technical or financial assistance pursuant to Federal and State programs that is available to address the contamination of sources of drinking water and to develop and respond to petitions submitted under subsection (a).

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section $5,000,000 for each of the fiscal years 1997 through 2003. Each State with a plan for a program approved under subsection (b) shall receive an equitable portion of the funds available for any fiscal year.

(f) STATUTORY CONSTRUCTION.—Nothing in this section—

(1)(A) creates or conveys new authority to a State, political subdivision of a State, or community water system for any new regulatory measure; or

(B) limits any authority of a State, political subdivision, or community water system; or

(2) precludes a community water system, municipal or local government, or political subdivision of a government from locally developing and carrying out a voluntary, incentive-based, source water quality protection partnership to address the origins of drinking water contaminants of public health concern.

[42 U.S.C. 300j–14]

WATER CONSERVATION PLAN

SEC. 1455. (a) GUIDELINES.—Not later than 2 years after the date of enactment of the Safe Drinking Water Act Amendments of 1996, the Administrator shall publish in the Federal Register guidelines for water conservation plans for public water systems serving fewer than 3,300 persons, public water systems serving between 3,300 and 10,000 persons, and public water systems serving more than 10,000 persons, taking into consideration such factors as water availability and climate.

(b) LOANS OR GRANTS.—Within 1 year after publication of the guidelines under subsection (a), a State exercising primary enforcement responsibility for public water systems may require a public water system, as a condition of receiving a loan or grant from a State loan fund under section 1452, to submit with its application for such loan or grant a water conservation plan consistent with such guidelines.

[42 U.S.C. 300j–15]

ASSISTANCE TO COLONIAS

SEC. 1456. (a) DEFINITIONS.—As used in this section:

(1) BORDER STATE.—The term "border State" means Arizona, California, New Mexico, and Texas.

(2) ELIGIBLE COMMUNITY.—The term "eligible community" means a low-income community with economic hardship that—

(A) is commonly referred to as a colonia;

(B) is located along the United States-Mexico border (generally in an unincorporated area); and

(C) lacks a safe drinking water supply or adequate facilities for the provision of safe drinking water for human consumption.

(b) GRANTS TO ALLEVIATE HEALTH RISKS.—The Administrator of the Environmental Protection Agency and the heads of other appropriate Federal agencies are authorized to award grants to a border State to provide assistance to eligible communities to facilitate compliance with national primary drinking water regulations or otherwise significantly further the health protection objectives of this title.

(c) USE OF FUNDS.—Each grant awarded pursuant to subsection (b) shall be used to provide assistance to one or more eligible communities with respect to which the residents are subject to a significant health risk (as determined by the Administrator or the head of the Federal agency making the grant) attributable to the lack of access to an adequate and affordable drinking water supply system.

(d) COST SHARING.—The amount of a grant awarded pursuant to this section shall not exceed 50 percent of the costs of carrying out the project that is the subject of the grant.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section $25,000,000 for each of the fiscal years 1997 through 1999.

[42 U.S.C. 300j–16]

ESTROGENIC SUBSTANCES SCREENING PROGRAM

SEC. 1457. In addition to the substances referred to in section 408(p)(3)(B) of the Federal Food, Drug, and Cosmetic Act (21 U.S.C. 346a(p)(3)(B)) the Administrator may provide for testing under the screening program authorized by section 408(p) of such Act, in accordance with the provisions of section 408(p) of such Act, of any other substance that may be found in sources of drinking water if the Administrator determines that a substantial population may be exposed to such substance.

[42 U.S.C. 300j–17]

DRINKING WATER STUDIES

SEC. 1458. (a) SUBPOPULATIONS AT GREATER RISK.—

(1) IN GENERAL.—The Administrator shall conduct a continuing program of studies to identify groups within the general population that may be at greater risk than the general population of adverse health effects from exposure to contaminants in drinking water. The study shall examine whether and to what degree infants, children, pregnant women, the elderly, individuals with a history of serious illness, or other subpopulations that can be identified and characterized are likely to experience elevated health risks, including risks of cancer, from contaminants in drinking water.

(2) REPORT.—Not later than 4 years after the date of enactment of this subsection and periodically thereafter as new and significant information becomes available, the Administrator shall report to the Congress on the results of the studies.

(b) BIOLOGICAL MECHANISMS.—The Administrator shall conduct biomedical studies to—

(1) understand the mechanisms by which chemical contaminants are absorbed, distributed, metabolized, and eliminated from the human body, so as to develop more accurate physiologically based models of the phenomena;

(2) understand the effects of contaminants and the mechanisms by which the contaminants cause adverse effects (especially noncancer and infectious effects) and the variations in the effects among humans, especially subpopulations at greater risk of adverse effects, and between test animals and humans; and

(3) develop new approaches to the study of complex mixtures, such as mixtures found in drinking water, especially to determine the prospects for synergistic or antagonistic interactions that may affect the shape of the dose-response relationship of the individual chemicals and microbes, and to examine noncancer endpoints and infectious diseases, and susceptible individuals and subpopulations.

(c) STUDIES ON HARMFUL SUBSTANCES IN DRINKING WATER.—

(1) DEVELOPMENT OF STUDIES.—The Administrator shall, not later than 180 days after the date of enactment of this section and after consultation with the Secretary of Health and Human Services, the Secretary of Agriculture, and, as appropriate, the heads of other Federal agencies, conduct the studies described in paragraph (2) to support the development and implementation of the most current version of each of the following:

(A) Enhanced Surface Water Treatment Rule (59 Fed. Reg. 38832 (July 29, 1994)).

(B) Disinfectant and Disinfection Byproducts Rule (59 Fed. Reg. 38668 (July 29, 1994)).

(C) Ground Water Disinfection Rule (availability of draft summary announced at (57 Fed. Reg. 33960; July 31, 1992)).

(2) CONTENTS OF STUDIES.—The studies required by paragraph (1) shall include, at a minimum, each of the following:

(A) Toxicological studies and, if warranted, epidemiological studies to determine what levels of exposure from disinfectants and disinfection byproducts, if any, may be associated with developmental and birth defects and other potential toxic end points.

(B) Toxicological studies and, if warranted, epidemiological studies to quantify the carcinogenic potential from exposure to disinfection byproducts resulting from different disinfectants.

(C) The development of dose-response curves for pathogens, including cryptosporidium and the Norwalk virus.

(3) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this subsection $12,500,000 for each of fiscal years 1997 through 2003.

(d) WATERBORNE DISEASE OCCURRENCE STUDY.—

(1) SYSTEM.—The Director of the Centers for Disease Control and Prevention, and the Administrator shall jointly—

(A) within 2 years after the date of enactment of this section, conduct pilot waterborne disease occurrence studies for at least 5 major United States communities or public water systems; and

(B) within 5 years after the date of enactment of this section, prepare a report on the findings of the pilot studies, and a national estimate of waterborne disease occurrence.

(2) TRAINING AND EDUCATION.—The Director and Administrator shall jointly establish a national health care provider training and public education campaign to inform both the professional health care provider community and the general public about waterborne disease and the symptoms that may be caused by infectious agents, including microbial contaminants. In developing such a campaign, they shall seek comment from interested groups and individuals, including scientists, physicians, State and local governments, environmental groups, public water systems, and vulnerable populations.

(3) FUNDING.—There are authorized to be appropriated for each of the fiscal years 1997 through 2001, $3,000,000 to carry out this subsection. To the extent funds under this subsection are not fully appropriated, the Administrator may use not more than $2,000,000 of the funds from amounts reserved under section 1452(n) for health effects studies for purposes of this subsection. The Administrator may transfer a portion of such funds to the Centers for Disease Control and Prevention for such purposes.

[42 U.S.C. 300j–18]

PART F—ADDITIONAL REQUIREMENTS TO REGULATE THE SAFETY OF DRINKING WATER [1]

DEFINITIONS

SEC. 1461. As used in this part—

(1) DRINKING WATER COOLER.—The term "drinking water cooler" means any mechanical device affixed to drinking water supply plumbing which actively cools water for human consumption.

(2) LEAD FREE.—The term "lead free" means, with respect to a drinking water cooler, that each part or component of the cooler which may come in contact with drinking water contains not more than 8 percent lead, except that no drinking water cooler which contains any solder, flux, or storage tank interior surface which may come in contact with drinking water shall be considered lead free if the solder, flux, or storage tank interior surface contains more than 0.2 percent lead. The Administrator may establish more stringent requirements for treating any part or component of a drinking water cooler as lead free for purposes of this part whenever he determines that any

[1] Part F was added by the Lead Contamination Control Act of 1988 (P.L. 100–572; 102 Stat. 2884).

such part may constitute an important source of lead in drinking water.

(3) LOCAL EDUCATIONAL AGENCY.—The term "local educational agency" means—

(A) any local educational agency as defined in section 9101 of the Elementary and Secondary Education Act of 1965,

(B) the owner of any private, nonprofit elementary or secondary school building, and

(C) the governing authority of any school operating under the defense dependent's education system provided for under the Defense Dependent's Education Act of 1978 (20 U.S.C. 921 and following).

(4) REPAIR.—The term "repair" means, with respect to a drinking water cooler, to take such corrective action as is necessary to ensure that water cooler is lead free.

(5) REPLACEMENT.—The term "replacement", when used with respect to a drinking water cooler, means the permanent removal of the water cooler and the installation of a lead free water cooler.

(6) SCHOOL.—The term "school" means any elementary school or secondary school as defined in section 9101 of the Elementary and Secondary Education Act of 1965 and any kindergarten or day care facility.

(7) LEAD-LINED TANK.—The term "lead-lined tank" means a water reservoir container in a drinking water cooler which container is constructed of lead or which has an interior surface which is not leadfree.

[42 U.S.C. 300j–21]

RECALL OF DRINKING WATER COOLERS WITH LEAD-LINED TANKS

SEC. 1462. For purposes of the Consumer Product Safety Act, all drinking water coolers identified by the Administrator on the list under section 1463 as having a lead-lined tank shall be considered to be imminently hazardous consumer products within the meaning of section 12 of such Act (15 U.S.C. 2061). After notice and opportunity for comment, including a public hearing, the Consumer Product Safety Commission shall issue an order requiring the manufacturers and importers of such coolers to repair, replace, or recall and provide a refund for such coolers within 1 year after the enactment of the Lead Contamination Control Act of 1988. For purposes of enforcement, such order shall be treated as an order under section 15(d) of that Act (15 U.S.C. 2064(d)).

[42 U.S.C. 300j–22]

DRINKING WATER COOLERS CONTAINING LEAD

SEC. 1463. (a) PUBLICATION OF LISTS.—The Administrator shall, after notice and opportunity for public comment, identify each brand and model of drinking water cooler which is not lead free, including each brand and model of drinking water cooler which has a lead-lined tank. For purposes of identifying the brand and model of drinking water coolers under this subsection, the Administrator shall use the best information available to the Environ-

mental Protection Agency. Within 100 days after the enactment of this section, the Administrator shall publish a list of each brand and model of drinking water cooler identified under this subsection. Such list shall separately identify each brand and model of cooler which has a lead-lined tank. The Administrator shall continue to gather information regarding lead in drinking water coolers and shall revise and republish the list from time to time as may be appropriate as new information or analysis becomes available regarding lead contamination in drinking water coolers.

(b) PROHIBITION.—No person may sell in interstate commerce, or manufacture for sale in interstate commerce, any drinking water cooler listed under subsection (a) or any other drinking water cooler which is not lead free, including a lead-lined drinking water cooler.

(c) CRIMINAL PENALTY.—Any person who knowingly violates the prohibition contained in subsection (b) shall be imprisoned for not more than 5 years, or fined in accordance with title 18 of the United States Code, or both.

(d) CIVIL PENALTY.—The Administrator may bring a civil action in the appropriate United States District Court (as determined under the provisions of title 28 of the United States Code) to impose a civil penalty on any person who violates subsection (b). In any such action the court may impose on such person a civil penalty of not more than $5,000 ($50,000 in the case of a second or subsequent violation).

[42 U.S.C. 300j–23]

LEAD CONTAMINATION IN SCHOOL DRINKING WATER

SEC. 1464. (a) DISTRIBUTION OF DRINKING WATER COOLER LIST.—Within 100 days after the enactment of this section, the Administrator shall distribute to the States a list of each brand and model of drinking water cooler identified and listed by the Administrator under section 1463(a).

(b) GUIDANCE DOCUMENT AND TESTING PROTOCOL.—The Administrator shall publish a guidance document and a testing protocol to assist schools in determining the source and degree of lead contamination in school drinking water supplies and in remedying such contamination. The guidance document shall include guidelines for sample preservation. The guidance document shall also include guidance to assist States, schools, and the general public in ascertaining the levels of lead contamination in drinking water coolers and in taking appropriate action to reduce or eliminate such contamination. The guidance document shall contain a testing protocol for the identification of drinking water coolers which contribute to lead contamination in drinking water. Such document and protocol may be revised, republished and redistributed as the Administrator deems necessary. The Administrator shall distribute the guidance document and testing protocol to the States within 100 days after the enactment of this section.

(c) DISSEMINATION TO SCHOOLS, ETC.—Each State shall provide for the dissemination to local educational agencies, private nonprofit elementary or secondary schools and to day care centers of the guidance document and testing protocol published under sub-

section (b), together with the list of drinking water coolers published under section 1463(a).

(d) REMEDIAL ACTION PROGRAM.—

(1) TESTING AND REMEDYING LEAD CONTAMINATION.—Within 9 months after the enactment of this section, each State shall establish a program, consistent with this section, to assist local educational agencies in testing for, and remedying, lead contamination in drinking water from coolers and from other sources of lead contamination at schools under the jurisdiction of such agencies.

(2) PUBLIC AVAILABILITY.—A copy of the results of any testing under paragraph (1) shall be available in the administrative offices of the local educational agency for inspection by the public, including teachers, other school personnel, and parents. The local educational agency shall notify parent, teacher, and employee organizations of the availability of such testing results.

(3) COOLERS.—In the case of drinking water coolers, such program shall include measures for the reduction or elimination of lead contamination from those water coolers which are not lead free and which are located in schools. Such measures shall be adequate to ensure that within 15 months after the enactment of this subsection all such water coolers in schools under the jurisdiction of such agencies are repaired, replaced, permanently removed, or rendered inoperable unless the cooler is tested and found (within the limits of testing accuracy) not to contribute lead to drinking water.

[42 U.S.C. 300j–24]

FEDERAL ASSISTANCE FOR STATE PROGRAMS REGARDING LEAD CONTAMINATION IN SCHOOL DRINKING WATER

SEC. 1465. (a) SCHOOL DRINKING WATER PROGRAMS.—The Administrator shall make grants to States to establish and carry out State programs under section 1464 to assist local educational agencies in testing for, and remedying, lead contamination in drinking water from drinking water coolers and from other sources of lead contamination at schools under the jurisdiction of such agencies. Such grants may be used by States to reimburse local educational agencies for expenses incurred after the enactment of this section for such testing and remedial action.

(b) LIMITS.—Each grant under this section shall be used by the State for testing water coolers in accordance with section 1464, for testing for lead contamination in other drinking water supplies under section 1464, or for remedial action under State programs under section 1464. Not more than 5 percent of the grant may be used for program administration.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section not more than $30,000,000 for fiscal year 1989, $30,000,000 for fiscal year 1990, and $30,000,000 for fiscal year 1991.

[42 U.S.C. 300j–25]

FLOWING STREAM

	Percent			Data Set Estimate (n = 395)			Total Systems Estimate (n = 3167)		
Ecoli Trigger	Sensitivity	Required to Monitor	Monitored : Caught	Sensitivity	Required to Monitor	Monitored : Caught	Sensitivity	Required to Monitor	Monitored : Caught
0	100%	100%	14.2	26 / 26	395 / 395	395 : 26	208 / 208	3167 / 3167	3167 : 208
5	100%	85%	11.9	26 / 26	335 / 395	335 : 26	208 / 208	2685 / 3167	2685 : 208
10	100%	78%	10.8	26 / 26	307 / 395	307 : 26	208 / 208	2461 / 3167	2461 : 208
15	100%	72%	10.0	26 / 26	286 / 395	286 : 26	208 / 208	2293 / 3167	2293 : 208
20	96%	69%	9.9	25 / 26	273 / 395	273 : 25	200 / 208	2188 / 3167	2188 : 200
25	92%	65%	9.7	24 / 26	257 / 395	257 : 24	192 / 208	2060 / 3167	2060 : 192
30	92%	63%	9.3	24 / 26	247 / 395	247 : 24	192 / 208	1980 / 3167	1980 : 192
35	92%	61%	9.1	24 / 26	242 / 395	242 : 24	192 / 208	1940 / 3167	1940 : 192
40	92%	59%	8.7	24 / 26	233 / 395	233 : 24	192 / 208	1868 / 3167	1868 : 192
45	88%	56%	8.6	23 / 26	220 / 395	220 : 23	184 / 208	1763 / 3167	1763 : 184
50	85%	54%	8.8	22 / 26	215 / 395	215 : 22	176 / 208	1723 / 3167	1723 : 176
55	85%	53%	8.5	22 / 26	209 / 395	209 : 22	176 / 208	1675 / 3167	1675 : 176
60	85%	51%	8.2	22 / 26	202 / 395	202 : 22	176 / 208	1619 / 3167	1619 : 176
65	85%	50%	8.0	22 / 26	197 / 395	197 : 22	176 / 208	1579 / 3167	1579 : 176
70	85%	48%	7.6	22 / 26	190 / 395	190 : 22	176 / 208	1523 / 3167	1523 : 176
75	81%	47%	7.8	21 / 26	185 / 395	185 : 21	168 / 208	1483 / 3167	1483 : 168
80	81%	45%	7.5	21 / 26	179 / 395	179 : 21	168 / 208	1435 / 3167	1435 : 168
85	81%	44%	7.2	21 / 26	173 / 395	173 : 21	168 / 208	1387 / 3167	1387 : 168
90	81%	41%	6.7	21 / 26	162 / 395	162 : 21	168 / 208	1298 / 3167	1298 : 168
95	81%	40%	6.5	21 / 26	158 / 395	158 : 21	168 / 208	1266 / 3167	1266 : 168
100	81%	38%	6.2	21 / 26	151 / 395	151 : 21	168 / 208	1210 / 3167	1210 : 168
105	81%	37%	6.0	21 / 26	147 / 395	147 : 21	168 / 208	1178 / 3167	1178 : 168
110	81%	36%	5.8	21 / 26	142 / 395	142 : 21	168 / 208	1138 / 3167	1138 : 168
115	77%	35%	5.9	20 / 26	138 / 395	138 : 20	160 / 208	1106 / 3167	1106 : 160
120	73%	34%	6.2	19 / 26	136 / 395	136 : 19	152 / 208	1090 / 3167	1090 : 152
125	69%	33%	6.3	18 / 26	131 / 395	131 : 18	144 / 208	1050 / 3167	1050 : 144
130	69%	33%	6.3	18 / 26	131 / 395	131 : 18	144 / 208	1050 / 3167	1050 : 144
135	69%	32%	6.1	18 / 26	128 / 395	128 : 18	144 / 208	1026 / 3167	1026 : 144
140	69%	31%	5.8	18 / 26	123 / 395	123 : 18	144 / 208	986 / 3167	986 : 144
145	69%	31%	5.7	18 / 26	121 / 395	121 : 18	144 / 208	970 / 3167	970 : 144
150	69%	30%	5.6	18 / 26	119 / 395	119 : 18	144 / 208	954 / 3167	954 : 144
155	62%	29%	6.1	16 / 26	114 / 395	114 : 16	128 / 208	914 / 3167	914 : 128
160	62%	29%	6.1	16 / 26	113 / 395	113 : 16	128 / 208	906 / 3167	906 : 128
165	62%	29%	6.1	16 / 26	113 / 395	113 : 16	128 / 208	906 / 3167	906 : 128
170	62%	28%	6.0	16 / 26	112 / 395	112 : 16	128 / 208	898 / 3167	898 : 128
175	58%	28%	6.3	15 / 26	110 / 395	110 : 15	120 / 208	882 / 3167	882 : 120
180	58%	26%	5.9	15 / 26	104 / 395	104 : 15	120 / 208	834 / 3167	834 : 120
185	58%	26%	5.8	15 / 26	102 / 395	102 : 15	120 / 208	818 / 3167	818 : 120
190	50%	25%	6.6	13 / 26	99 / 395	99 : 13	104 / 208	794 / 3167	794 : 104
195	46%	25%	7.1	12 / 26	97 / 395	97 : 12	96 / 208	778 / 3167	778 : 96
200	46%	25%	7.1	12 / 26	97 / 395	97 : 12	96 / 208	778 / 3167	778 : 96

Note: The "Total Systems Estimate" is based on an anticipated total of 3,167 flowing stream systems. This is an estimate given for illustrative purposes, and the high implied precision should be ignored. These numbers are basically reached by multiplying the "Data Set Estimate" by 3,167 / 395.

LAKE / RESERVOIR

	Percent			Data Set Estimate (n = 457)			Total Systems Estimate (n = 2411)		
Ecoli Trigger	Sensitivity	Required to Monitor	Monitored : Caught	Sensitivity	Required to Monitor	Monitored : Caught	Sensitivity	Required to Monitor	Monitored : Caught
0	100%	100%	49.8	9 / 9	457 / 457	457 : 9	47 / 47	2411 / 2411	2411 : 47
5	89%	55%	30.4	8 / 9	251 / 457	251 : 8	42 / 47	1324 / 2411	1324 : 42
10	89%	41%	22.4	8 / 9	187 / 457	187 : 8	42 / 47	986 / 2411	986 : 42
15	89%	33%	18.0	8 / 9	152 / 457	152 : 8	42 / 47	802 / 2411	802 : 42
20	89%	29%	15.8	8 / 9	134 / 457	134 : 8	42 / 47	707 / 2411	707 : 42
25	67%	24%	17.5	6 / 9	111 / 457	111 : 6	32 / 47	586 / 2411	586 : 32
30	67%	21%	15.3	6 / 9	98 / 457	98 : 6	32 / 47	517 / 2411	517 : 32
35	67%	18%	13.0	6 / 9	84 / 457	84 : 6	32 / 47	444 / 2411	444 : 32
40	67%	17%	12.0	6 / 9	78 / 457	78 : 6	32 / 47	412 / 2411	412 : 32
45	67%	16%	11.2	6 / 9	73 / 457	73 : 6	32 / 47	385 / 2411	385 : 32
50	67%	15%	10.7	6 / 9	70 / 457	70 : 6	32 / 47	370 / 2411	370 : 32
55	67%	14%	9.7	6 / 9	64 / 457	64 : 6	32 / 47	338 / 2411	338 : 32
60	67%	14%	9.3	6 / 9	62 / 457	62 : 6	32 / 47	327 / 2411	327 : 32
65	67%	13%	8.7	6 / 9	58 / 457	58 : 6	32 / 47	306 / 2411	306 : 32
70	67%	12%	8.3	6 / 9	56 / 457	56 : 6	32 / 47	296 / 2411	296 : 32
75	67%	11%	7.7	6 / 9	52 / 457	52 : 6	32 / 47	275 / 2411	275 : 32
80	67%	11%	7.3	6 / 9	50 / 457	50 : 6	32 / 47	264 / 2411	264 : 32
85	56%	10%	8.2	5 / 9	46 / 457	46 : 5	26 / 47	242 / 2411	242 : 26
90	56%	9%	7.6	5 / 9	43 / 457	43 : 5	26 / 47	226 / 2411	226 : 26
95	56%	9%	7.2	5 / 9	41 / 457	41 : 5	26 / 47	216 / 2411	216 : 26
100	56%	9%	7.0	5 / 9	40 / 457	40 : 5	26 / 47	211 / 2411	211 : 26
105	44%	8%	8.5	4 / 9	38 / 457	38 : 4	21 / 47	200 / 2411	200 : 21
110	44%	8%	8.3	4 / 9	37 / 457	37 : 4	21 / 47	195 / 2411	195 : 21
115	44%	8%	8.3	4 / 9	37 / 457	37 : 4	21 / 47	195 / 2411	195 : 21
120	44%	8%	8.0	4 / 9	36 / 457	36 : 4	21 / 47	190 / 2411	190 : 21
125	44%	8%	7.8	4 / 9	35 / 457	35 : 4	21 / 47	185 / 2411	185 : 21
130	44%	7%	7.3	4 / 9	33 / 457	33 : 4	21 / 47	174 / 2411	174 : 21
135	44%	7%	7.0	4 / 9	32 / 457	32 : 4	21 / 47	169 / 2411	169 : 21
140	44%	7%	6.5	4 / 9	30 / 457	30 : 4	21 / 47	158 / 2411	158 : 21
145	44%	6%	6.0	4 / 9	28 / 457	28 : 4	21 / 47	148 / 2411	148 : 21
150	33%	6%	7.7	3 / 9	26 / 457	26 : 3	16 / 47	137 / 2411	137 : 16
155	33%	5%	7.3	3 / 9	25 / 457	25 : 3	16 / 47	132 / 2411	132 : 16
160	33%	5%	6.7	3 / 9	23 / 457	23 : 3	16 / 47	122 / 2411	122 : 16
165	33%	5%	6.0	3 / 9	21 / 457	21 : 3	16 / 47	111 / 2411	111 : 16
170	33%	4%	5.0	3 / 9	18 / 457	18 : 3	16 / 47	95 / 2411	95 : 16
175	33%	4%	5.0	3 / 9	18 / 457	18 : 3	16 / 47	95 / 2411	95 : 16
180	33%	4%	4.3	3 / 9	16 / 457	16 : 3	16 / 47	85 / 2411	85 : 16
185	33%	3%	3.7	3 / 9	14 / 457	14 : 3	16 / 47	74 / 2411	74 : 16
190	22%	3%	5.0	2 / 9	12 / 457	12 : 2	11 / 47	64 / 2411	64 : 11
195	22%	2%	4.5	2 / 9	11 / 457	11 : 2	11 / 47	58 / 2411	58 : 11
200	22%	2%	4.5	2 / 9	11 / 457	11 : 2	11 / 47	58 / 2411	58 : 11

Note: The "Total Systems Estimate" is based on an anticipated total of 2,411 lake/reservoir systems. This is an estimate given for illustrative purposes, and the high implied precision should be ignored. These numbers are basically reached by multiplying the "Data Set Estimate" by 2,411 / 457.

OGWDW Review of Small System Monitoring Requirements Under the Long Term 2 Enhanced Surface Water Treatment Rule

Under the final Long Term 2 Enhanced Surface Water Treatment Rule (LT2), the State may approve an alternative to the small water system *E. coli* trigger levels of LT2 (source water mean *E. coli* levels less than 10 *E. coli*/100ml for lake/reservoir sources or less than 50 *E. coli*/100ml for flowing stream sources) if the alternative trigger levels provide a more accurate identification of whether the system will exceed 0.075 *Cryptosporidium (Crypto)* oocysts per liter. OGWDW analyzed the impacts of using alternative *E. coli* trigger levels and determined that alternative levels would more accurately identify systems required to meet the treatment technique requirements of LT2 and prevent a large number of small systems from incurring *Crypto* monitoring costs. OGWDW has reviewed the *E. coli* and *Crypto* source water data from 850 large systems that are already implementing LT2. Our analysis indicates that alternative *E. coli* trigger levels of 100 *E. coli*/100ml for both lake/reservoir and flowing streams provide more accurate identification of systems requiring *Crypto* monitoring and compliance with the LT2 treatment technique requirements. With the alternative trigger levels, we still expect that most systems with high *Crypto* levels in their source water would be required to monitor for *Crypto* and to meet the treatment technique requirements of LT2, if necessary.

Specifically, the alternative trigger levels are estimated to cause roughly a quarter of small systems (1,400 of 5,600) to monitor for *Crypto*, which we estimate would ultimately result in about 194 systems being required to meet the treatment technique requirements of LT2. The current trigger levels are estimated to cause nearly half of small systems (about 2,700 of 5,600) to monitor for *Crypto*, which we estimate would ultimately result in about 218 systems being required to meet the treatment technique requirements of LT2.

We estimate that 24 systems that would have been required to monitor for *Crypto* and then required to meet the treatment requirements of LT2 under the current LT2 triggers will not be required to meet the treatment technique requirements using the alternative levels. We estimate the alternative levels could exclude 1,300 systems from monitoring for *Crypto*, which translates to approximately $17 million in monitoring cost savings. While there is uncertainty with the estimates, we also compared the accuracy at different levels of alternative trigger and determined that the accuracy would diminish for trigger levels above 100 *E. coli* per 100ml.

If the State chooses to allow the alternate trigger levels suggested in this guidance, documentation of that decision should be maintained by the Region. If the State proposes to approve other alternate trigger levels, that proposal must be described in the State's primacy application under 40 CFR 142.16 (n) (1). For States that choose to allow an alternative trigger level, the LT2 rule requires that the State notify the systems in writing and include the basis for

the State's determination. In calculating the annual mean *E.coli* level for comparison with the trigger levels, individual *E.coli* results (every two weeks) should not be rounded and significant figures should be maintained in calculating the annual mean.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB - 4 2010

MEMORANDUM

OFFICE OF WATER

SUBJECT: OGWDW Review of Small System Monitoring Requirements Under the Long Term 2 Enhanced Surface Water Treatment Rule

FROM: Cynthia C. Dougherty, Director
Office of Ground Water and Drinking Water

TO: Water Division Directors

In the preamble to the final Long Term 2 Enhanced Surface Water Treatment Rule (LT2), the Agency stated that it would issue guidance to States on alternate indicators and *E.coli* trigger levels used to determine *Cryptosporidium* (*Crypto*) monitoring requirements under LT2 for small water systems (serving fewer than 10,000 people), if warranted, based on preceding LT2 monitoring by large public water systems. OGWDW has since conducted an evaluation of LT2 monitoring data and the *E. coli* trigger levels. Based on that evaluation, we are providing the attached guidance on alternative *E.coli* trigger levels which may result in the exclusion of many small systems from *Crypto* monitoring while providing public health protection. The alternative trigger levels suggested in the attached document are intended as guidance for States. States may choose to not allow these alternative levels to be used or may propose other alternative levels as described in LT2.

If you have any questions, you may contact me at (202) 564-3750, or have your staff contact Michael Finn at (202) 564-5261.

Attachment
Cc: Regional Branch Chiefs
Jim Taft, Association of State Drinking Water Administrators

The Texas Commission on Environmental Quality (TCEQ, agency, or commission) adopts amendments to §§290.38, 290.39, 290.41 - 290.47, 290.110, 290.111 and 290.116.

Sections 290.38, 290.41, 290.45, 290.47, 290.111, and 290.116 are adopted *without changes* to the proposed text as published in the February 6, 2015, issue of the *Texas Register* (40 TexReg 518) and, therefore, will not be republished. Sections 290.39, 290.42 - 290.44, 290.46, and 290.110 are adopted *with changes* to the proposed text.

Background and Summary of the Factual Basis for the Adopted Rules

This rulemaking amends Chapter 290 for consistency with Texas Water Code (TWC), §12.013 and Chapter 13; for consistency with existing federal regulations and guidance; and, to provide clarification on existing state rules. The adopted rulemaking addresses: federal changes to the lead and *Escherichia Coli* (*E. coli*) thresholds; desalination; chloramination; plan review submittal process; enforceability of exceptions; and other drinking water matters.

State Statutes

The amendment to Chapter 290 is necessary to reflect changes to TWC, §12.013 and Chapter 13, made during the 83rd Texas Legislature, 2013, in §2.96 of House Bill (HB) 1600 and §§1, 4, 95, and 96 of Senate Bill (SB) 567, transferring the utilities and rates

program to the Public Utility Commission of Texas (PUC), effective September 1, 2014. The majority of the rule changes required to implement HB 1600 and SB 567 will occur under Rule Project Number 2013-057-291-OW. This rulemaking, Rule Project Number 2013-046-290-OW, removes a requirement for the submission of Certificate of Public Convenience and Necessity (CCN) information in existing §290.39(j)(3) as the TCEQ no longer has jurisdiction over CCNs.

Federal Regulations

Reduction of Lead in Drinking Water Act -- The federal Reduction of Lead in Drinking Water Act reduced the allowed lead content of pipes, pipe fittings, and plumbing fittings and fixtures from 8.0% to 0.25%, effective January 4, 2014. The adopted amendments within Chapter 290 address this federal revision.

E. coli Threshold -- The United States Environmental Protection Agency's (EPA's) Long Term 2 Enhanced Surface Water Treatment (LT2) rule required public water systems (PWSs) with surface water or groundwater under the direct influence of surface water sources to monitor for *Cryptosporidium*. The EPA gave primacy states the discretion to allow small PWSs, those with a population less than 10,000, to monitor for *E. coli* instead. Subsequent federal guidance established an *E. coli* trigger level of 100 *E. coli*/100 milliliters, no matter the source of water. The adopted amendments within Chapter 290 are consistent with this federal guidance.

Additional Staff Recommendations -- Staff-initiated rule changes adopted within Chapter 290 address: the process for TCEQ's approval of desalination technology; chloramine disinfection criteria; modification of the plan review submittal process; enforceability of exceptions; clarification for well construction review process; alternative appurtenances for overflow devices; water storage; water distribution crossings; the removal of three Appendices in existing §290.47; and, the related establishment of three agency forms.

Process for Approving Desalination Technology -- The adopted rule allows the use of desalination technologies for chemical removal without submitting an exception request, which is required when proposing the use of any technology that does not have design, operation, maintenance, monitoring, and reporting standards within Chapter 290. These technologies, which are not mentioned in the rules, are considered innovative/alternate treatment technologies and require site-specific review and approval as an exception to the rule.

The use of reverse osmosis membranes and other desalination technologies for water treatment has been in use for decades. Over 15,000 desalination plants were in use worldwide in 2002. Given this length of time in production and the widespread use of desalination, the commission adopts amendments with design, operation, maintenance,

monitoring, and reporting standards for desalination based upon recommendations from the executive director's staff and input from the regulated community. Historically, desalination has been approved on a case-by-case basis through the executive director's exception process under existing §290.39(l) and §290.42(g). Desalination has become a common technology used by PWSs; therefore, the TCEQ's practices for approving these technologies have become well developed. By placing the specific requirements for desalination through reverse osmosis and nanofiltration within Chapter 290, a PWS can implement the technology without the added time of requesting and receiving an exception before submitting the plans and specifications for staffs' review if the treatment is not for pathogen control or desalination of seawater.

PWSs can use desalination to remove salts from water that is high in total dissolved solids, making the water more palatable, or to comply with the maximum contaminant level (MCL) for a regulated inorganic chemical like arsenic or fluoride. Under the on-going drought conditions, there has been increased interest in using desalination because of the degradation of potential source water quality. Desalination can be accomplished through reverse osmosis or nanofiltration technology.

On May 9, 2014, and June 3, 2014, the executive director's staff met with a group of interested stakeholders including representatives of PWSs, government agencies, design engineers, membrane vendors, and other interested participants. The purpose of the

stakeholder process was to solicit feedback for proposed rules that would allow the approval of desalination technology for chemical removal through reverse osmosis and nanofiltration without obtaining an exception. With the exclusion of treatment for pathogen control and the treatment of seawater (both of which have unique challenges), the stakeholder process worked to develop a path for PWSs and their design engineers to use rule-based criteria to demonstrate that the desalination process would be effective, reliable and safe. With that goal, the executive director's staff presented a discussion outline that included plant design, engineering report, capacity requirements, operator licensing, operating records and reports, and instrument calibration. Among the stakeholders, there was a consensus that the modeling tools of the membrane vendor were sufficiently developed to allow these models as a basis for configuring a reverse osmosis or nanofiltration system. The TCEQ has an existing process for allowing these modeling tools for the design of brackish groundwater treatment systems, but not for the treatment of any primary contaminants. In an effort to allow the most flexibility to the design engineer, many of the stakeholders were resistant to design rules that prescribed defined trigger limits for maintenance/cleaning activities and for when (and how frequently) performance monitoring data was collected (such as conductivity). The preferred process was to allow the design engineer to present the engineering arguments that would support these decisions in an engineering report and then to validate some (or most) of these decisions in a second report after the plant is placed in service. Once a general agreement for the engineering submittal process was

completed, the stakeholder discussion continued to address general criteria for plant operations, operator licensing, and capacity. The completed stakeholder process provided the executive director's staff with sufficient feedback to develop proposed rules for desalination through reverse osmosis or nanofiltration that meet the concerns of the regulated community while being protective of public health.

The design requirements adopted in this rulemaking related to desalination through reverse osmosis or nanofiltration include allowable pretreatment, post-treatment for removal of dissolved gases and re-mineralization, pipes and pipe galleries, conductivity or total dissolved solids monitoring, chemical containment, flow metering for dose calculation, sample taps for monitoring and dosing correctly, and technology-specific flux determination monitoring facilities. The adopted operational requirements relate to desalination through reverse osmosis or nanofiltration include: operator licensing; periodic maintenance cleaning; set points for when maintenance is required; and monitoring, reporting, and recordkeeping.

Chloramine Disinfection Criteria -- The adopted rule allows the use of chloramines in most cases without applying for and being granted an exception. PWSs use chloramines as a compliance option for MCLs for trihalomethanes and haloacetic acids and to ensure a long-lasting disinfectant residual. Design, operation, maintenance, and recordkeeping requirements have been added to the rule to no longer require that a PWS obtain an

exception for any unit process. The design requirements related to chloramination include pump and tank sizing, chemical containment, flow metering for dose calculation, sample taps for monitoring and dosing correctly, and the ability to drain the tanks as needed. The operational requirements for chloramination include notification, monitoring, recordkeeping, maintenance, and the ability to respond to nitrification, which can occur when nitrifying bacteria uses free ammonia as a food source, causing the loss of residual disinfectant and the potential formation of undesirable nitrite and nitrate.

Modification of the Plan Review Submittal Process -- The amended rule provides a more efficient submittal process and clarifies what constitutes a "significant change." Under the federal Safe Drinking Water Act's special primacy requirements (40 Code of Federal Regulations Chapter 142), the TCEQ is required to review all plans for PWSs, but the EPA grants primacy agencies flexibility regarding the design and operation requirements as long as those requirements are protective of public health. Existing §290.39 instructs PWSs to first notify the TCEQ of significant changes and then submit plans and specifications upon the TCEQ's request. The commission amends §290.39 by requiring PWSs to submit plans and specifications for significant changes to reduce confusion in the regulated community and to reduce staffs' processing time currently spent issuing requests for the submission of plans and specifications. The commission further amends §290.39 by simplifying the criteria for a change to be considered as

"significant" under the rule.

Enforceability of Exceptions -- Under existing §290.39(l)(2), if a PWS does not meet the requirements of a granted exception, the exception can be revoked through a time-consuming and cumbersome process, in which a TCEQ field investigator who finds a PWS violating the exception's conditions must contact the agency's Central Office to request revocation of the exception, then wait for its revocation before issuing a violation. To streamline this process and ensure that PWSs follow the conditions established in the granted exception, the amended rule clarifies that failing to follow the conditions of a granted exception is a violation and allows the TCEQ's field investigators to directly issue violations for failure to follow an exception's conditions.

Clarification for Well Construction Review Process -- The amended rule clarifies PWS well construction conditions by including the requirements from the American Water Works Association (AWWA) standards into the rule so that PWSs will have to consult only one source for requirements on well design; specifically, cementing requirements and annular space requirements for PWS wells. The existing rule refers to AWWA standards but does not include them.

Alternative Appurtenances for Overflow Devices -- The amended rule allows the use of alternative appurtenances, which enables PWSs to use these designs without requesting

an exception from the TCEQ, saving time for the PWS and TCEQ's staff.

Water Storage -- The amended rule allows PWSs more flexibility when designing water storage tanks because it clarifies that tanks of other materials approved by the AWWA are allowed.

Water Distribution Crossings -- The amended rule aligns the TCEQ's water and wastewater rules for water distribution pipe crossings and helps PWSs protect public health by ensuring pipe integrity when wastewater lines and water lines are near each other.

Appendices -- The amended rule removes three figures, or appendices, in existing §290.47. Based upon the revision of federal law regarding the lead content in pipes, fittings, and fixtures, the commission amends Figure: 30 TAC §290.47(b). During its amendment of Figure: 30 TAC §290.47(b), the commission revisited the other figures in existing §290.47 and adopts the removal of Figures: 30 TAC §290.47(c), (d), and (f).

Section by Section Discussion

The commission adopts administrative changes throughout the adopted rules to correct typographical and syntax errors; maintain alphanumeric order; update citations, cross-references, and terminology; and, conform with *Texas Register* requirements.

State Statutes -- The commission amends §290.39(j)(3) by removing the requirement to submit a CCN to the commission with changes or additions to a PWS since the commission no longer has jurisdiction over CCNs.

Federal Regulations

Reduction of Lead in Drinking Water Act -- The federal requirement for the lead content of pipes, pipe fittings, and plumbing fittings and fixtures was reduced from 8.0% to 0.25%, effective January 4, 2014, therefore the commission amends §§290.41(c)(3)(B), 290.44(b)(1), 290.46(i), and Figure: 30 TAC §290.47(b) by reducing the allowable lead content from 8.0% to 0.25% to be in compliance with the Reduction of Lead in Drinking Water Act. The commission also adopts §290.44(b)(3) and (3)(A) and (B) to incorporate the federal exemptions to be consistent with the federal Reduction of Lead in Drinking Water Act.

E. coli Threshold -- The commission amends §290.111(b)(3)(B)(i) to change the average acceptable *E. coli* level at a surface water plant located on a river from 50 to 100 *E. coli*/100 milliliters and also amends §290.111(b)(3)(B)(ii) to change the average acceptable *E. coli* level at a surface water plant located on a lake from 10 to 100 *E. coli*/100 milliliters. The EPA's LT2 rule required PWSs with surface water or groundwater under the direct influence of surface water sources to monitor

for *Cryptosporidium*. The EPA gave states the discretion to allow small PWSs, those with a population less than 10,000, to monitor for *E. coli* instead. Subsequent federal guidance established that the appropriate *E. coli* trigger level is 100 *E. coli*/100 milliliters, no matter the source of water. The adopted changes to §290.111(b)(3)(B)(i) and (ii) align the TCEQ rule with EPA's guidance. The commission amends §290.111(b)(6) to identify which entity approves or accredits a laboratory for consistency with the existing Chapter 290 requirements and to reduce confusion in the regulated community. The commission also amends §290.111(b)(6)(B) to remove an outdated reference as the TCEQ no longer certifies laboratories.

Additional Staff Recommendations

Process for Approving Desalination Technology -- The adopted rule allows the use of desalination technologies without an exception request, which is required when approving the use of any technology that does not have design, maintenance, monitoring, and reporting standards within Chapter 290. Technologies that are not mentioned in the rule are considered as innovative/alternate treatment technologies and require specific review and approval as an exception to the rule. Desalination can be accomplished through reverse osmosis or nanofiltration technology. The commission amends §290.38 to allow the use of reverse osmosis and nanofiltration technologies for chemical removal without an exception, but to still require an exception for pathogen treatment. An exception which includes a pilot study, or data from an alternative site, is

required by existing §290.42(g) for PWSs proposing the use of innovative/alternate treatment. Since January 2012, PWSs have been allowed to submit computer models instead of a pilot study or alternative site information for reverse osmosis or nanofiltration membrane systems. Also, the exception and plan review processes have been performed concurrently when plans and computer models have been submitted. The commission formalizes this process by removing reverse osmosis and nanofiltration membrane systems from the technologies that are considered innovative/alternate treatment (when proposed for treatment other than pathogens); thus, an exception is no longer required if the reverse osmosis or nanofiltration treatment is used for any treatment other than pathogen removal. To facilitate these changes, the adopted rule introduces new terminology in the rule language or, in some cases, changes the meaning of existing definitions in the rule. To assure that the terminology referenced in the rule change (for PWSs using reverse osmosis or nanofiltration) is clearly understood by all users of the rule, new definitions are added and several existing definitions are amended in §290.38. The commission adopts §290.38(10), (30), (57), (79), and (82), defining "Baseline performance," "Flux," "Pass," "Stage," and "Vessel," respectively. For the definition of "Flux" in adopted §290.38(30), the language is taken from the EPA's *Membrane Filtration Guidance Manual*. For the definition of "Stage" in §290.38(79), the adopted language is from the AWWA's *Manual of Water Supply Practices M46*. The other definitions adopted by the commission in §290.38(10), (57), and (82) are consistent with the intent of the adopted rule and based on standard

operation of these technologies. The commission amends existing §290.38(34), which defines "Innovative/alternate treatment," by deleting the examples of treatment types that were considered innovative/alternate treatment prior to this rulemaking. In addition, the adopted change in the definition of "Innovative/alternate treatment" will help prevent the misinterpretation of treatment types that would be innovative/alternate treatment in some circumstances.

The commission adopts §290.39(e)(6) and (7) as part of a staff-initiated change to allow use of reverse osmosis and nanofiltration technologies for desalination without the need for a granted exception. Specifically, these adopted changes require planning materials in an engineering report and an addendum to be submitted to and approved by the executive director prior to the construction and use of a reverse osmosis or nanofiltration membrane system. The desalination technology's engineering report requirements are specified in adopted §290.39(e)(6) and its subdivisions. The engineering report must provide a clear source description, reverse osmosis or nanofiltration modeling analysis (or one of the accepted alternatives), proof of conformance with appropriate NSF International (NSF) standards, blending calculations, analysis of disinfection byproduct potential, and process control details. When the desalination facility is placed into service, the design engineer must prepare an addendum to the engineering report to document the system's performance. The addendum's requirements are specified in adopted §290.39(e)(7) and its subdivisions.

The addendum shall include initial baseline performance (for net driving pressure, normalized permeate flow, and salt rejection), set points for membrane cleaning or replacement, verification of the design model's accuracy, verification of plant capacity, and a complete physical and chemical analysis of the raw and treated water. Some of these additional engineering report requirements provide engineering criteria and performance validation data that were previously required by the pilot study requirements in existing §290.42(g) for innovative/alternate treatment. The adopted rule in §290.39(e)(6) formalizes the option to use industry-accepted manufacturer's modeling tools (and submit the modeling results in the engineering report) and then requires validation data for the full-scale treatment process after the start-up of the facility (and requires the PWS to report that data as an addendum to the previously submitted engineering report required by adopted §290.39(e)(7)). This adopted rule allows the design engineer to use pilot testing in cases where the pilot process would be beneficial. In response to comment, the commission revised §290.39(j)(1) by moving proposed §290.39(j)(1)(E) and revising it as adopted §290.39(j)(4)(A) - (E), and relettering proposed §290.39(j)(1)(F) as adopted §290.39(j)(1)(E). Adopted §290.39(j)(4)(A) - (E) requires written notification of membrane replacement or change of membrane modules instead of requiring plan submittal in all cases as proposed. Under the adopted rule, a new plan submittal and baseline performance data will most likely need to be provided any time the manufacture or model is changed, but may not be required in all circumstances. Because there may be some situations where a new

plan submittal and/or baseline data may not be necessary, the adopted rule requires notification and the PWS will be notified if a new plan submittal and/or baseline performance data is required.

The commission adopts §290.42(b)(2)(D) and (9) and its subdivisions to allow the use of reverse osmosis and nanofiltration technologies for treatment by providing acceptable design standards. Adopted §290.42(b)(2)(D) and (9) and its subdivisions allow a PWS to implement the technology without having to request and receive an exception before submitting the plans and specifications for the executive director's review. Because adopted §290.42(b)(2)(D) defines specific design parameters for the approval of groundwater systems using reverse osmosis or nanofiltration, the use of these technologies will no longer be considered innovative/alternate treatment. To complement the addition of reverse osmosis and nanofiltration design requirements in §290.42(b)(9) and its subdivisions, the commission adopts §290.42(b)(9)(C)(i) to allow a design process based on the industry-accepted modeling tools of the membrane's manufacturer to demonstrate the efficacy of the reverse osmosis or nanofiltration membrane for groundwater treatment. Existing §290.42(b)(2) states that groundwater treatment facilities shall be provided in conformance with established and proven methods. To expand the list of established and proven options, the commission adopts §290.42(b)(2)(D), which directs PWSs proposing to use reverse osmosis or nanofiltration for groundwater treatment to the adopted design requirements in

§290.42(b)(9) and its subdivisions. Adopted §290.42(b)(9) and its subdivisions replace the design information that was previously submitted to the TCEQ under the exception requirements in existing §290.42(g). Specifically, adopted §290.42(b)(9) and its subdivisions includes a rule for a design based on an approved method of production validation (modeling, pilot, alternate site, or allowable manufacturer parameters), acceptable methods of pretreatment, post-treatment for corrosion control and re-mineralization, pipes and pipe galleries, chemical storage, cross connection protection, and process monitoring equipment. In response to comment, the commission revised §290.42(b)(9)(G) to specify feed and permeate conductivity monitoring on each individual membrane unit at a nanofiltration or reverse osmosis plant because the executive director's staff inadvertently used an undefined term of "facility" instead of the defined term of "membrane unit." In response to comment, the commission adopts §290.42(c)(8) to address an inadvertent oversight, thus including the ability for a PWS treating groundwater under the direct influence of surface water to use reverse osmosis or nanofiltration design requirements in the same circumstances as surface water systems. The commission adopts §290.42(d)(17) to allow PWSs treating surface water or groundwater under the direct influence of surface water to use the reverse osmosis and nanofiltration design requirements as outlined in adopted §290.42(b)(9) and its subdivisions for groundwater systems, which would be applicable only when this technology is proposed for chemical removal treatment, not pathogen treatment. This adopted change will extend the benefits of the rule for the use of reverse osmosis and

nanofiltration technologies to PWSs treating surface water or groundwater under the direct influence of surface water as long as the required microbiological control is achieved through other approved treatments and technologies. The commission amends §290.42(j) to correct the references to American National Standards Institute (ANSI) NSF Standards 60 and 61 as the terms "direct additives" and "indirect additives" are no longer used in the ANSI/NSF Standards 60 and 61 descriptions. For ANSI/NSF Standard 60, "direct additives" has changed to "Drinking Water Treatment Chemicals." For ANSI/NSF Standard 61, "indirect additives" has changed to "Drinking Water System Components." The commission amends §290.42(l) to ensure that the plant operations manual includes additional information when reverse osmosis or nanofiltration technologies are used. The additional information in the plant operations manual must include the system's configuration, baseline performance data, and any set point for membrane cleaning or replacement. The additional information is required so that operators can know: 1) when the membrane systems should be cleaned; and 2) what the baseline performance of the membrane was when new. By comparing present day performance with baseline performance, the operators can see if: the cleaning is working; the membranes are still performing adequately; or, whether it is time for the membrane's replacement. Failing membranes should be replaced because they will not provide the quantity or quality of the water expected by the PWS's customers.

The commission amends §290.45(a)(6) and its subdivisions to ensure that the

production capacity of PWSs using reverse osmosis or nanofiltration membrane systems is calculated properly. The calculated capacity must consider any water losses associated with the membrane processes, such as concentrate and permeate used for cleaning, when calculating the capacity of the treatment units.

The commission adopts §290.46(e)(2)(D) to require operators who operate a reverse osmosis or nanofiltration membrane system to obtain reverse osmosis or nanofiltration membrane specific training by successfully completing at least one executive director-approved course or one executive director-approved training event. The existing operator licensing rules do not provide course work to address the unique operating processes at a membrane treatment plant. In response to comment, the commission amends §290.46(e)(2)(D) to allow operators to complete the training by August 31, 2016. This will allow adequate time for operators to take a training class if they have not previously taken one. Additionally, the commission will consider courses an operator has previously taken which meet the executive director's criteria for approval. The TCEQ's criteria for approving training courses or events will be developed through a stakeholder process. The commission amends §290.46(e)(5)(C) and (D), and (6)(A) and (B) to update the course titles to be consistent with existing 30 TAC §30.390(f). The commission amends §290.46(f)(3)(A)(vi) to ensure that PWSs are maintaining records of each reverse osmosis or nanofiltration membrane cleaning event for at least two years. These records are necessary as evidence to demonstrate that the membrane

facility is operated in accordance with the conditions of approval. Typically, any conditions of approval for the use of reverse osmosis or nanofiltration desalination technologies will require a treatment facility to clean or replace membranes based on a specified limit for salt passage, pressure differential, or another similar parameter to prevent irreparable damage to the membrane equipment. The commission adopts §290.46(f)(3)(B)(x) to ensure that PWSs using reverse osmosis or nanofiltration membranes maintain records of treatment effectiveness monitoring for at least three years. These records are necessary as evidence to demonstrate that the membrane facility is operated in accordance with the conditions of approval. The conditions of approval, based on the commission's review of the engineering report and supplemental addendums, will require any membrane treatment facility to make operational adjustments based on any critical change in performance in the membrane equipment. The adopted requirement in §290.46(f)(3)(B)(x) to keep these records for at least three years should help existing and new personnel at the PWSs better understand the required frequency of and benefits to these operational adjustments. In response to comment, the commission revised §290.46(f)(3)(B)(x) to specify feed and permeate conductivity monitoring on each individual membrane unit at a reverse osmosis or nanofiltration plant because the proposed rule did not specify the location for the conductivity results that are to be maintained for three years. Also in response to comment, the commission revised §290.46(f)(3)(B)(x) to change the phrase "transmembrane pressure differential" to "pressure differential across a membrane

vessel" as the term "transmembrane pressure" is generally not associated with reverse osmosis and nanofiltration membranes. The commission adopts §290.46(m)(7) to ensure that PWSs using reverse osmosis or nanofiltration membranes maintain the good working condition of the system's facilities and equipment. This adopted rule limits reverse osmosis or nanofiltration plant operations to the allowable operating conditions of the membrane manufacturer and requires membrane cleaning or replacement based on predetermined set points for changes in salt passage, pressure differential, and/or normalized permeate flow to prevent irreparable damage to the membrane equipment. The commission amends §290.46(s)(1) to ensure that flow-measuring devices and rate-of-flow controllers, as required by §290.42(b)(9)(J) for reverse osmosis or nanofiltration membrane systems, are properly calibrated at least once every 12 months for PWSs using reverse osmosis or nanofiltration. This adopted rule helps a PWS to know that the instruments used for flow measurement are accurate. The commission adopts §290.46(s)(2)(G) to ensure that conductivity (or total dissolved solids) monitors and pressure instruments are properly calibrated for PWSs using reverse osmosis or nanofiltration. This adopted rule helps a PWS and the TCEQ to know that the instruments used to determine when maintenance or corrective measures are required are accurate. The commission adopts §290.46(s)(2)(H) to ensure that temperature-measuring devices are properly calibrated for PWSs using reverse osmosis or nanofiltration and also to correct a typographical error. This adopted rule helps a PWS know that the instruments used to determine when maintenance or corrective

measures are required are accurate. By placing the requirements for desalination through reverse osmosis and nanofiltration within Chapter 290, a PWS - including those impacted by on-going drought conditions - can implement this technology without undergoing the added time and expense associated with requesting and receiving an exception before submitting the plans and specifications, including the required engineering report, for review by the executive director's staff.

Chloramine Disinfection Criteria -- The use of chloramines has become a common practice at PWSs. The TCEQ's existing exception process prescribes the required public notice, sampling frequency, equipment requirements, nitrification action plans, records retention, chemical injection locations, chemical feed and storage requirements for chloraminating PWSs. The commission amends Chapter 290 to allow the use of chloramines without requiring a site-specific exception review to reduce the time involved for both the regulated community and TCEQ staff by moving the design, operation, maintenance, monitoring, and documentation criteria currently in the exception approval letters to the rules to simplify the process for the TCEQ and PWSs. The commission adopts §290.39(e)(8) to require the submission of calculations for sizing feed pumps and chemical storage tanks along with the submission of engineering plans to support the approval of chloramination without an exception request. Under existing rules, the chloramine chemical pump and tank sizing are reviewed by the executive director's staff using the site-specific exception process to assure the chemical

facilities can deliver and store the amount of chloramine chemical needed for effective dosing. By placing this requirement in the rule, this adopted change will allow staff to review this information during the review of the submitted plans and specifications and will also reduce confusion in the regulated community regarding when to submit the chemical pump and tank sizing information. Having this information readily available will also speed up TCEQ's review and prevent delays encountered while awaiting the submission of this required information under existing rules.

The commission amends §290.42(e)(3)(B) to allow for manual control instead of automatic proportioning of disinfectant dosage at all treatment plants if the flow varies less than 50% above or below the average flow. The existing rule only allows manual controls at PWS using surface water or groundwater under the direct influence of surface water. The change is to ensure that disinfectant chemicals are dosed properly at all plants with automatically variable water flow rates or with highly variable flow rates, regardless of water source. The commission amends §290.42(e)(3)(D) to simplify the language by replacing the phrase "as well as" with the word "and" to make the rule easier to understand. The commission amends §290.42(e)(3)(G) to remove the requirement that all PWSs with chloramine residual in their drinking water must have a granted exception. By adding design and other requirements for chloramination to the adopted rule, an exception will no longer be needed for most situations, thus saving the regulated community and TCEQ staff time. However, under amended §290.42(e)(3)(G),

if chloraminated and chlorinated water will be blended, an exception request will be required to be submitted and a case-by-case review will be performed by the executive director's staff as chloramination is only successful when the ratio of chlorine and ammonia is carefully controlled. Improper mixing can cause a low disinfectant residual as well as unpleasant tasting and smelling water. An exception is needed when water containing chloramines will be blended with water containing free chlorine so that the executive director can review the specific design components and determine site-specific conditions based upon staffs' review. The commission adopts §290.42(e)(7) and its subdivisions to add the minimum chloramine design requirements to Chapter 290, thus making a chloramine exception unnecessary. Design requirements regarding the order of chemical addition, mixing of chloramination chemicals, feed and storage of chemicals, laboratory equipment, and sampling taps are adopted in this rulemaking to incorporate the standard policies and procedures that have been required on a case-by-case basis for past exception reviews.

In its rulemaking proposal, the TCEQ requested public comment on the way PWSs should inject the chloramine chemicals. The proposed rule had the following requirements: inject the first chemical, mix, and then inject the second chemical and mix. The best practice for controlling the chlorine-to-ammonia ratio was stated as measuring the first chemical residual before adding the second chemical, because the second chemical dose can be based on the actual concentration of the first chemical,

including loss due to demand, instead of dosing based on the calculated dose. In keeping with best practices, the commission proposed in §290.42(e)(7)(C) to require a sample tap before and after each chemical injection point. By monitoring upstream of any injection, between the first and second chemical injections, and also downstream of the second chemical injection, operators will be able to know how much of the first chemical is needed based on the first sampling point, how much of the second chemical is needed based on the residual found in the water of the first chemical, and finally, after the last point, the disinfecting species - monochloramine - can be monitored to assure that the ratio and amount of chemicals added are appropriate. The TCEQ proposed these sampling taps because improper chloramine dosing can cause taste and odor issues, low disinfectant residual, and potentially nitrification. Furthermore, because low disinfectant and nitrification can lead to acute health risks, the TCEQ proposed design requirements in §290.42(e)(7)(B) and (C) to allow the most accurate dosing of chemicals. In its proposal, the commission sought public comment on the effect this proposed design criteria would have on PWSs that are currently adding chloramines. In response to TCEQ's call for comment, written comments were received and have been addressed in the Response to Comments section of this rulemaking. In response to comment, the commission revised §290.42(e)(7)(C) and its subdivisions to apply the need for sample taps between chloramine injection points to installations submitted for plan approval starting January 1, 2016. The TCEQ recognizes that after January 1, 2016, some installations may need to locate chlorine injection points closer to the subsequent

ammonia injection point to control disinfection byproduct formation, leaving no room for the tap between the two injectors; however, a tap must be provided before any chemical injection and after the second chemical is injected.

The commission amends §290.42(f) by removing the word "surface" to clarify that the chemical feed and storage facility rule applies to all PWSs. When initially adopted, only surface water systems required complex chemical feed and storage facilities; however, these design standards have been applied on a case-by-case basis through the TCEQ's exception process for innovative/alternate treatment involving chemical addition regardless of the water source, including chloramination and reverse osmosis. Because the adopted rulemaking incorporates requirements for chloramination and reverse osmosis by rule, it is necessary to add the requirements of §290.42(f) to the rule so that groundwater and purchased water systems will also be designed to handle, store, and feed chemicals properly. Stakeholders also supported this adopted change. One impact of the addition of chemical storage and feed requirements relates to the use of day tanks. The commission amends §290.42(f)(1)(B) to specify that the day tanks in the adopted rule are only required for bulk storage tanks. A day tank holds the volume of chemical used in one typical day and the installation of a day tank can prevent the possibility of severely overfeeding the chemical from bulk storage. Small chemical storage tanks, such as a 55-gallon drum, would require a very small day tank if the rule were applied to all chemical storage. A very small day tank is impractical. The adopted rule avoids

confusion and the unnecessary installment of day tanks. The commission amends §290.42(f)(1)(E)(ii)(V) to exempt 55-gallon hypochlorite solution containers from spill containment. The existing rule allows 35-gallon hypochlorite solution containers to be installed without spill containment. The existing rule was intended to allow the exemption to non-permanent containers that are replaced instead of refilled, unlike permanent chemical storage facilities. Currently, 55-gallon non-permanent containers are commonly used, thus the adopted rule expands the volume allowed to the size of a commonly used, non-permanent chemical storage container.

Nitrification is a biological process that can occur in distribution pipes and storage tanks, causing a loss of residual and regrowth of bacteria. Nitrification of the PWS's distribution system is also a concern as it can raise nitrite and nitrate to levels that have been shown to potentially harm infants. In the past, some PWSs have had nitrifying organisms colonize a storage tank and have needed to drain the tank to fight nitrification. When a nitrification event occurs, PWSs should be able to quickly drain water storage tanks with high levels of nitrifying organisms, nitrite, or nitrate levels; however, some storage tanks were not designed for efficient draining, sometimes taking several days to drain, even with the use of pumps and other equipment. Therefore, the commission proposed amending §290.43(c)(7) by adding a requirement that storage tanks containing chloraminated water shall be designed to drain "efficiently" as a means to control nitrification. In response to comment, the commission revised §290.43(c)(7)

to read "[*e*]*ach clearwell or potable water storage tank must be designed to drain the tank*." The rule requires a tank to have a drain, but will not contain a potentially vague term about how the tank must be drained.

The commission amends §290.46(d)(2)(B) to reword the type of distribution system and finished water storage tank that are required to have a chloramine residual. The existing rule states that only PWSs that feed ammonia may have a chloramine residual (measured as total chlorine). Chemically, chloramines are formed when free chlorine reacts with ammonia creating chlorinated compounds. When a PWS has chloramines in the water, no matter how the chemicals are added to create them, the disinfectant will be expressed as "total chlorine" when measured. "Free chlorine" is not present in correctly chloraminated water because the chlorine has reacted with ammonia to form a family of chlorinated nitrogen compounds that are measured as "total chlorine." Of the approximately 7,000 PWSs in Texas, approximately 800 have a chloramine residual in their PWS without adding ammonia. If the PWS purchases and redistributes water which already has a chloramine residual, or if the source of the water has naturally occurring ammonia, then only chlorine may be added. Since the monitoring equipment measures total chlorine in a chloraminated PWS (no matter what chemicals are added or occur naturally), the water from a PWS that purchases and redistributes chloraminated water, adds chlorine to water with naturally occurring ammonia, or adds ammonia to chlorinated water must still measure total chlorine to have meaningful

results. The adopted rule applies the total chlorine residual requirement in §290.46(d)(2)(B) for PWSs that distribute chloraminated water, regardless of which chemicals are added by the system. The adopted rule allows the TCEQ to approve the use of chloramines without a site-specific exception review. Recordkeeping is one of the conditions applied with a granted exception. Existing §290.46(f)(3)(A)(ii) requires all water systems to keep the records of the volume of water treated for two years. There is some confusion regarding whether a purchased water system "treats" water and whether records of the volume should be kept. To reduce confusion while still requiring the same amount of recordkeeping, the commission amends §290.46(f)(3)(A)(ii) and its subdivisions to require all PWSs to keep records of the volume of water distributed. In support of the adopted rule change to approve chloramines based on design requirements instead of an exception, the commission also changes in §290.46(f)(3)(A)(ii) the use of the word "treated" to "distributed" and to require groundwater and purchased water systems to keep records of the volume of water treated. In the adopted rule the word "treated" means that PWSs that add chemicals or provide pathogen or chemical removal "treat" the water. For some systems, the treated water and distributed water may be the same volume and may be monitored by the same flow meter. For example, a groundwater system that adds only chlorine will most likely have the same volume of distributed and treated water. Knowing the volume of water is essential to the operators of PWSs when dosing any chemicals and determining the system's water loss. The commission adopts §290.46(f)(3)(B)(ix) to require records

on chloramination be kept for at least three years, which will give the PWSs sufficient information to identify seasonal trends in chloramination. The commission adopts §290.46(s)(2)(D), which adds a requirement for the calibration of the chloramine analyzers every 90 days. Calibration is necessary to assure that the analyzers used to monitor the effectiveness of the chloramination process and to check for potential nitrification chemicals provide accurate results. The commission reletters existing §290.46(s)(2)(D) and (E) with the addition of adopted §290.46(s)(2)(D). The commission amends §290.46(y) and (y)(1) to comply with *Texas Register* requirements and also correct a typographical error. The commission adopts §290.46(z) and its subdivisions, adding requirements for a PWS that uses chloraminated water to create a nitrification action plan. The nitrification action plan is a site-specific plan describing the levels of total chlorine, monochloramine, ammonia, nitrite, and nitrate that are acceptable and what levels should initiate actions such as additional sampling to determine the cause of the imbalance, which is usually a low disinfectant residual. Nitrification in the PWS's distribution system is a concern as it can cause a loss of residual that allows bacterial regrowth and raise nitrite and nitrate to levels that have been shown to potentially harm infants. Each PWS using chloramines must have a nitrification action plan to show what trends in the monitoring data suggest incipient nitrification, what steps to take to prevent nitrification, and actions to take if nitrification is found. The nitrification action plan is only required under existing rules when a chloramination exception is granted. In response to comment, the phrase used

to describe the nitrification action plan, "to prevent nitrification," was removed from §290.46(z) to eliminate confusion; additionally, the phrase "distributing chloraminated water" was added to §290.46(z) to maintain consistency with Chapter 290.

The commission adopts Figure: 30 TAC §290.47(h), Sample Language for Notification Upon Changing from Free Chlorine to Chloramines, to contain the required customer notification language of a pending change in the PWS's disinfectant from chlorine to chloramines. Due to the nature of chloramines, some health care facilities and persons with pet fish might need to change their equipment to accommodate the chloramines instead of chlorine. By notifying the customers, they can make any necessary changes before they begin receiving the chloraminated water. The adopted notification language will assure a correct and consistent message is relayed to affected PWS customers. Exception approval letters for chloramines under existing rules include this notification requirement and language; therefore, the chloramine requirement in the adopted rule contains consistent language for customer notification.

The commission amends §290.110(b)(2), (4), and (5) to clarify the type of chloramine measurement that is used when determining whether a PWS meets the required minimum or maximum chloramine level. These requirements are required under existing rules through site-specific exceptions. This rulemaking adopts minimum chloramine design requirements in Chapter 290, making a chloramine exception

unnecessary. Because the species of chloramines that provides disinfection is monochloramine, the adopted rule refers to monochloramine. By introducing monochloramine into the adopted rule, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. The commission adds the clarification that the chloramine level in this condition shall be "measured as total chlorine." The commission amends §290.110(c)(1) - (4) by adding catchlines to differentiate the sampling location and purpose - whether for compliance or to manage treatment processes for effective chloramination. Catchlines are added so that the regulated community can more easily identify the sampling requirements at each point in the PWS. The commission amends §290.110(c)(1)(A) and (B) by replacing the phrase "entering the distribution system" with the phrase "at each entry point" which is defined in existing §290.103(13). The commission also adopts §290.110(c)(1)(C) to specify the frequency at which the disinfectant residual must be recorded. Adopted §290.110(c)(1)(C) is contrasted with existing rule, §290.110(c)(1)(A) and (B), which states that the residual at the entry point must be recorded continuously. Since "continuous" is not defined, and as a true continuous recording is not possible, the commission requires a 30-minute recording interval, which is consistent with existing guidance in Regulatory Guidance-211, *Monthly Testing and Reporting at Surface Water Treatment Plants*. The commission adopts §290.110(c)(2)(A) and (B) to add specificity by restating the requirements for entry point disinfection instead of cross-referencing to §290.110(b)(2). The commission further amends §290.110(c) to include the monitoring

requirements included when a chloramine exception is granted. These adopted chloramine effectiveness monitoring requirements can be summarized in the following table. The commission requires that a water system with a chloramine residual must, at a minimum, measure and record the following:

Figure 1: 30 TAC Chapter 290 -- Preamble

	At or After the **Entry Point(s)**	In the **Distribution System**	Downstream of Any Chlorine or Ammonia **Injection Points**
Free Ammonia	Weekly.	At least weekly.[a]	Weekly and before and after adjusting the chlorine or ammonia feed rate.
Mono-chloramine	Weekly.	At least weekly.[a]	Weekly and before and after adjusting the chlorine or ammonia feed rate.
Total Chlorine	Weekly.	Daily/weekly.[b]	Weekly and before and after adjusting the chlorine or ammonia feed rate.
Nitrite and Nitrate	As needed to set baseline, then quarterly.	At least quarterly, and in response to action level triggers.	Routine sampling not required.

[a.] *When collecting a routine sample such as a bacteriological or disinfectant residual sample, the free ammonia and monochloramine should be measured at the same time.*
[b.] *Total chlorine must be collected weekly or daily, based on the system size, at locations representing the entire distribution system in accordance with §290.110.*

The commission adopts §290.110(c)(5) to include the chloramine effectiveness monitoring and to also demonstrate when the sample results will be used to determine compliance with the MCLs, maximum residual disinfectant levels (MRDLs), action

levels, or treatment techniques. To clearly differentiate between results used for compliance and those not used for the MRDLs, action levels, or treatment technique compliance; total chlorine monitoring is included in §290.110(c)(4). Total chlorine monitoring is not included with the chloramine effectiveness monitoring because all total chlorine monitoring in the distribution system is used for MRDL compliance, thus it cannot be included with the adopted chloramine effectiveness monitoring. The commission adopts §290.110(c)(4)(E) to require that PWSs distributing chloraminated water test for chloramines (measured as total chlorine) at any distribution system site that adds chemicals to boost the chloramine residual. The testing is completed weekly or whenever the chemical dosage is changed at the disinfection booster station. The monitoring is in conjunction with chloramine effectiveness sampling described in adopted §290.110(c)(5)(C). The commission adopts §290.110(c)(5) with a non-substantive change to the catchline. To correct a typographical error, the commission removed the hyphen from between the words "chloramine" and "effectiveness." The commission adopts §290.110(c)(5) describing the sampling that must occur to assure that chloramines are being formed properly and that nitrification is controlled in the PWS to establish the chloramine requirements in rule instead of requiring an exception request. Sampling as adopted in §290.110(c)(5) has been previously required as a condition to a granted exception. Poor chloramine addition can result in taste and odor issues, low disinfectant residual, and nitrification. Low disinfectant residual levels and nitrification can both cause acute health effects. Sampling lets the PWS know what

levels of chemicals exist throughout the PWS's distribution system. The sampling results inform the PWS if nitrification or poor chloramination is occurring. Adopted §290.110(c)(5)(A) requires monitoring of ammonia, nitrite, and nitrate at the water coming into the PWS at least once to determine if the source water has ammonia, nitrite, or nitrate. If the ammonia levels are higher than 0.5 milligram per liter free ammonia (as nitrogen), additional samples are required to determine if the ammonia level is consistent or variable. Free ammonia is used in the creation of chloramines so knowing the source water's concentration is necessary for downstream dosing and evaluating trends in the distribution system. Nitrite and nitrate monitoring is needed to allow a PWS's operator to know whether these chemicals are from the source or from nitrification. Knowing what the nitrite and nitrate levels are in the PWS's source water helps to determine if the nitrite or nitrate levels are rising. The PWS can take action when the levels first begin rising, not when they are near the level that can cause acute health effects to infants or complete loss of disinfectant residual. Adopted §290.110(c)(5)(B) and (B)(i) require sampling the chloraminated water that just entered the distribution system for total chlorine, ammonia and monochloramine. This sampling point is located after the chloramine chemical addition and can show if the chemical addition successfully made monochloramine. Nitrite and nitrate are required to be monitored in §290.110(c)(5)(B)(ii) for at least six months to find a baseline for the PWS and to develop the nitrification action plan. Nitrite and nitrate are monitored in §290.110(c)(5)(B)(iii) to determine if any of the levels in the nitrification action plan

have been exceeded. Knowing the entry point nitrite and nitrate levels in the water after treatment, but before distribution, will allow the PWS to determine if the nitrite or nitrate levels are rising, thus the PWS can take action when the levels first begin rising, not when they are near the level that can cause acute health effects. Adopted §290.110(c)(5)(B)(ii) explicitly disallows the use of the results of the nitrite and nitrate samples collected to determine the effectiveness of chloramination dosing from also being used for compliance with §290.106 because PWSs are directed to take them at the first customer, which is not a federal compliance site, and because they are taken with a field instrument, which is accurate but which does not use an EPA-approved method. In §290.110(c)(5)(B)(iii), the adopted rule explicitly allows the use of samples collected for compliance with §290.106 to also be used for chloramine treatment effectiveness sampling. Currently, those compliance samples are collected by a TCEQ contractor, while process effectiveness samples are collected and potentially analyzed by the PWS. These "self-collected" samples are not to be used for compliance because they would not use an EPA-approved method, and would not be collected at the federal compliance location, but TCEQ contractor collected samples can be used for treatment effectiveness. Adopted §290.110(c)(5)(C) and its subdivisions describe the sampling that must be performed immediately upstream and downstream of the chloramine chemical injection points. These treatment samples are taken to be able to dose chloramines based on actual residual, not on a calculated dose. The process described in the adopted rule provides a more accurate chloramine dosing strategy and limits the potential health

effects caused by low residual or nitrification. In response to comment, §290.110(c)(5)(C)(iii) was revised to reference that the sampling must occur between the injection of the two chemicals only if a sample tap is required or present. Though sampling between the injection points of the two chloramine chemicals is best practice, the responses that TCEQ received in response to its call for comment upon this issue was that not all PWSs have taps or can have taps between the injection of the chemicals already. To allow for flexibility, the commission is only requiring sample taps on new construction. Because the taps may not be available at all PWSs, the sampling is only required where taps are installed or required. Adopted §290.110(c)(5)(C)(iv) and (v) describe which chemicals must be monitored if the treatment occurs before the entry point or if the treatment occurs in the distribution system. Adopted §290.110(c)(5)(D) and its subdivisions describe the sampling that must be performed in the PWS's distribution system. Monochloramine and free ammonia must be monitored once per week in conjunction with the disinfectant residual samples in the distribution system described in existing §290.110(c)(4). Nitrite and nitrate must be monitored quarterly. Monochloramine, free ammonia, nitrite and nitrate are sampled in the distribution system to determine if nitrification is occurring. Changes in these levels can indicate nitrification. The PWS can then take the steps outlined in the PWS's nitrification action plan to control or prevent the nitrification. The commission amends §290.110(d) and its subdivisions to provide the analytical sensitivity required for the analysis methods for chloramine chemicals. Adopted §290.110(d) and (d)(3) - (6) support the chloramination

requirements by providing analytical methods for the tests that need to be performed to monitor chloramination. In response to comment, §290.110(d)(5) and (6) was revised to change the accuracy requirement from 0.5 milligrams per liter as nitrogen (mg/L as N) to 0.1 mg/L as N for nitrate and from 0.05 mg/L as N to 0.05 mg/L as N for nitrite. The adopted accuracy levels will allow PWSs to better detect changes in the distribution system that may indicate nitrification. Existing §290.110(d) includes a reference for nitrite and nitrate sampling in existing §290.119, which references EPA approved methods; however ammonia and monochloramine do not have EPA approved drinking water methods and the field methods commonly used to determine nitrite and nitrate are not EPA approved. The sensitivity for each test is described in adopted §290.110(d)(3) - (6), and will allow PWSs greater flexibility when choosing a test method. Adopted §290.110(d) and its subdivisions also assures the test methods are sensitive enough to detect changes in water quality that could indicate nitrification, which could potentially cause acute health effects in infants. The commission amends §290.110(d)(1) to specify which chloramine test may be used to determine the chloramine residual. Because the species of chloramines that provides disinfection is monochloramine, the adopted rule refers to monochloramine. By introducing the term "monochloramine" into the rule, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. Therefore, the commission adds that the chloramine is "measured as total chlorine" to avoid confusion. Also, §290.110(d)(1) is amended to no longer require written permission of the executive

director to use a color comparator, commonly referred to as a "color wheel." The adopted rulemaking supports the chloramination use requirements by removing another requirement for written permission. The adoption will shorten the activities required and time spent by a PWS when electing to use chloramines. Adopted §290.110(d)(1) establishes requirements on the appearance of the color comparator, the age of the comparator, the age of the reagents, proper storage of the comparator, and the range of the comparator. If the comparator or sample cells are old, discolored, or in a different range than the water, the test will provide inaccurate results, potentially providing inaccurate chloramine dosing or monitoring. The commission amends §290.110(e)(2) to incorporate forms needed to report disinfectant levels at the entry point and in the distribution system for PWSs using surface water or groundwater under the direct influence of surface water. There are currently three forms for PWSs that treat surface water and groundwater under the direct influence of surface water but only two are listed in the existing rule. This adopted rule supports the chloramination use requirements for Chapter 290 by adopting all three forms for use when reporting disinfection information. The commission amends §290.110(e)(5) and renumbers existing §290.110(e)(5) and (6) as a result of the adopted addition. The adopted addition sets the report requirements for a nitrification action plan, which is kept at the PWS unless the plan is required to be seen by the executive director. The recordkeeping requirement in adopted §290.110(e)(5) is a condition on current letters granting chloramine exceptions as required by the existing rules. Keeping the nitrification action

plan for three years will allow the regulated community to compare past nitrification action plans to see how water quality has changed over time, as well as highlight any trends and seasonal fluctuations. The commission amends §290.110(f)(6) - (9) to specify which chloramine test may be used to determine the chloramine residual. Because the species of chloramines that provides disinfection is monochloramine, the adopted rule refers to monochloramine. By introducing monochloramine into the rules, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. Therefore, the commission adds that the chloramine is "measured as total chlorine" to avoid confusion. The commission amends §290.110(g)(5) to clarify that the monitoring for chloramines will not fall under the requirements for public notices required on federally mandated compliance monitoring and reporting violations. The chloramination monitoring is to ensure proper disinfection and avoid nitrification, and is not for federal compliance purposes. Nitrite and nitrate have MCLs, but they are measured at the entry point, not in the PWSs distribution system. The adopted rule change in §290.110(g)(5) is to avoid confusion and clearly state that public notice would be needed if a PWS fails to perform federally mandated compliance monitoring; however, a public notice is not required if the PWS fails to perform the chloramination effectiveness monitoring. The commission also adopts §290.110(g)(6) and its subdivisions to require PWSs notify their retail and wholesale customers when the PWS first provides chloraminated water and also when new customers begin receiving the chloraminated water. Adopted §290.110(g)(6) and its

subdivisions describe when the notification must be sent, how it must be sent, and who must be notified. Adopted §290.110(g)(6)(D) and (E) also clarify when new customers must be notified and state that the notice must be provided in multiple languages, if appropriate. This notification is a condition of a granted exception as required by existing rules. Due to the nature of chloramines, some health-care facilities and persons with pet fish might need to change their equipment to accommodate the switch to chloramines. By amending the notice requirements, customers of affected PWSs can make any changes needed before they begin receiving the chloraminated water.

The commission amends §290.111(d)(4)(C) to specify which chloramine test - total chlorine - may be used to determine the chloramine residual. Because the species of chloramines that provides disinfection is monochloramine, the adopted rule refers to monochloramine. By introducing monochloramine into the rule, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. Therefore, the commission adds that the chloramine is "measured as total chlorine" to avoid confusion. Also, §290.111(d)(4)(C) is amended to no longer require written permission of the executive director to use a color comparator. This adopted change in §290.111(d)(4)(C) supports the adopted chloramination use requirements by removing another requirement for written permission. The adoption will shorten the activities required and time spent by a PWS when electing to use chloramines. As adopted, §290.111(d)(4)(C) would establish requirements on the

appearance of the color comparator, the age of the comparator and the reagents, proper storage of the comparator, and the range of the comparator. If the comparator or sample cells are old, discolored, or in a different range than the water, the test will provide inaccurate results, thus potentially providing inaccurate chloramine dosing and monitoring information. The commission amends §290.111(h)(2) and its subdivisions to incorporate forms needed to report disinfectant levels at the entry point and in the PWS's distribution system. There are currently three forms for PWSs that treat surface water and groundwater under the direct influence of surface water, but only two are listed in the existing rule. The adopted rule specifies which form is appropriate for use by the PWSs in §290.111(h)(2)(A) - (C). The commission removes §290.111(h)(3) because the requirement in this section was moved to adopted §290.111(h)(2)(C). The commission also deletes §290.111(h)(7) and (8) as these have been incorporated into the forms required by §290.111(h)(2). The commission also renumbers the paragraphs as a result of the adopted changes.

The commission amends §290.116(a)(1) and (d)(2) by adding the word "must" to address a syntax error. The commission amends §290.116(c)(3)(C) to specify which chloramine test - total chlorine - may be used to determine chloramine residual. Because the species of chloramines that provides disinfection is monochloramine, the adopted rule refers to monochloramine. By introducing monochloramine into the rule, it becomes unclear which measurement the PWSs should use to determine compliance

when the word "chloramine" is used. Therefore, the commission adds that the chloramine is "measured as total chlorine" to avoid confusion. Also, §290.116(c)(3)(C) is amended to no longer require written permission of the executive director to use a color comparator. Adopted §290.116(c)(3)(C) supports the chloramination use requirements by removing the requirement for written permission. The adoption will shorten the activities required and time spent by a PWS when electing to use chloramines. Adopted §290.116(c)(3)(C) establishes requirements for the appearance of the color comparator, the age of the comparator, the age of the reagents, proper storage of the comparator, and the range of the comparator. If the comparator or sample cells are old, discolored or in a different range than the water, the test will provide inaccurate results, thus potentially providing inaccurate chloramine dosing and monitoring information.

Modification of the Plan Review Submittal Process -- The commission amends §290.39(i) by adding the words "previously approved" to describe the submittal of information on changes to plans that have already been approved by TCEQ, whereas other sections require plan submittal for new projects that have not been approved by TCEQ. The commission amends §290.39(j) and its subdivisions to provide a more efficient submittal process and clarify the definition of a "significant change" in §290.39(j)(1)(A) - (F). Existing §290.39(j) instructs PWSs to first notify the TCEQ of significant changes and then submit plans and specifications upon TCEQ's request. The commission amends §290.39(j)(1) by requiring PWSs to submit plans and specifications

for significant changes to reduce confusion in the regulated community and reduce staffs' processing time currently spent issuing requests for plans and specification submission. The commission further amends §290.39(j)(1)(D) by simplifying the criteria for a change to be considered as "significant" under the rule. As amended, §290.39(j)(1)(D) will be simplified to consider any changes greater than 10% of the number of connections, any change that results in the system's inability to comply with any of the applicable capacity requirements of §290.45 and any change that involves an interconnection with another PWS. The adopted distribution system criteria is 10% of connections, instead of, 10% of the existing distribution capacity or 250 connections, whichever is smaller. The two criteria for a significant change in distribution caused much confusion for the regulated community. The commission also amends §290.39(j)(2) and its subdivisions to move the requirement for approval of long term-treatment changes that will impact the corrosivity of the water and that need written approval from the executive director from existing §290.39(j)(1)(G) to adopted §290.39(j)(2) because the long-term treatment changes, though considered significant changes and must have approval, may not require the submittal of plans and specifications. Adopted §290.39(j)(2)(A) is a portion of existing §290.39(j)(1)(G) that provides examples of long-term treatment changes, while adopted §290.39(j)(2)(B) allows the executive director to determine the need for plan and specification submittal. Lastly, the commission adopts §290.39(j)(3) and its subdivisions to include the requirements for another entity to review plans and specification in lieu of the TCEQ's

review, as taken from existing §290.39(j)(2)(B)(i) - (iii) and (C). The adopted amendments to existing §290.39(j)(1) and (2) providing for a more efficient submittal process and clarifying the definition of a "significant change" required a reorganization of this section, including the adopted movement of rule language from existing §290.39(j)(2)(B)(i) - (iii) and (C) to adopted §290.39(j)(3) and its subdivisions. As previously discussed in the *Process for Approving Desalination Technology* portion of the Section by Section Discussion, in response to comment, the commission revised §290.39(j)(1) by moving proposed §290.39(j)(1)(E) and revising it as adopted §290.39(j)(4)(A) - (E), and relettering proposed §290.39(j)(1)(F) as adopted §290.39(j)(1)(E). Adopted §290.39(j)(4)(A) - (E) requires written notification of membrane replacement or change of membrane modules instead of requiring plan submittal in all cases as proposed. Under the adopted rule, a new plan submittal and baseline performance data will most likely need to be provided any time the manufacture or model is changed, but may not be required in all circumstances. Because there may be some situations where a new plan submittal and/or baseline data may not be necessary, the adopted rule requires notification and the PWS will be sent a letter if a new plan submittal and/or baseline performance data is required. The explanation of revisions made in response to comment has been repeated in this portion of the Section by Section Discussion to give a full picture of the changes to the rule.

Enforceability of Exceptions -- The commission adopts §290.39(l)(4) and (5) to

streamline the process when a PWS does not follow the conditions of a granted exception. Under existing §290.39(l)(2), if a PWS does not meet the requirements of a granted exception, the exception can only be revoked and a violation issued through a time-consuming and cumbersome process, in which a TCEQ field investigator who finds a PWS violating the exception's conditions must contact the agency's Central Office to request revocation of the exception, then wait for its revocation before issuing a violation. To streamline this process while also ensuring a PWS follows the conditions established in the granted exception, the adopted rule clarifies that failing to follow the conditions of a granted exception is a violation and allows the TCEQ's field investigators to directly issue violations for failure to follow an exception's conditions.

Clarification for Well Construction Review Process -- The commission amends §290.41(c)(3)(C) to clarify and specify well construction for a PWS. The commission amends §290.41(c)(3)(C) to specify the grouting mixture for pressure cementing as neat cement as specified in the most current AWWA Standard for Water Wells and to which a maximum of 6%, by dry weight, bentonite and 2%, by dry weight, calcium chloride may be added. The commission further amends §290.41(c)(3)(C) to specifically define well annular space for a PWS well as the minimum annular space between the outside diameter of the casing pipe and the borehole shall be no less than 1 1/2 inches in radial thickness or three inches in net diametrical difference and to clearly explain that well annular space pressure grouting shall be from the bottom upward utilizing one of the

methods listed in §290.41(c)(3)(C) for all PWS groundwater well construction. Existing §290.41(c)(3)(C) refers to the current AWWA standard for determining pressure cementing method. Amended §290.41(c)(3)(C) will reduce confusion in the regulated community, reduce staffs' processing time currently spent issuing continuing requests for documentation regarding proper construction, and reduce approval time for the regulated community. The rule adoption serves also to consolidate the requirements for wells into one location, making them more accessible to the PWSs by not requiring separate access to the AWWA standards.

Alternative Appurtenances for Overflow Devices -- The commission amends §290.43(c)(3) to allow other acceptable options for a tank overflow cover. The existing rule requires a "gravity-hinged and weighted cover" at the end of the overflow pipe on water storage tanks; however, other designs have also proven to be effective at preventing backflow and the entrance of contaminants. The adopted rule allows a duckbill or any other overflow cover that closes automatically to less than 1/16 inch gap. The adopted rule allows any design that meets this specific criterion. The commission adopts a gap criteria of 1/16 inch because that is the size of a midge fly and the cover is used to prevent wildlife and insects from being able to enter the water storage tank. The midge fly, in particular, is a small insect that can enter the tank, lay eggs, and then distribute its hatched, red colored worms to the distribution system. Establishing the gap tolerance at 1/16 inch will prevent incursions from this insect. The existing rule

requires PWSs to receive a case-by-case exception to use these other devices. The commission amends §290.43 to establish a standard to streamline the process for PWSs using other pipe cover designs and to reduce staffs' time currently spent reviewing these exception requests.

Water Storage -- The commission amends §290.43(c) to remove the reference to AWWA D103 and address the perception that other types of bolted tanks are not allowed. The existing rule states "all facilities for potable water storage shall be covered and designed, fabricated, erected, tested, and disinfected in strict accordance with current AWWA standards." Thus, the existing rule already allows the use of any tank with an AWWA standard, and the reference to D103 is redundant and has caused misunderstanding of the rule. The removal of the sentence referencing D103 from §290.43(c) allows PWSs more flexibility when designing water storage tanks by allowing tanks of other materials approved by the AWWA. The commission amends §290.43(c)(9) by replacing the word "Commission" with the phrase "executive director" to correct a typographical error.

Water Distribution Crossings -- During a rule change in 1995, language applicable to waterlines crossing under wastewater lines was added to §290.44 which created conflict with the requirements for wastewater lines in 30 TAC §217.53. The commission amends §290.44(e)(4)(B) and its subdivisions to: adjust the water and wastewater line crossing

requirements for protection of public health; reduce confusion within the regulated community and its consultants; and remove the conflict with the requirements for wastewater lines in existing §217.53. The commission has an on-going rulemaking for wastewater, Rule Project Number 2012-040-217-OW, *Amendments to Chapter 217: Design Criteria*. The TCEQ's Office of Water's wastewater and drinking water programs have been working together to maintain consistency across programs. The commission amends a cross-reference in §290.44(e)(4)(B)(iii) to maintain consistency with Rule Project Number 2012-040-217-OW. In this rulemaking, Rule Project Number 2013-046-290-OW, the commission also amends §290.44(e)(5) by inserting the word "manhole" between the words "main or" in the first two sentences of that paragraph to address a point of confusion in the regulated community. With the addition of the word "manhole" in this paragraph, the commission clarifies that a potable waterline is to be separated from a wastewater main manhole or lateral manhole or cleanout, instead of requiring separation from a wastewater main, lateral manhole, or cleanout as interpreted by some readers of this rule.

Appendices -- With the adopted amendment to Figure: 30 TAC §290.47(b), the commission revisited the other figures in existing §290.47 and adopts the removal of existing Figures: 30 TAC §290.47(c), (d), and (f) and reletters existing Figures: 30 TAC §290.47(e), (g), (h), (i), and (j) as Figures: 30 TAC §290.47(c), (d), (e), (f), and (g), respectively. Additionally, the commission adopts updated cross-references to the

relettered Appendices in §§290.39(c)(4)(A) and (o)(1); 290.44(h)(1)(A) and (4); and, 290.46(j)(2), (p)(2), and (q)(1) and (2). The commission adopts the removal of existing Figure: 30 TAC §290.47(c), *Sample Sanitary Control Easement Document for a Public Water Well*; existing Figure: 30 TAC §290.47(d), *Customer Service Inspection Certificate*, and existing Figure: 30 TAC §290.47(f), *Sample Backflow Prevention Assembly Test and Maintenance Report* to allow the executive director's staff to make revisions to these forms outside of a formal rulemaking. Existing Figure: 30 TAC §290.47(c), *Sample Sanitary Control Easement Document for a Public Water Well*, is an example only and is not required to be used by the regulated community. An agency form that can be amended outside of a rulemaking process allows the form to be revised as improvements are suggested after consideration by the regulated community through the TCEQ's Drinking Water Advisory Work Group and its subcommittees instead of amending the form during a formal rulemaking. This also allows the document to be provided in a format that can be modified as needed by a PWS to incorporate the PWS's specific information. Adopting existing Figure: 30 TAC §290.47(d), *Customer Service Inspection Certificate*, and existing Figure: 30 TAC §290.47(f), *Sample Backflow Prevention Assembly Test and Maintenance Report*, as agency forms will allow the regulated community to use the forms in a recordable, electronic format. The existing Figures are available only as portable document formats, PDFs, and require the regulated community to retype the certificate or report to keep an electronic record or fill in the portions of the certificate or report that are applicable to each PWS. Providing

these two Figures as forms facilitates the end user's ability to comply with applicable records retention requirements by being able to retain the forms electronically. Once this rulemaking is effective, the commission's forms will be available as: No. 20698, *Sanitary Control Easement*; No. 20699, *Customer Service Inspection Certificate*; and No. 20700, *Backflow Prevention Assembly Test and Maintenance Report*. Additionally, references to the existing Figures that are adopted as agency forms once this rulemaking is effective are also updated in §§290.39(e)(4), 290.44(h)(4)(C), and 290.46(j). Further, the commission amends existing §290.38(70) and §290.44(h)(4)(B) to refer to agency forms and further clarify their usage.

Final Regulatory Impact Analysis Determination

The commission reviewed the adopted rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225 and determined that the rulemaking is not subject to Texas Government Code, §2001.0225. A "major environmental rule" means a rule with a specific intent to protect the environment or reduce risks to human health from environmental exposure, and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state.

First, the adopted rulemaking does not meet the statutory definition of a "major

environmental rule" because its specific intent is not to protect the environment or reduce risks to human health from environmental exposure. The specific intent of the adopted rulemaking is fourfold.

The first intent of the adopted rulemaking is to comply with requirements and standards established by the EPA pursuant to its federal requirements related to Texas' primary enforcement responsibility with regard to drinking water. Specifically, the federal drinking water standards changed regarding two contaminants. First, the lead content allowed in pipes, pipe fittings, and plumbing fittings and fixtures was reduced through federal legislation. Second, the EPA provided states the discretion to allow small PWSs using surface water or groundwater under the influence of surface water to monitor for *E. coli* rather than *Cryptosporidium*. Texas adopted this alternate monitoring, with a trigger level of 10 or 50 *E. coli*/100 milliliters, depending on the water source. Federal guidance subsequently established the *E. coli* trigger level of 100 *E. coli*/100 milliliters, no matter the water source. As a primacy state, Texas has the obligation of complying with EPA drinking water standards. The federal requirements that would be implemented through the adopted rulemaking are designed to reduce risks to human health from environmental exposure by limiting exposure to lead and microbial pathogens, but the changes in the adopted rules are intended to maintain compliance and consistency with EPA requirements and standards.

The second intent of the adopted rulemaking is to implement state legislation enacted during the 2013 legislative session. This legislation related to the transfer of the commission's utilities and rates program to the PUC. Specifically, the adopted rulemaking removes a requirement related to a CCN with notification of changes or additions to a PWS. CCNs are part of the utilities and rates program transferred effective September 1, 2014, and the agency no longer has jurisdiction over CCNs as they relate to Chapter 291. The adopted rulemaking implements HB 1600, §2.96 and SB §§1, 4, 95 and 96, both enacted by the 83rd Texas Legislature, though the majority of the rule changes necessary to implement this legislation will occur in a different rulemaking, specifically Rule Project Number 2013-057-291-OW.

The third intent of the adopted rulemaking is to clarify existing rules and make them more efficient by amending language, correcting cross-references, and eliminating potential ambiguities. The adopted rulemaking provides a more efficient plan submittal process; clarifies that an exception once granted must be complied with; clarifies the well construction review process; provides alternative appurtenances to use for overflow devices; provides more flexibility for PWSs in selecting water storage tanks; and aligns the commission's water and wastewater rules related to pipes and water distribution. Part of this intent involves correction of typographical and syntax errors, updating of citations, cross-references, and terminology.

The fourth intent of the adopted rulemaking is to make the rules more cost-effective and efficient for the regulated community and for the agency by eliminating the requirement to process desalination treatment requests and requests for use of chloramines as a primary disinfectant through the exceptions process under existing rules. The exceptions process can be burdensome and time-consuming. Desalination has become of increasing interest in the regulated community because of the on-going drought and the degradation of potential source water quality. The use of desalination technologies has become common for PWSs and the adopted rulemaking contains adequate safeguards to ensure that safe drinking water is provided to the public, while streamlining approval for the use of such technologies. Chloramines have been used as a secondary disinfectant for several years; its use as a primary disinfectant under the current rules requires approval through the exceptions process. The adopted rulemaking streamlines the use of chloramines as a primary disinfectant while ensuring adequate safeguards to ensure the provision of safe drinking water to the public.

Second, the adopted rulemaking does not meet the statutory definition of a "Major environmental rule" because the adopted rules would not 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. It is not anticipated that the cost of complying with the adopted rules will be significant with respect to the economy as a whole or with respect to a sector of the economy; therefore,

the adopted amendments will not adversely affect in a material way the economy, a sector of the economy, competition, or jobs.

Finally, the adopted rulemaking does not meet any of the four applicability requirements for a "Major environmental rule" listed in Texas Government Code, §2001.0225(a). Texas Government Code, §2001.0225 only applies to a major environmental rule, the result of which is to: 1) exceed a standard set by federal law, unless the rule is specifically required by state law; 2) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4) adopt a rule solely under the general powers of the agency instead of under a specific state law. The adopted rulemaking does not meet any of the preceding four applicability requirements because this rulemaking does not exceed any standard set by federal law for PWSs and is adopted to comply with standards set by the EPA; does not exceed any express requirement of state law under Texas Health and Safety Code (THSC), Chapter 341, Subchapter C; does not exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government but rather is adopted to comply with applicable federal standards related to the federal Safe Drinking Water Act; and is not adopted solely under the general powers of the agency, but specifically under THSC, §341.031, which gives the commission authority to

establish standards ensuring the supply of safe drinking water, as well as the other general powers of the commission.

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

Takings Impact Assessment

The commission evaluated this adopted rulemaking and performed analysis of whether these adopted rules constitute a taking under Texas Government Code, Chapter 2007. The specific purpose of the adopted rules is to amend Chapter 290 for consistency with TWC, §12.013, and Chapter 13, and with existing federal legislation and guidance; and provide clarification on and increased efficiency under existing state rules. The adopted rules would substantially advance the stated purpose by amending the rules to reflect the reduced lead content allowed under federal legislation in pipes, pipe fittings, and plumbing fittings and fixtures; by changing the appropriate *E. coli* trigger level for small PWSs; by creating a process for approving desalination technology; by establishing chloramine disinfection criteria; by modifying the plan review submittal process; by clarifying the enforceability of exceptions; by clarifying the well construction review process; by providing alternative appurtenances for overflow devices; by clarifying water storage requirements; by clarifying the rules regulating water distribution crossings; by

correcting typographical and syntax errors; and by updating citations, cross-references, and terminology.

The commission's analysis indicates that Texas Government Code, Chapter 2007, does not apply to these adopted rules based upon exceptions to applicability in Texas Government Code, §2007.003(b). First, the adopted rulemaking is an action that is reasonably taken to fulfill an obligation mandated by federal law, exempt under Texas Government Code, §2007.003(b)(4). In order to maintain primacy over public drinking water, the state must enact rules no less stringent than the federal requirements. Second, the adopted rulemaking includes a modification of an existing regulation that provides a unilateral expectation that does not rise to the level of a recognized interest in private real property, exempt under Texas Government Code, §2007.003(b)(5). Chapter 290 is a set of existing rules that regulate public drinking water. The unilateral expectation on the part of the agency is that the regulated community will comply with the amended rules in Chapter 290; the unilateral expectation on the part of the regulated community is that the agency will enforce the amended rules in Chapter 290. Neither unilateral expectation rises to the level of a recognized interest in private real property because Chapter 290 regulates public drinking water.

Further, the commission has determined that promulgation and enforcement of these adopted rules would be neither a statutory nor a constitutional taking of private real

property. Specifically, there are no burdens imposed on private real property under the rules because the adopted rules neither relate to, nor have any impact on, the use or enjoyment of private real property, and there would be no reduction in property value as a result of these rules. The rules require PWSs to comply with drinking water standards protective of human health and the environment, and the rules bring those standards into concurrence with the corresponding federal requirements. The rules also clarify and make existing rules more efficient, thereby streamlining regulation rather than making it burdensome. Therefore, the adopted rules would not constitute a taking under Texas Government Code, Chapter 2007.

Consistency with the Coastal Management Program

The commission reviewed the adopted rules and found that they are neither identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11(b)(2) or (4), nor will they affect any action/authorization identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11(a)(6). Therefore, the adopted rules are not subject to the Texas Coastal Management Program (CMP).

The commission invited public comment regarding the consistency with the CMP during the public comment period. No comments were received regarding the consistency of this rulemaking with the CMP.

Public Comment

The commission held a public hearing on this proposal in Austin on February 26, 2015, and no oral testimony occurred. The comment period closed on March 10, 2015. The commission received timely written comments from the South Central Membrane Association with the support of the American Membrane Technology Association (SCMA/AMTA) and two individuals.

The comments focused on the reverse osmosis and nanofiltration requirements and the chloramination requirements. The comments on reverse osmosis and nanofiltration included questions on: a reverse osmosis and nanofiltration definition; the water sources that may be treated by reverse osmosis and nanofiltration; when a plan review and a baseline study is required; the location of conductivity samples; the use of historical classes for training requirements; the maintenance of records; when a module must be replaced; and, the calibration interval for instruments. The comments on chloramination included questions on: when a nitrification action plan is required; where the nitrification action plan samples can be taken; disinfection sample collection; mixing requirements; drain requirements; sample accuracy limits; and, color comparators. The comments have been summarized in the Response to Comments section of the preamble.

Response to Comments

An individual commented on the preamble's fiscal note stating that the "*Costs to State and Local Government, Additional Staff Recommendations, Chloramine Disinfection Criteria*" did not include the cost of creating a nitrification action plan.

The commission respectfully disagrees that the cost of creating a nitrification action plan should have been addressed in the fiscal note. The nitrification action plan is a site-specific plan describing the levels of total chlorine, monochloramine, ammonia, nitrite, and nitrate that are acceptable and what levels should initiate actions such as additional sampling to determine the cause of the imbalance. Nitrification in the PWS's distribution system is a concern as it can cause a loss of residual that allows bacterial regrowth and raise nitrite and nitrate to levels that have been shown to potentially harm infants. The commission responds that the TCEQ has directed significant resources toward ensuring PWSs have the most recent exception language which includes a requirement for a nitrification action plan and plain-language instructions on how to create the nitrification action plan, which is available as *Enclosure 2: Monitoring Plan Alert and Action Levels* at http://www.tceq.texas.gov/assets/public/permitting/watersupply/pdw/Use_of_Chloramines.pdf. Additionally, the cost associated with creation of a nitrification action plan is minimal. The commission provides free, on-site

assistance for creation of a nitrification action plan through the Water Supply Division's financial, managerial and technical (FMT) assistance program, which can further lessen the cost for a PWS to develop a nitrification action plan. Information regarding the TCEQ's FMT program is available at *http://www.tceq.texas.gov/drinkingwater/fmt*. Interested PWSs can contact the FMT Program Coordinator by calling (512) 239-4691, by email at *pdws@tceq.texas.gov*, or by submitting the TCEQ's *Financial, Managerial & Technical Assistance Referral Form* (commission Form 20167). No change has been made in response to this comment.

Process for Approving Desalination Technology

An individual commented on §290.38(79), stating that "*while this definition of stage is certainly correct, it is not completely clear as to its intent"* and further commented "[*a*] *single stage would be a set of pressure vessels installed in parallel. Any vessels connected in series to those parallel vessels would then be considered an additional stage*." The individual requested TCEQ clarify this definition as it pertains to multiple stages.

The commission responds that this definition was taken directly from the AWWA's manual of *Water Supply Practices, M46, Reverse Osmosis and Nanofiltration*. The commission acknowledges that PWSs may be

constructed with multiple stages and passes, and in different configurations. The definition of "stage" is not intended to cover all scenarios. The commission's intent in incorporating this definition in the adopted rule is to assist readers of the rule with a basic understanding of the commission's regulatory requirements. No change has been made in response to this comment.

SCMA/AMTA commented on §290.39(e)(7), asking if there is a minimum time period expected for collecting the baseline performance data reported in the engineering report's addendum.

The commission responds that a minimum time to collect baseline performance data has not been specified in the rule. However, the rule does specify that the addendum must be submitted to the executive director and approved prior to using the reverse osmosis or nanofiltration system to produce drinking water. Each source water is different and the time necessary to collect the baseline data should be determined by the PWS and its professional engineer. Please contact the Water Supply Division's Plan and Technical Review Team at (512) 239-4691 if individual guidance is needed. No change has been made in response to this comment.

SCMA/AMTA commented on §290.39(e)(7), asking if "*the submitted addendum* [is] *subject to review and approval by the TCEQ before the production of drinking water or is the addendum for record purposes*."

The commission responds that the addendum must be submitted to the executive director and approved prior to using the reverse osmosis or nanofiltration system to produce drinking water. The commission has mimicked the existing process for its approval of wells in its desalination technology rules. The well approval process allows the design engineer to present the engineering plans and specifications for approval first then, after construction, to validate the water quality produced by the well. No change has been made in response to this comment.

SCMA/AMTA commented on §290.39(e)(7)(A), questioning if the PWS is responsible for providing TCEQ with a new baseline upon membrane replacement at some time in the future. SCMA/AMTA also commented on §290.39(e)(6), questioning "*what documentation would TCEQ require if a water utility changes membranes from one manufacturer to another*," identifying two potential scenarios: 1) changing to recognized equivalent (both brackish reverse osmosis membranes), and 2) changing the type of membrane (from brackish reverse osmosis to low energy reverse osmosis, or vice versa).

The commission responds that a new plan submittal and baseline performance data will most likely need to be provided any time the manufacture or model has been changed, but these items may not be required in all circumstances. The TCEQ acknowledges that there may be some situations where a new plan submittal and/or baseline data may not be necessary. In response to this comment, the commission has revised §290.39(j)(1)(D) - (F) and has added §290.39(j)(4)(A) - (E) to require written notification of membrane replacement or change of membrane modules instead of requiring plan submittal in all cases. The PWS will be sent a letter if a new plan submittal and/or baseline performance data is required.

SCMA/AMTA commented on §290.39(e)(7)(A) - (E), asking "[*i*]*s the membrane cleaning frequency, as required in Section 7(B), the design cleaning frequency or the verified frequency determined after sufficient operating time? Depending on the interpretation of Section 7, there may be a scenario where a PWS would be required to delay drinking water production until items (A) - (E) are established for inclusion in the addendum*."

The commission responds that the items specified in the addendum must be

reviewed and approved prior to drinking water production. However, the intent of the addendum is for the PWS and their engineer to compile data to determine baseline performance during start up in a relatively short timeframe (for example, a few days and not the standard 90 day pilot study), with the exception of the PWS's receipt of laboratory results. Regarding §290.39(e)(7)(B), the design engineer should select a set-point (based on the loss of performance from baseline) that would be a trigger for the PWS to clean the membranes. Alternatively, the rule allows for the engineer to set a time interval for cleaning. In §290.39(e)(7)(A) - (E), the commission mimicked the existing process for its approval of wells. The well approval process allows the design engineer to present the engineering plans and specifications for approval first then, after construction, to validate the water quality produced by the well. No change has been made in response to this comment.

SCMA/AMTA commented on §290.42(b)(9)(G), questioning "[*i*]*s TCEQ looking at total feed and permeate conductivity reading at each unit?*" SCMA/AMTA further commented on §290.46(f)(3)(B)(x), asking "[*i*]*s the requirement for monitoring the conductivity with respect to total or individual units?*"

The commission agrees that clarification of the proposed rules is necessary.

In response to this comment, the commission has revised §290.42(b)(9)(G) to specify feed and permeate conductivity monitoring on each individual membrane unit at a nanofiltration or reverse osmosis plant because the executive director's staff inadvertently used an undefined term of "facility" in the proposed rule instead of the defined term of "membrane unit." The commission also revised §290.46(f)(3)(B)(x) to specify feed and permeate conductivity monitoring on each individual membrane unit at a nanofiltration or reverse osmosis plant because the location for the conductivity results that are to be maintained for three years was not specified in the proposed rule.

SCMA/AMTA commented on §290.42(b)(9)(K), stating they "*liked the requirement for having instrumentation between stages, such as pressure indicators, which make it easier to troubleshoot systems.*"

The commission acknowledges the support expressed by the commenter. No change has been made in response to this comment.

An individual commented on §290.42(d)(17), noting that it will greatly reduce the burden for surface water systems which would also wish to include reverse osmosis nanofiltration and commending its inclusion. The individual also requested that TCEQ

consider the inclusion of identical language in proposed §290.42(d)(17) in a new paragraph under §290.42(c).

The commission acknowledges the support expressed by the commenter and agrees that the language in proposed §290.42(d)(17) should be included in §290.42(c). PWSs using groundwater under the direct influence of surface water sources should be able to utilize reverse osmosis and nanofiltration as contemplated by the proposed rules. In response to this comment, the commission added §290.42(c)(8) to address this inadvertent oversight in the proposed rule.

SCMA/AMTA commented on §290.42(l), asking if the baseline performance data (that is required to be maintained in the Plant Operations Manual) will need to be changed after cleaning when the membrane performance is not restored to the original baseline performance.

The commission responds that regardless of the changes in performance after membrane cleaning, the original baseline performance data is the only baseline data to be kept in the Plant Operations Manual. The intent of the requirement to maintain the original baseline data is for the plant operations staff to be aware of changes in plant performance since start up

so they can evaluate the effectiveness of cleaning regimes, and prepare for when membrane replacement or other service is required. No change has been made in response to this comment.

SCMA/AMTA questioned whether the TCEQ will require a minimum license level for operation of membrane facilities in §290.46(e)(2)(D).

The adopted rule does not change the minimum operator level required for either a groundwater or surface water treatment facility. The rule change only addresses the requirement for an approved training that addresses concerns unique to reverse osmosis and nanofiltration processes. No change has been made in response to this comment.

SCMA/AMTA questioned whether the TCEQ will recognize/grandfather training taken by an operator prior to the rule's effective date.

The commission responds that it will consider courses taken in the past. The criteria for course acceptance is being developed through a stakeholder process. In response to comment, the commission amended §290.46(e)(2)(D) to allow operators to complete the training by August 31, 2016. This will allow adequate time for operators to take a training class if

they have not previously taken one. Additionally, the commission will consider courses an operator has previously taken which meet the executive director's criteria for approval. The TCEQ's criteria for approving training courses or events will be developed through a stakeholder process.

SCMA/AMTA asked whether operators will be required to have a minimum experience of operating a membrane plant in addition to certification in §290.46(e)(2)(D).

At this time, there are no minimum experience requirements for operators at a membrane plant. No change has been made in response to this comment.

SCMA/AMTA commented on §290.46(f)(3)(A)(vi), requesting that the TCEQ consider adding the chemicals used and the reason that triggered the cleaning (e.g., an increase of pressure to 10 pounds per square inch) to the list for maintained records of the clean-in-place procedure.

The commission respectfully disagrees that the requested rule additions are necessary. The commission responds that, under existing §290.46(f)(3)(A)(i), the list of chemicals used must be maintained in the PWS's records; therefore, no change has been made in response to this

comment. The commission concurs that the PWS best practices should include documenting the reason for the clean-in-place, even if the clean-in-place was simply conducted at a scheduled interval. Knowing the reason for the cleaning is important to extend the lifecycle of the membrane and also when troubleshooting problems. Knowing the reason for the cleaning is not necessary to support TCEQ's health-based requirements; therefore, no change has been made in response to this comment.

SCMA/AMTA commented on §290.46(f)(3)(B)(x), requesting that TCEQ consider changing the phrase "transmembrane pressure differential" to "pressure differential across a membrane vessel" as the term "transmembrane pressure" is generally associated with low pressure membranes.

The commission concurs and, in response, has revised §290.46(f)(3)(B)(x).

SCMA/AMTA commented on §290.46(m)(7), suggesting that the cleaning and replacement of membrane elements be left to the discretion of the PWS instead of the proposed requirement that reverse osmosis or nanofiltration systems be cleaned or replaced in accordance with the allowable operating conditions of the manufacturer.

The commission respectfully disagrees that the rule infringes on the

discretion of a PWS to make operating decisions. The commission responds that the adopted rule is not intended to require the PWS to replace the membranes based solely upon the manufacturer's terms. The rule requires the cleaning and replacement of membranes to be based upon local membrane performance. The commission cautions that unintended damage may occur if membranes are exposed to chemicals, pressures, temperatures, or operating procedures that have been identified as unacceptable by the manufacturer. No change has been made in response to this comment.

SCMA/AMTA commented on §290.46(s)(2)(G), proposing the replacement of the requirement for calibration of conductivity monitoring devices from once a year to "*in accordance with the manufacturer's specifications.*" SCMA/AMTA asks if once a year is sufficient for calibrating a conductivity meter.

The commission respectfully disagrees that calibration for conductivity monitoring devices should be based on the manufacturer's specifications because the proposed rule is clear, yet offers flexibility. The adopted rule states that conductivity (or total dissolved solids) meters must be calibrated at least once a year and does not preclude the PWS from conducting more frequent calibrations based upon the manufacture's recommendations or

local decisions. No change has been made in response to this comment.

Chloramine Disinfection Criteria

An individual requests clarification on mixing that is required to disperse chemicals in §290.42(e)(7)(B). The individual questioned "*what defines mixing*" and further commented "[*f*]*or example, is an injector designed to inject chemical at the center of a pipe sufficient?*" SCMA/AMTA commented that the commission should grandfather those plants that are not designed or constructed with mixing equipment (e.g., in-line mixers) in order to allow them to meet the requirements of §290.42(e)(7)(B).

The commission respectfully disagrees that revision of the proposed rule is necessary and responds that the intent of the requirement was to assure efficient chemical dispersion. Mixing chlorine and ammonia correctly assures adequate disinfection and saves a PWS money by ensuring that chemicals are not overdosed. There are numerous ways to assure adequate mixing, including those referenced in the comments. The proposed rule language allowed flexibility for PWSs to implement appropriate technology as necessary. Therefore, there is no need to grandfather those plants because flexibility has already been provided in §290.42(e)(7)(B) and many of the methods already installed work adequately. No change has been made in response to these comments.

An individual stated that a sample tap is required before and after each chemical injection point in §290.42(e)(7)(C) and that chlorine must be monitored before ammonia is added in §290.110(c)(5)(C). The individual commented that these plants feed chlorine and ammonia close together to limit disinfection byproduct formation, thus making sampling before and after each injection point impractical. The individual recommended putting this practice of measuring free chlorine prior to the addition of ammonia in a guidance document instead of in the commission's rules. SCMA/AMTA also commented that the commission should grandfather those plants not built to accommodate the proposed sample points in §290.42(e)(7)(C).

The commission specifically requested comments regarding this requirement because the commission recognized that the industry could have difficulty making changes to accomplish the proposed requirement. This requirement was proposed because dosing chloramines correctly in surface water treatment plants is important to ensure the assumed viral log removal in the EPA's Surface Water Treatment Rules and correct dosing at any location is required to ensure that monochloramine is formed and that chemicals are not over or underfed. However, some source waters are more challenging to treat because even short periods (seconds) of free chlorine contact before ammonia addition can allow formation of regulated

disinfection byproducts. In response to these comments, the commission has revised §290.42(e)(7)(C) and its subdivisions to apply to installations submitted for plan approval starting January 1, 2016, and to include the recognition that some installations after that time may have the need to locate chlorine injection points closer to the subsequent ammonia injection point to control disinfection byproduct formation so that there is no room for the tap between the two injectors. However, a tap must be provided before any chemical injection and after the second chemical is injected. The January 1, 2016, date was chosen to give the professional engineers time to add the additional taps to projects. Also, the date was chosen to not impose the condition on projects that had already been submitted to the commission for approval. Additionally, in response to these comments, the commission has revised §290.110(c)(5)(C)(iii) to reference that the sampling must occur between the injection of the two chemicals only if a sample tap is required or present.

SCMA/AMTA commented on §290.43(c)(7), questioning what the word "efficiently" means, and asked TCEQ to consider grandfathering tanks not designed or constructed with the means to drain efficiently.

The commission acknowledges that the term "efficiently" could be vague,

and in response has revised §290.43(c)(7) to instead state "*[e]ach clearwell or potable water storage tank must be designed to drain the tank.*" Regarding the request to grandfather the design of tanks, the commission respectfully disagrees that revision of the proposed rule is necessary because the commission does not approve tanks designed without drains. In the preamble the commission referenced an example where a PWS took several days to drain a tank during a nitrification event, which is a public health risk. The lack of a drain presents an immediate public health risk. The ability to drain a tank to remove water with high levels of nitrate or nitrite is critical. No change has been made in response to this comment.

An individual suggested requiring a nitrification action plan in §290.46(z) only if distribution chlorine residual regulations are not met, or allowing reduced monitoring for systems in compliance with total chlorine residual requirements. Alternatively, SCMA/AMTA referenced §290.110(c)(5), suggesting that a nitrification action plan may only be required if action levels are exceeded.

The commission respectfully disagrees that revision of the proposed rules is necessary and responds that chloramination is a complex process that must be monitored to assure safe drinking water is produced. A PWS with compliant total chlorine residuals can experience nitrification. The intent

of the nitrification action plan is to prevent or control nitrification. If the nitrification action plan is only required after exceedances which may cause unsafe water, it would not fulfill the public health intent of the requirement, because it would not prevent or control nitrification. The commission has required nitrification action plans as a condition of the site-specific exceptions for several years. No change has been made in response to these comments.

SCMA/AMTA recommended amending §290.46(z), replacing the word "prevent" with "control."

The commission concurs with this comment and responds that while prevention is the ultimate goal, nothing in nature can be completely prevented. In response to this comment, the phrase "to prevent nitrification" is removed from §290.46(z) as proposed, rather than replacing the verb with "control" as suggested, to eliminate confusion. Additionally, the phrase "distributing chloraminated water" has been added to adopted §290.46(z) to maintain consistency with Chapter 290.

An individual questioned what will be the specific sampling requirements of the nitrification action plan in §290.46(z).

The commission responds that the minimum nitrification action plan baseline and continuing sampling locations and frequencies has been specified in §290.110(c)(4) and (5) and their subdivisions. No change has been made in response to this comment.

An individual recommends Total Coliform Rule (TCR) sample sites be used for nitrification action plan sampling described in §290.46(z). Similarly, SCMA/AMTA recommends using the TCR sample sites for nitrification action plan sampling, referencing §290.110(c)(4).

The commission respectfully disagrees that revision of the proposed rules is necessary. The commission responds that nitrification action plan distribution system samples for monochloramine and free ammonia are to be taken at the same time and place as the total chlorine residual samples required by §290.110(c)(4). The existing rule allows the flexibility for the disinfectant residual samples to be taken at the TCR sample locations or at the routine disinfectant level monitoring locations. Existing regulations in §290.110 and §290.121 require PWSs to set appropriate sample sites that are representative of the distribution system and to document these locations in their monitoring plan. No change has been made in response to

these comments.

SCMA/AMTA recommends incorporating a one or two year grace period for PWSs to develop a meaningful data set for action levels in §290.46(z)(2) and §290.110(c)(5) because the baseline data collection may take longer than proposed.

The commission respectfully disagrees that revision of the proposed rules is necessary. The commission responds that an initial nitrification action plan may be developed with less than a year of data collection. A nitrification action plan, like any operating instruction document, is a living document that will be revised to accommodate changes over time, including subsequent data collection. Further, the commission notes that the site-specific exceptions have required development of nitrification action plans for several years, so most PWSs have already developed a nitrification action plan. Finally, the TCEQ provides free, on-site assistance for nitrification action plan development through the Water Supply Division's FMT assistance program. Information regarding the TCEQ's FMT program is available at *http://www.tceq.texas.gov/drinkingwater/fmt*. Interested PWSs can contact the FMT Program Coordinator by calling (512) 239-4691, by email at *pdws@tceq.texas.gov*, or by submitting the TCEQ's *Financial, Managerial & Technical Assistance Referral Form* (commission Form

20167). No change has been made in response to this comment.

SCMA/AMTA suggested quarterly or annual sampling for the chloramine effectiveness suite for systems that demonstrate consistently meeting target levels for weekly sampling as required in §290.110(c)(5)(C).

The commission respectfully disagrees that revision of the proposed rules is necessary. The commission responds that distribution systems are a dynamic and changing environment and small changes in the system, not caused by the PWS, can result in large changes in the chloramination chemistry. For example, many PWSs had trouble in 2007 during an extremely wet year which caused nitrification in PWSs that had not had any issues previously. Weekly sampling is required to assure the health and safety of the drinking water. No change has been made in response to this comment.

SCMA/AMTA commented requesting clarification of whether TCR sample sites are intended to be used for the monitoring described under §290.110(c)(5)(C)(v), which relates to monitoring for monochloramine and free ammonia after injection of chloramination chemicals within the distribution system.

The commission responds that the requirements of §290.110(c)(5)(C)(v) regarding the monitoring monochloramine and free ammonia after the addition of chloramination chemicals within the distribution system, commonly known as booster chloramination, is to determine whether the chloramines are being dosed properly. Therefore, the sample locations used for this monitoring should be close enough to the booster location to provide immediate knowledge of the impact of chemical addition on the ratio and concentration of total chlorine, monochloramine, and free ammonia. If a coliform sample site is present in such a location, the rule allows the flexibility to use that sample site. However, the PWS's existing coliform sample sites may be too far away from the booster station to provide meaningful data, so requiring use of a TCR site would not accomplish the intent of the rule. No change has been made in response to this comment.

SCMA/AMTA suggested increased nitrate and nitrite sampling from quarterly to monthly at TCR sites in §290.110(c)(5)(D)(ii).

The commission respectfully disagrees that revision of the proposed rules is necessary and responds that the intent of the chloramine effectiveness suite is to provide the water system with the ability to respond prior to

nitrification events. Monitoring parameters such as monochloramine, free ammonia and total chlorine frequently provides the PWS with meaningful data to be able to respond before nitrification occurs. Nitrification has an acute health impact and can also be difficult to eliminate once it has begun; thus, the TCEQ has focused on providing proactive - not reactive - steps within its rule. The quarterly nitrate and nitrite sampling is intended to be a minimum sampling frequency. The commission concurs that many PWSs may find that additional sampling is necessary as a response to system specific action levels as defined in each PWS's nitrification action plan. Also, a PWS may want to expand the number of sampling points or frequency of the sampling to provide more insight into the condition of the distribution system. The rule's flexibility allows for more frequent than quarterly sampling. No change has been made in response to this comment.

SCMA/AMTA expressed concern on the requirements for the use of color comparators in §290.110(d)(1), specifically asking whether color comparators have been a source of inaccurate compliance data.

The commission responds that color comparators have been a source of inaccurate data in the past. The causes of the inaccuracies, such as a faded color chart, were used to create the criteria for accurate operation of the

color comparator tool that appears in the rule. No change has been made in response to this comment.

SCMA/AMTA questioned if the proposed minimum accuracy level for nitrite and nitrate is adequate for detecting nitrification and recommended amending §290.42(e)(7)(E)(v) to include a detection limit of 0.01 mg/L as N for nitrite.

The commission responds that the specific minimum accuracy levels for the equipment listed in §290.42(e)(7)(E)(v) are contained in §290.110(d)(5) and (6) as 0.5 mg/L as N for nitrate and 0.05 mg/L as N for nitrite, respectively. The commission acknowledges that changes in levels as low as 0.01 mg/L as N for nitrite may be meaningful in detecting nitrification. Upon consideration of the submitted comment and based upon the proven accuracy of commonly available methods, the commission agrees that the minimum accuracy levels of nitrite and nitrate in §290.110(d)(5) and (6) should be revised to 0.1 mg/L as N for nitrate and 0.01 mg/L as N for nitrite, respectively, and, in response, has revised §290.110(d)(5) and (6) accordingly. The commission notes that PWSs can still choose more stringent methods.

SUBCHAPTER D: RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS

§§290.38, 290.39, 290.41 - 290.47

Statutory Authority

The amendments are adopted under Texas Water Code (TWC), §5.102, which establishes the commission's general authority necessary to carry out its jurisdiction; TWC, §5.103, which establishes the commission's general authority to adopt rules; TWC, §5.105, which establishes the commission's authority to set policy by rule; Texas Health and Safety Code (THSC), §341.031, which allows the commission to adopt rules to comply with standards established by the United States Environmental Protection Agency pursuant to the federal Safe Drinking Water Act, 42 United States Code, §§300f to 300j-6; and, THSC, §341.0315, which requires public water systems to comply with commission rules adopted to ensure the supply of safe drinking water.

The adopted amendments implement TWC, §§5.102, 5.103, and 5.105; THSC, §341.031 and §341.0315; and, House Bill 1600 and Senate Bill 567, both enacted during the 83rd Texas Legislature, 2013.

§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 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 Water Dictionary: A Comprehensive Reference of Water Terminology*, [*The Drinking Water Dictionary*,] prepared by the American Water Works Association.

(1) Affected utility--A retail public utility (§291.3 of this title (relating to Definitions of Terms)), exempt utility (§291.103(d)(1) of this title (relating to Certificates Not Required)), [(§291.3 of this title),] or provider or conveyor of potable or raw water service that furnishes water service to more than one customer:

(A) in a county with a population of 3.3 million or more; or

(B) in a county with a population of 550,000 or more adjacent to a county with a population of 3.3 million or more.

(2) 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.

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

(4) American Society of Mechanical Engineers (ASME) standards--The standards of the ASME.

(5) American Water Works Association (AWWA) standards--The latest edition of the applicable standards as approved and published by the AWWA.

(6) [(4)] Approved laboratory--A laboratory approved by the executive director to analyze water samples to determine their compliance with certain maximum or minimum allowable constituent levels.

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

(7) [(6)] ASTM International standards--The standards of ASTM International (formerly known as the American Society for Testing and Materials) [the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, Pennsylvania, 19428].

(8) [(7)] 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.

[(8) 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.]

(9) Bag filter [Filter]--Pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed of a non-rigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to the outside.

(10) Baseline performance--In reference to a membrane treatment facility, the detailed assessment of observed operational conditions at the time the membrane facility is placed in service for the purpose of tracking changes over time and determining when maintenance or service is required. Examples of parameters where baseline performance data is collected include: net driving pressure, normalized permeate flow, salt rejection, and salt passage.

(11) [(10)] Cartridge filter--Pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

(12) [(11)] Certified laboratory--A laboratory certified by the commission to analyze water samples to determine their compliance with maximum allowable constituent levels. After June 30, 2008, laboratories must be accredited, not certified, in order to perform sample analyses previously performed by certified laboratories.

(13) [(12)] Challenge test--A study conducted to determine the removal efficiency (log removal value) of a device for a particular organism, particulate, or surrogate.

(14) [(13)] Chemical 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.

(15) [(14)] 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.

(16) [(15)] 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.

(17) [(16)] 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.

(18) [(17)] 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.

(19) [(18)] Direct integrity test--A physical test applied to a membrane unit in order to identify and isolate integrity breaches/leaks that could result in contamination of the filtrate.

(20) [(19)] Disinfectant--A chemical or a treatment which is intended to kill or inactivate pathogenic microorganisms in water.

(21) [(20)] Disinfection--A process which inactivates pathogenic organisms in the water by chemical oxidants or equivalent agents.

(22) [(21)] 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.

(23) [(22)] 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.

(24) [(23)] 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).

(25) [(24)] 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.

(26) [(25)] Emergency operations--The operation of an affected utility during an extended power outage at a minimum water pressure of 35 pounds per square inch.

(27) [(26)] 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.

(28) [(27)] Extended power outage--A power outage lasting for more than 24 hours.

(29) [(28)] Filtrate--The water produced from a filtration process; typically used to describe the water produced by filter processes such as membranes.

(30) Flux--The throughput of a pressure-driven membrane filtration system expressed as flow per unit of membrane area. For example, gallons per square foot per day or liters per hour per square meter.

(31) [(29)] Groundwater--Any water that is located beneath the surface of the ground and is not under the direct influence of surface water.

(32) [(30)] 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; or

(C) site-specific characteristics including measurements of water quality parameters, well construction details, existing geological attributes, and other features that are similar to groundwater sources that have been identified by the executive director as being under the direct influence of surface water.

(33) [(31)] 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.

(34) [(32)] 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.

(35) [(33)] Indirect integrity monitoring--The monitoring of some aspect of filtrate water quality, such as turbidity, that is indicative of the removal of particulate matter.

(36) [(34)] Innovative/alternate treatment--Any treatment process that does not have specific design requirements in §290.42(a) - (f) of this title (relating to Water Treatment). [For example, the adjustment of fluoride ion content, special treatment for metals, iron, manganese, organic and inorganic contaminant reduction, special methods for taste and odor control, demineralization, corrosion control processes, membrane filtration, bag/cartridge filters, ozone, chlorine dioxide, Ultraviolet (UV) light disinfection, and other treatment processes.]

(37) [(35)] Interconnection--A physical connection between two public water supply systems.

(38) [(36)] International Fire Code (IFC)--The standards of the International Code Council[, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001].

(39) [(37)] 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.

(40) [(38)] 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.

(41) [(39)] 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.

(42) [(40)] Log removal value (LRV)--Removal efficiency for a target organism, particulate, or surrogate expressed as $\log_{10}$ (i.e., $\log_{10}$ (feed concentration) - $\log_{10}$ (filtrate concentration)).

(43) [(41)] 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.

(44) [(42)] Maximum contaminant level (MCL)--The MCL for a specific contaminant is defined in the section relating to that contaminant.

(45) [(43)] Membrane filtration--A pressure or vacuum driven separation process in which particulate matter larger than one micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test; includes the following common membrane classifications microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), and reverse osmosis (RO), as well as any "membrane cartridge filtration" (MCF) device that satisfies this definition.

(46) [(44)] Membrane $LRV_{C\text{-}Test}$--The number that reflects the removal efficiency of the membrane filtration process demonstrated during challenge testing. The value is based on the entire set of log removal values (LRVs) obtained during challenge testing, with one representative LRV established per module tested.

(47) [(45)] Membrane module--The smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.

(48) [(46)] Membrane sensitivity--The maximum log removal value [(LRV)] that can be reliably verified by a direct integrity test.

(49) [(47)] Membrane unit--A group of membrane modules that share common valving, which allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.

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

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

(52) [(50)] National Fire Protection Association (NFPA) standards--The standards of the NFPA[, 1 Batterymarch Park, Quincy, Massachusetts, 02269-9101].

(53) [(51)] NSF International [National Sanitation Foundation (NSF)]--The organization and the standards, certifications, and [The NSF or reference to the] listings developed by NSF International (formerly known as the National Sanitation Foundation) related to drinking water [the foundation, P.O. Box 1468, Ann Arbor, Michigan 48106].

(54) [(52)] Noncommunity water system--Any public water system which is not a community system.

(55) [(53)] 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.

(56) [(54)] 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.

(57) Pass--In reference to a reverse osmosis or nanofiltration membrane system, stages of pressure vessels in series in which the permeate from one stage is further processed in a following stage.

[(55) psi--Pounds per square inch.]

(58) [(56)] 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.

(59) [(57)] 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.

(60) [(58)] 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.

(61) [(59)] Potable water customer service line--The sections of potable water pipe between the customer's meter and the customer's point of use.

(62) [(60)] 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.

(63) [(61)] 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.

(64) [(62)] 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.

(65) [(63)] Process control duties--Activities that directly affect the potability of public drinking water, including: making decisions regarding the day-to-day operations and maintenance of public water system production and distribution; maintaining system pressures; determining the adequacy of disinfection and disinfection procedures; taking routine microbiological samples; taking chlorine residuals and microbiological samples after repairs or installation of lines or appurtenances; and operating chemical feed systems, filtration, disinfection, or pressure maintenance equipment; or performing other duties approved by the executive director.

(66) psi--Pounds per square inch.

(67) [(64)] 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.

(68) [(65)] Public health engineering practices--Requirements in this subchapter or guidelines promulgated by the executive director.

(69) [(66)] 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.

(70) [(67)] Quality Control Release Value (QCRV)--A minimum quality standard of a non-destructive performance test [(NDPT)] established by the manufacturer for membrane module production that ensures that the module will attain the targeted log removal value [(LRV)] demonstrated during challenge testing.

(71) [(68)] Reactor Validation Testing--A process by which a full-scale ultraviolet [Ultraviolet] (UV) reactor's disinfection performance is determined relative to operating parameters that can be monitored. These parameters include flow rate, UV intensity as measured by a UV sensor and the UV lamp status.

(72) [(69)] Resolution--The size of the smallest integrity breach that contributes to a response from a direct integrity test in membranes used to treat surface water or groundwater under the direct influence of surface water.

(73) [(70)] 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. For an example, see commission Form 20698.

(74) [(71)] Sanitary survey--An onsite review of a public water system's adequacy for producing and distributing safe drinking water by evaluating the following elements: water source; treatment; distribution system; finished water storage; pump, pump facilities, and controls; monitoring, reporting, and data verification; system management, operation and maintenance; and operator compliance.

(75) [(72)] Sensitivity--The maximum log removal value (LRV) that can be reliably verified by a direct integrity test in membranes used to treat surface water or groundwater under the direct influence of surface water; also applies to some continuous indirect integrity monitoring methods.

(76) [(73)] 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.

(77) [(74)] Service pump--Any pump that takes treated water from storage and discharges to the distribution system.

(78) [(75)] Significant deficiency--Significant deficiencies cause, or have the potential to cause, the introduction of contamination into water delivered to customers. This may include defects in design, operation, or maintenance of the source, treatment, storage, or distribution systems.

(79) Stage--In reference to a reverse osmosis or nanofiltration membrane system, a set of pressure vessels installed in parallel.

(80) [(76)] 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.

(81) [(77)] 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.

(82) Vessel--In reference to a reverse osmosis or nanofiltration membrane system, a cylindrical housing unit where membrane modules are placed in a series to form one unit.

(83) [(78)] 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.

(84) [(79)] 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. Texas Water Code (TWC), [Chapter 13, Subchapter E,] §13.1395, prescribes the duties of the commission relating to standards for emergency operations of affected utilities. The

statute requires that the commission ensure that affected utilities provide water service as soon as safe and practicable during an extended power outage following the occurrence of a natural disaster.

(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 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.

(4) Emergency Preparedness Plan for Public Water Systems that are Affected Utilities.

(A) Each public water system that is also an affected utility, as defined by §290.38 [§290.38(1)] of this title (relating to Definitions), is required to submit to the executive director, receive approval for, and adopt an emergency preparedness plan in accordance with §290.45 of this title (relating to Minimum Water System Capacity Requirements) using either the template in Appendix G [Appendix J] of §290.47 of this title (relating to Appendices) or another emergency preparedness plan that meets the requirements of this section. Emergency preparedness plans are required to be prepared under the direction of a licensed professional engineer when an affected utility has been granted or is requesting an alternative capacity requirement in accordance with §290.45(g) of this title, or is requesting to meet the requirements of TWC, §13.1395, as an alternative to any rule requiring elevated storage, or as determined by the executive director on a case-by-case [case by case] basis.

(B) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall include in its emergency preparedness plan under subparagraph (A) of this paragraph provision for the actual installation and

maintenance of automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(C) The executive director shall review an emergency preparedness plan submitted under subparagraph (A) of this paragraph. If the executive director determines that the plan is not acceptable, the executive director shall recommend changes to the plan. The executive director must make its recommendations on or before the 90th day after the executive director receives the plan. In accordance with commission rules, an emergency preparedness plan must include one of the options listed in §290.45(h)(1)(A) - (H) of this title.

(D) Each affected utility shall install any required equipment to implement the emergency preparedness plan approved by the executive director immediately upon operation.

(E) The executive director may grant a waiver of the requirements for emergency preparedness plans to an affected utility if the executive director determines that compliance with this section will cause a significant financial burden on customers of the affected utility. The affected utility shall submit financial, managerial,

and technical information as requested by the executive director to demonstrate the financial burden.

(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 159, [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 transferable. 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. For an example, see commission Form 20698. [Section 290.47(c) of this title 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.

(6) For public water systems using reverse osmosis or nanofiltration membranes, the engineering report must include the requirements specified in paragraph (1)(A) - (H) of this subsection, and additionally must provide sufficient information to ensure effective treatment. Specifically:

(A) Provide a clear identification of the proposed raw water source.

(i) If the well has been constructed, a copy of the State of Texas Well Report according to 16 TAC Chapter 76 (relating to Water Well Drillers and Water Well Pump Installers), a cementing certificate (as required by §290.41(c)(3)(A) of this title), and a copy of the complete physical and chemical analysis of the raw water from the well as required by §290.41(c)(3)(G) of this title; or

(ii) If the well has not been constructed, the approximate longitude and latitude for the new well and the projected water quality.

(B) Provide a description of the pretreatment process that includes:

(i) target water quality of the proposed pretreatment process;

(ii) constituent(s) to be removed or treated;

(iii) method(s) or technologies used; and

(iv) operating parameters, such as chemical dosages, filter loading rates, and empty bed contact times.

(C) The design of a reverse osmosis or nanofiltration membrane system shall be based on the standard modeling tools of the manufacturer. The model must be run for both new membranes and end-of-life membranes. All design parameters required by the membrane manufacturer's modeling tool must be included in the modeled analysis. At a minimum, the model shall provide:

(i) system flow rate;

(ii) system recovery;

(iii) number of stages;

(iv) number of passes;

(v) feed pressure;

(vi) system configuration with the number of vessels per stage, the number of passes (if applicable), and the number of elements per vessel;

(vii) flux (in gallons per square foot per day) for the overall system;

(viii) selected fouling factor for new and end-of-life membranes; and

(ix) ion concentrations in the feed water for all constituents required by the manufacturer's model and the projected ion concentrations for the permeate water and concentrate water.

(D) In lieu of the modeling requirements as detailed in subparagraph (C) of this paragraph, the licensed professional engineer may provide either a pilot study or similar full-scale data in accordance with §290.42(g) of this title (relating to Water Treatment). Alternatively, for reverse osmosis or nanofiltration units rated for flow rates less than 300 gallons per minute, the design specifications can be based on the allowable operating parameters of the manufacturer.

(E) Provide documentation that the components and chemicals for the proposed treatment process conform to American National Standards Institute/NSF International (ANSI/NSF) Standard 60 for Drinking Water Treatment Chemicals and ANSI/NSF Standard 61 for Drinking Water System Components.

(F) Provide the details for post-treatment and re-mineralization to reduce the corrosion potential of the finished water. If carbon dioxide and/or hydrogen sulfide is present in the reverse osmosis permeate, include the details for a degasifier for post-treatment.

(G) For compliance with applicable drinking water quality requirements in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems), provide the projected water quality at the entry point to the distribution system and the method(s) used to make the water quality projections.

(H) When blending is proposed, provide the blending ratio, source of the water to be blended, and the calculations showing the concentrations of regulated constituents in the finished water.

(I) Provide a description of the disinfection byproduct formation potential based on total organic carbon and other precursor sample results.

(J) Provide the process control details to ensure the integrity of the membrane system. The engineering report shall identify specific parameters and set

points that indicate when membrane cleaning, replacement, and/or inspection is necessary.

(i) The parameters shall be based on one, or more of the following: increased salt passage, increased or decreased pressure differential, and/or change in normalized permeate flow.

(ii) Define the allowable change from baseline performance.

(7) Before reverse osmosis or nanofiltration membrane systems can be used to produce drinking water, but after the reverse osmosis or nanofiltration membrane system has been constructed at the water system, the licensed professional engineer must submit an addendum to the engineering report required by paragraph (6) of this subsection to the executive director for review and approval. The addendum shall include the following verification data of the full-scale treatment process:

(A) Provide the initial baseline performance of the plant. The baseline net driving pressure, normalized permeate flow, salt rejection (or salt passage) must be documented when the reverse osmosis or nanofiltration membrane systems are placed online.

(B) Provide the frequency of cleaning or membrane replacement. The frequency must be based on a set time interval or at a set point relative to baseline performance of the unit(s).

(C) If modeling is used as the basis for the design, provide verification of the model's accuracy. If the baseline performance evaluation shows that the modeling projection in the engineering report were inaccurate, the licensed professional engineer shall determine if the deviation from the modeled projections resulted from incorrect water quality assumptions or from other incorrect data in the model. The model shall be considered inaccurate if the overall salt passage or the required feed pressure is 10% greater than the model projection. For any inaccurate model, provide a corrected model with the addendum to the engineering report.

(D) Provide verification of plant capacity. The capacity of the reverse osmosis and nanofiltration membrane facility shall be based on the as-built configuration of the system and the design parameters in the engineering report with adjustments as indicated by the baseline performance. Refer to paragraph (6)(C) of this subsection and §290.45(a)(6) of this title for specific considerations.

(E) Provide a complete physical and chemical analysis of the water. The analyses shall be in accordance with §290.41(c)(3)(G) of this title for the raw water

(before any treatment), the water produced from the membrane systems, and the water after any post-treatment. Samples must be submitted to an accredited laboratory for chemical analyses.

(8) The calculations for sizing feed pump(s) and chemical storage tank(s) must be submitted to demonstrate that a project meets chemical feed and storage capacity requirements.

(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 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 Chapter 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 previously approved 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. Significant changes in existing systems or supplies [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. Any long-term change in water treatment that will impact the corrosivity] shall not be instituted without the prior approval of the executive director.

(1) Public water systems shall submit plans and specifications to the executive director for the following [The following changes are considered to be] significant changes:

(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 number of connections, [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, or involves interconnection with another public water system; and

~~(E) proposed replacement or change of membranes modules; and~~

(E) ~~(F)~~ any other material changes specified by the executive director. [; and]

[(G) examples of long-term treatment changes that could impact the corrosivity of the water include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants, and switching corrosion inhibitor products. Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.]

(2) Public water systems shall notify the executive director in writing of the addition of treatment chemicals, including long-term treatment changes, that will impact the corrosivity of the water. These are considered to be significant changes that require written approval from the executive director. [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) Examples of long-term treatment changes that could impact the corrosivity of the water include the addition of a new treatment process or modification

of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants, and switching corrosion inhibitor products. Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes. [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) After receiving the notification, the executive director will determine whether the submittal of plans and specifications will be required. 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. [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) Plans and specifications may not be required for changes that are specifically addressed in paragraph (1)(D) of this subsection in the following situations: [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.]

(A) 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.

(B) 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 (A) 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 (A) of this paragraph.

(4) Public water systems shall notify the executive director in writing of proposed replacement or change of membrane modules, which may be a significant change. After receiving the notification, the executive director will determine whether the submittal of plans and specifications will be required. Upon request of the executive director, the system shall submit plans and specifications in accordance with the requirements of subsection (d) of this section. In its notification to the executive director, the system shall include the following information:

(A) The membrane module make/type, model, and manufacturer;

(B) The membrane plant's water source (groundwater, surface water, groundwater under the direct influence of surface water, or other);

(C) Whether the membrane modules are used for pathogen treatment or not;

(D) Total number of membrane modules per membrane unit; and

(E) The number of membrane modules being replaced or changed for each membrane unit.

(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.

(4) The executive director may establish <u>site-specific</u> [site specific design, operation, maintenance, and reporting] requirements for systems that have been <u>granted</u> [issued] an exception [to the subchapter]. <u>The requirements may include, but are not limited to: site-specific design, operation, maintenance, and reporting requirements.</u>

(5) Water systems that are granted an exception shall comply with the requirements established by the executive director under paragraph (4) of this subsection.

(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.

(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;

(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.

(o) Emergency Preparedness Plans for Affected Utilities.

(1) Each public water system that is also an affected utility and that exists as of November 1, 2011 is required to adopt and submit to the executive director an emergency preparedness plan in accordance with §290.45 of this title and using the template in Appendix G [Appendix J] of §290.47 of this title or another emergency preparedness plan that meets the requirements of this subchapter no later than February 1, 2012. Emergency preparedness plans are required to be prepared under the direction of a licensed professional engineer when an affected utility has been granted or is requesting an alternative capacity requirement in accordance with §290.45(g) of this title, or is requesting to meet the requirements of TWC, §13.1395, as an alternative to any rule requiring elevated storage, or as determined by the executive director on a case-by-case [case by case] basis.

(2) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall include in its emergency preparedness plan under this subsection provisions for the actual installation and maintenance of automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(3) The executive director shall review an emergency preparedness plan submitted under this subsection. If the executive director determines that the plan is not acceptable, the executive director shall recommend changes to the plan. The executive director must make its recommendations on or before the 90th day after the executive director receives the plan. In accordance with the commission rules, an emergency preparedness plan must include one of the options listed in §290.45(h)(1)(A) - (H) of this title.

(4) Not later than June 1, 2012, each affected utility shall implement the emergency preparedness plan approved by the executive director.

(5) An affected utility may file with the executive director a written request for an extension not to exceed 90 days, of the date by which the affected utility is required under this subsection to submit the affected utility's emergency preparedness plan or of the date by which the affected utility is required under this subsection to implement the affected utility's emergency preparedness plan. The executive director may approve the requested extension for good cause shown.

(6) The executive director may grant a waiver of the requirements for emergency preparedness plans to an affected utility if the executive director determines that compliance with this section will cause a significant financial burden on customers

of the affected utility. The affected utility shall submit financial, managerial, and technical information as requested by the executive director to demonstrate the financial burden.

§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).

(1) A retail public utility as defined by Texas Water Code, §13.002(19) and each entity from which the utility is obtaining wholesale water service for the utility's retail system shall report to the executive director when the utility or entity is reasonably

certain that the water supply will be available for less than 180 days. The reporting must be accomplished by utilizing the online "PWS Drought Contingency Plan Reporting Form."

(2) If reporting cannot be accomplished in accordance with paragraph (1) of this subsection, then the retail public utility or entity from which the utility is obtaining wholesale water service may report to the executive director by United States Postal Service mail, program e-mail, [electronic mail,] or facsimile.

(c) Groundwater sources and development.

(1) Groundwater sources shall be located so that there will be no danger of pollution from flooding or from unsanitary 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, 4, and 5 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 subparagraph [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 (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 0.25% [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 most current

AWWA Standard for Water Wells (A100), [(A100-06),] Appendix C: Section C.2 (Positive Displacement Exterior Method); Section C.3 (Interior Method Without Plug); Section C.4 (Positive Placement, Interior Method, Drillable Plug); and Section C.5 (Placement Through Float Shoe Attached to Bottom of Casing). The grouting mixture used to pressure cement the annular space shall be neat cement as specified in the most current AWWA Standard for Water Wells and to which a maximum of 6%, by dry weight, bentonite and 2%, by dry weight, calcium chloride may be added. The minimum annular space between the outside diameter of the casing pipe and the borehole shall be no less than 1 1/2 inches in radial thickness or three inches in net diametrical difference and the pressure grouting shall be from the bottom upward utilizing one of the methods listed in this subparagraph for all public water system groundwater well construction. 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 accredited by the Texas Commission on Environmental Quality.

(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 an accredited 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 accredited 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 [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 159, [MC 153,] P.O. Box 13087, Austin, Texas 78711-3087.

(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.

(5) All systems with new springs or similar sources must monitor microbiological source water quality at the new springs or similar sources in accordance with §290.111 of this title (relating to Surface Water Treatment) on a schedule determined by the executive director. The system must notify the agency of the new spring or similar source prior to construction. The executive director may waive these requirements if the spring or similar source has been determined not to be under the direct influence of surface water.

(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 §§321.1 - 321.11 of this title (relating to Boat Sewage Disposal).

(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, *Escherichia 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.

(G) All systems with new surface water intakes or new bank filtration wells must monitor microbiological source water quality at the new surface water intakes or new bank filtration wells in accordance with §290.111 of this title on a schedule determined by the executive director. The system must notify the agency of the new surface water intake or bank filtration well prior to construction.

(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 groundwater 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 wastes, 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)(11) 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 minute per square foot (gpm/sq ft) [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.

(D) If reverse osmosis or nanofiltration membrane systems are used, the design shall conform to the requirements in paragraph (9) of this subsection.

(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.

(8) The executive director may require 4-log removal or inactivation of viruses based on raw water sampling results required by §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques).

(9) Reverse osmosis or nanofiltration membrane systems used for the treatment of primary and secondary contaminants defined in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems), must meet the design criteria in subparagraphs (A) - (L) of this paragraph.

(A) The design for all reverse osmosis and nanofiltration membrane systems must be in accordance with the findings of the engineering report. Variations from the engineering report must be explained and shall not compromise public health. Minimum engineering report requirements are found in §290.39(e)(1) and (6) of this title (relating to General Provisions).

(B) The reverse osmosis and nanofiltration membrane systems must be designed to ensure adequate cleaning of the membrane system.

(C) The reverse osmosis or nanofiltration membrane systems must be designed to operate at flux rates which assure effective filtration at all times based on at least one of the following:

(i) manufacturer's computer models for new and end-of-life membranes;

(ii) site-specific pilot study;

(iii) comparable design data from an alternative site; or

(iv) the manufacturer's allowable operating parameters, if the membrane unit's capacity is rated less than 300 gallons per minute (gpm).

(D) Pretreatment shall be provided such that the feed water quality to the membrane units shall meet the minimum allowable requirements of the membrane manufacturer. Pretreatment processes shall be sized correctly for the flow of the plant, and the components and chemicals used for pretreatment in contact with the water must conform to American National Standards Institute/NSF International (ANSI/NSF) Standard 60 for Drinking Water Treatment Chemicals or ANSI/NSF Standard 61 for Drinking Water System Components. Other pretreatment processes will

be reviewed on an individual basis in accordance the innovative/alternate treatment requirements specified in subsection (g) of this section. Acceptable pretreatment techniques include:

(i) bags, cartridge filters or screens for particulate removal;

(ii) chemical addition that will not adversely affect the reverse osmosis or nanofiltration membrane;

(iii) filters for iron and manganese removal in accordance with paragraph (2)(A) of this subsection;

(iv) aeration or degasification; and

(v) ion exchange softening.

(E) The treatment plant must include post-treatment facilities for corrosivity control, re-mineralization and the removal of dissolved gases, such as carbon dioxide and hydrogen sulfide, if necessary to meet the system's water quality goals. The treatment must be sized correctly for the flow of the plant, and the components and chemicals used for treatment must conform to ANSI/NSF Standard 60 for Drinking

Water Treatment Chemicals or ANSI/NSF Standard 61 for Drinking Water System Components.

(F) Pipes and pipe galleries shall meet the minimum requirements specified in subsection (d)(12) and (13) of this section.

(G) Each reverse osmosis or nanofiltration membrane unit ~~treatment facility~~ shall be equipped to measure conductivity or total dissolved solids in the feed and the permeate water.

(H) Chemical storage and chemical feed facilities shall comply with subsection (f) of this section.

(I) Provide cross-connection protection for common piping used for cleaning and normal production modes.

(J) Provide flow meters on the pipes for feed, permeate, and concentrate water. 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.

(K) The water system must provide pressure measuring and recording devices before and after each membrane stage.

(L) The water system must provide equipment to monitor the temperature of the water. The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(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 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. Based on raw water monitoring results, the executive director may require

additional levels of treatment for *Cryptosporidium* treatment as specified in §290.111 of this title (relating to Surface Water Treatment).

(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. 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 Notification).

(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.

(8) Reverse osmosis and nanofiltration membrane systems not provided for microbiological quality control shall conform to the requirements of subsection (b) of this section.

(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. Based on raw water monitoring results, the executive director may require additional levels of treatment for *Cryptosporidium* treatment as specified in §290.111 of this title.

(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. 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 [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 (MGD) 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 MGD [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 units [unit] [(NTU)] and the treatment plant meets with turbidity requirements of §290.111 of this title.

(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 MGD [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 gpm/sq ft [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 gpm/sq ft [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 gpm/sq ft [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 MGD [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 gpm/sq ft [gallons per square foot per minute]. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 3.0 gpm/sq ft [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 gpm/sq ft [gallons per square foot per minute]. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 6.5 gpm/sq ft [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 gpm/sq ft [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 MGD [million gallons per day] must be able to meet either the maximum daily demand or the minimum required 0.6 gpm [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 MGD [million gallons per day] or more must be able to meet either the maximum daily demand or the minimum required 0.6 gpm [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 gpm [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, as defined in §290.38 of this title (relating to Definitions), 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) 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 gpm/sq ft [gallons per minute per square foot])

and usually not more than 35 inches vertical rise per minute (21.8 gpm/sq ft [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) (No change to the figure as it exists in TAC.)

(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 accredited 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 accredited 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.

(17) Reverse osmosis and nanofiltration membrane systems not provided for microbiological quality control shall conform to the requirements of subsection (b)(9) of this section.

(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 and [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 free chlorine and chloramines will be considered on a case-by-case basis under the exception guidelines of §290.39(l) of this title [(relating to General Provisions)]. If water containing chloramines and water containing free chlorine are blended, then a case-by-case review under §290.39(l) of this title will be required.

(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 International Fire Code (IFC).

(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 IFC.

(7) Chloramine disinfection shall be performed in a manner which assures that the proper chlorine to ammonia (as nitrogen) ratio is achieved in order to maintain a monochloramine residual and limit nitrification.

(A) The order of chlorine and ammonia injection must be accomplished in a manner which allows inactivation of viruses and oxidation of cyanide.

(i) When chlorine is injected upstream of any other disinfectant, the ammonia injection point must be downstream of the chlorine injection point.

(ii) When chlorine and ammonia are added to distribution water that has a chloramine residual, ammonia should be added first.

(iii) When chlorine and ammonia are added to distribution water that has a free chlorine residual, chlorine should be added first.

(B) Mixing shall be provided to disperse chemicals.

(C) Sampling taps must be provided at locations that allow for chlorine and ammonia to be added to the water to form monochloramine as the primary chloramine species. These locations must be listed in the system's monitoring plan as described in §290.121 of this title (relating to Monitoring Plans). Sample taps ~~A sample tap~~ must be provided as follows: ~~before and after each chloramine chemical injection point.~~

(i) upstream of the chlorine or ammonia chemical injection point, whichever is furthest upstream; ~~Before chlorine is added, the free ammonia (as nitrogen) residual must be able to be determined.~~

(ii) between the addition of the chloramine chemicals at chloramination facilities submitted for plan review after December 31, 2015. For these facilities, an installation without this sample tap may be approved if an acceptable technical reason is described in the plan review documents. Technical reasons, such as disinfection byproduct control, must be supported by bench scale sampling results. Other technical reasons, such as membrane integrity, must be supported by documentation; and ~~Before ammonia is added, the free chlorine residual must be able to be determined.~~

(iii) ~~Sample taps must be provided~~ at a point after mixing to be able to measure fully-formed monochloramine levels.

(D) When using chloramines, the feed and storage must be designed as described in subsection (f) of this section, regardless of water source.

(E) When using chloramines, the public water systems shall provide equipment for making at least the following determinations for purposes of complying with the requirements in §290.110 of this title:

(i) free ammonia (as nitrogen);

(ii) monochloramine;

(iii) total chlorine;

(iv) free chlorine; and

(v) nitrite and nitrate (both as nitrogen). The public water systems must either obtain equipment for measuring nitrite and nitrate or identify an accredited laboratory that can perform nitrite and nitrate analysis and can provide results to the public water systems within 48 hours of sample delivery.

(f) Water [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 <u>from bulk storage facilities</u>. 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 55 [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. Innovative/alternate treatment processes will be considered on an individual basis, in accordance with §290.39(l) of this title. 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 a pilot study protocol to be submitted for review and approval prior to conducting a pilot study to verify compliance with the requirements of §290.39(l) of this title and Subchapter F of this chapter. The executive director may require proof of a one-year manufacturer's performance warrantee or guarantee assuring that the plant will produce treated water which meets minimum state and federal standards for drinking water quality.

(1) Package-type treatment systems and their components shall be subject to all applicable design criteria in this section.

(2) Bag and cartridge filtration systems or modules installed or replaced after April 1, 2012, and used for microbiological treatment, can receive up to 3.0-log *Giardia* removal credit, up to 2.0-log *Cryptosporidium* removal credit for individual bag or cartridge filters, and up to 2.5-log *Cryptosporidium* removal credit for bag or cartridge filters operated in series only if the cartridges or bags meet the criteria in subparagraphs (A) - (C) of this paragraph.

(A) The filter system must treat the entire plant flow.

(B) To be eligible for this credit, systems must receive approval from the executive director based on the results of challenge testing that is conducted

according to the criteria established by 40 Code of Federal Regulations (CFR) §141.719(a) and the executive director.

(i) A factor of safety equal to 1.0-log for individual bag or cartridge filters and 0.5-log for bag or cartridge filters in series must be applied to challenge testing results to determine removal credit.

(ii) Challenge testing must be performed on full-scale bag or cartridge filters, and the associated filter housing or pressure vessel, that are identical in material and construction to the filters and housings the system will use for removal of *Cryptosporidium* and *Giardia*.

(iii) Bag or cartridge filters must be challenge tested in the same configuration that the system will use, either as individual filters or as a series configuration of filters.

(iv) Systems may use results from challenge testing conducted prior to January 5, 2006, if prior testing was consistent with 40 CFR §141.719, submitted by the system's licensed professional engineer, and approved by the executive director.

(v) If a previously tested filter is modified in a manner that could change the removal efficiency of the filter product line, additional challenge testing to demonstrate the removal efficiency of the modified filter must be conducted and results submitted to the executive director for approval.

(C) Pilot studies must be conducted using filters that will meet the requirements of this section.

(3) Membrane filtration systems or modules installed or replaced after April 1, 2012, and used for microbiological treatment, can receive *Cryptosporidium* and *Giardia* removal credit for membrane filtration only if the systems or modules meet the criteria in subparagraphs (A) - (F) of this paragraph.

(A) The membrane module used by the system must undergo challenge testing to evaluate removal efficiency. Challenge testing must be conducted according to the criteria established by 40 CFR §141.719(b)(2) and the executive director.

(i) All membrane module challenge test protocols and results, the protocol for calculating the representative Log Removal Value [(LRV)] for each membrane module, the removal efficiency, calculated results of Membrane LRV_{C-}

Test, [LRVC-Test,] and the non-destructive performance test with its Quality Control Release Value (QCRV) must be submitted to the executive director for review and approval prior to beginning a membrane filtration pilot study at a public water system.

(ii) Challenge testing must be conducted on either a full-scale membrane module identical in material and construction to the membrane modules to be used in the system's treatment facility, or a smaller-scale membrane module identical in material and similar in construction to the full-scale module if approved by the executive director.

(iii) Systems may use data from challenge testing conducted prior to January 5, 2006, if prior testing was consistent with 40 CFR §141.719, submitted by the system's licensed professional engineer, and approved by the executive director.

(iv) If a previously tested membrane is modified in a manner that could change the removal efficiency of the membrane product line or the applicability of the non-destructive performance test and associated QCRV, additional challenge testing to demonstrate the removal efficiency of the modified membrane and determine a new QCRV for the modified membrane must be conducted and results submitted to the executive director for approval.

(B) The membrane system must be designed to conduct and record the results of direct integrity testing in a manner that demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration system approved by the executive director and meets the requirements in clauses (i) and (ii) [(i) - (ii)] of this subparagraph.

(i) The design must provide for direct integrity testing of each membrane unit.

(ii) The design must provide direct integrity testing that has a resolution of 3 micrometers or less.

(iii) The design must provide direct integrity testing with sensitivity sufficient to verify the log removal credit approved by the executive director. Sensitivity is determined by the criteria in 40 CFR §141.719(b)(3)(iii).

(iv) The executive director may reduce the direct integrity testing requirements for membrane units.

(C) The membrane system must be designed to conduct and record continuous indirect integrity monitoring on each membrane unit. The turbidity of the water produced by each membrane unit must be measured using the Hach FilterTrak Method 10133. The executive director may approve the use of alternative technology to monitor the quality of the water produced by each membrane unit.

(D) The level of removal credit approved by the executive director shall not exceed the lower of:

(i) the removal efficiency demonstrated during challenge testing conducted under the conditions in subparagraph (A) of this paragraph, or

(ii) the maximum removal efficiency that can be verified through direct integrity testing used with the membrane filtration process under the conditions in subparagraph (B) of this paragraph.

(E) Pilot studies must be conducted using membrane modules that will meet the requirements of this section.

(F) Membrane systems must be designed so that membrane units' feed water, filtrate, backwash supply, waste and chemical cleaning piping shall have

cross-connection protection to prevent chemicals from all chemical cleaning processes from contaminating other membrane units in other modes of operation. This may be accomplished by the installation of a double block and bleed valving arrangement, a removable spool system or other alternative methods approved by the executive director.

(4) Bag, cartridge or membrane filtration systems or modules installed or replaced before April 1, 2012, and used for microbiological treatment, can receive up to a 2.0-log removal credit for *Cryptosporidium* and up to a 3.0-log removal credit for *Giardia* based on site-specific [site specific] pilot study results, design, operation, and reporting requirements.

(5) Ultraviolet (UV) light reactors used for microbiological inactivation can receive *Cryptosporidium*, *Giardia* and virus inactivation credit if the reactors meet the criteria in subparagraphs (A) - (C) of this paragraph.

(A) UV light reactors can receive inactivation credit only if they are located after filtration.

(B) In lieu of a pilot study, the UV light reactors must undergo validation testing to determine the operating conditions under which a UV reactor

delivers the required UV dose. Validation testing must be conducted according to the criteria established by 40 CFR §141.720(d)(2) and the executive director.

(i) The validation study must include the following factors: UV absorbance of the water; lamp fouling and aging; measurement uncertainty of on-line sensors; UV dose distributions arising from the velocity profiles through the reactor; failure of UV lamps and other critical system components; inlet and outlet piping or channel configuration of the UV reactor; lamp and sensor locations; and other parameters determined by the executive director.

(ii) Validation testing must be conducted on a full-scale reactor that is essentially identical to the UV reactor(s) to be used by the system and using waters that are essentially identical in quality to the water to be treated by the UV reactor.

(C) The UV light reactor systems must be designed to monitor and record parameters to verify the UV reactors operation within the validated conditions approved by the executive director. The UV light reactor must be equipped with facilities to monitor and record UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters designated by the executive director.

(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 ANSI/NSF [American National Standards Institute/National Sanitation Foundation (ANSI/NSF)] Standard 60 for Drinking Water Treatment Chemicals [direct additives] and ANSI/NSF Standard 61 for Drinking Water System Components [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. <u>If operating a reverse osmosis or nanofiltration membrane system, the manual must also include the system's configuration, baseline performance data, and any set point for membrane cleaning or replacement.</u>

(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.

(n) Corrosion control treatment. Systems must install any corrosion control or source water treatment required by §290.117(f) and (g) of this title (relating to Regulation of Lead and Copper), respectively. Such treatment must be designed and installed consistent with the requirements of this subchapter. The requirements of 40 CFR §141.82(i) and §141.83(b)(7) relating to EPA involvement in treatment determination are adopted by reference.

§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 [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. <u>The discharge opening shall be covered with a gravity-hinged and weighted cover, an elastomeric duckbill valve, or other approved device to prevent the entrance of insects and other nuisances. When the tank is not overflowing, the cover shall close automatically and fit tightly with no gap over 1/16 inch.</u>

(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. Each clearwell or potable water storage tank ~~Any storage facility containing chloraminated water~~ must be designed to drain the tank ~~efficiently if nitrification occurs.~~

(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 United States Environmental Protection Agency, NSF International [EPA, National Sanitation Foundation] (NSF), or United States Food and Drug Administration [(FDA)]. All newly installed coatings must conform to American National Standards Institute/NSF [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 nonpotable [non-potable] purpose. Where a used tank is proposed for use, a letter from the previous owner or owners must be submitted to the executive director [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/NSF International [American National Standards Institute/National Sanitation Foundation] (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.

(2) All plastic pipes for use in public water systems must also bear the NSF International [National Sanitation Foundation] Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 pounds per square inch (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 0.25% [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.

(3) The following are exempt from prohibitions on the use of lead pipes, solder, and flux:

(A) pipes, pipe fittings, plumbing fittings, or fixtures, including backflow preventers, that are used exclusively for nonpotable services such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not anticipated to be used for human consumption; or

(B) toilets, bidets, urinals, fill valves, flush-o-meter valves, tub fillers, shower valves, service saddles, fire hydrants or water distribution main gate valves that are two inches in diameter or larger.

(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 less than 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) (No change to the figure as it exists in TAC.)

(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. The distribution system of public water systems that are also affected utilities must be designed to meet the requirements of §290.45(h) of this title (relating to Minimum Water System Capacity Requirements).

(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 [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 [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 [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 above a [an existing, non-pressure rated] wastewater main or lateral, the [one] segment of the waterline pipe shall be centered over and must be perpendicular to 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. When crossing an

existing wastewater main or lateral and it [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, the wastewater main or lateral [it] shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure-rated [pressure rated] pipe embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

(I) The potable waterline shall be at least two feet above an existing, non-pressure rated wastewater main or lateral.

(II) The potable waterline shall be at least six inches above an existing, pressure-rated wastewater main or lateral.

(ii) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral, the segment of the waterline pipe shall be centered over and shall be perpendicular to 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 (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end. The materials and method of installation shall conform to one of the following options:

[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.]

(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 clause (ii) of this subparagraph 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. When a new waterline crosses under a wastewater main, the procedures in §217.53(d) ~~§217.53(d)(3)(B)~~ of this title (relating to Pipe Design) must be followed. [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, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over and shall be perpendicular to 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 (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end. [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 to 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 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. [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 <u>manhole</u> or lateral manhole or cleanout separation. The separation distance from a potable waterline to a wastewater main <u>manhole</u> 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(f) [§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 licensed 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(f) [§290.47(i)] of this title shall be tested upon installation by a licensed 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 licensed backflow prevention assembly tester.

(A) Backflow prevention assembly testers shall have completed an executive director-approved [executive director approved] course on cross-

connection control and backflow prevention assembly testing, pass an examination administered by the executive director, and hold a current license 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 Texas Department of Insurance's State Fire Marshal's Office [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 AWWA's Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA Manual[,] M14). Public water systems shall require testers to include test gauge serial numbers on the Backflow Prevention Assembly Test and Maintenance Report (commission Form 20700), ["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 commission Form 20700 [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 milligrams per liter (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.

(j) If a structure is connected to a public water supply system and has a rainwater harvesting system, the structure must have appropriate cross-connection safeguards in accordance with subsection (h)(1) of this section.

(1) A privately owned rainwater harvesting system with a capacity of more than 500 gallons that is connected to a public water system for a back-up supply shall have a backflow prevention assembly or an air gap installed at the storage facility for the harvested rainwater to ensure physical separation between the rainwater harvesting system and the public water system.

(2) At each residence or facility where water from a rainwater harvesting system is used for potable purposes and there is a connection to a public water system, the public water system shall ensure that the rainwater harvesting system is installed and maintained by a master plumber or journeyman plumber licensed by the Texas State Board of Plumbing Examiners and who holds an endorsement issued by the Texas State Board of Plumbing Examiners as a Water Supply Protection Specialist.

(3) A person who intends to connect a rainwater harvesting system to a public water system must give written notice of that intention to the municipality or the owner or operator of the public water system in which the rainwater harvesting system is located.

(4) The public water system used as a back-up supply for the rainwater harvesting system may be connected only to the water storage tank and may not be connected to the plumbing of a structure.

§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 and do not include emergency fire flow capacities for systems required to meet requirements contained in §290.46(x) and (y) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(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 for a system that is unable to maintain a minimum pressure of 20 psi during fire fighting, line flushing, other unusual conditions, and systems that are required to provide fire flow as specified in §290.46(x) and (y) of this title.

(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. The production capacity of a reverse osmosis or nanofiltration membrane system shall be the quantity of permeate water after post-treatment that can be delivered to the distribution system. The amount available for customer use must consider:

(A) the quantity of feed water discharged to waste;

(B) the quantity of bypass water used for blending;

(C) the quantity of permeate water used for cleaning and maintenance; and

(D) any other loss of raw water or groundwater available for use due to other processes at the reverse osmosis or nanofiltration facility.

(7) If a public water system that is an affected utility fails to provide a minimum of 35 psi throughout the distribution system during emergency operations as soon as it is safe and practicable following the occurrence of a natural disaster, a revised emergency preparedness plan or justification regarding pressure drop shall be

submitted for review and approval within 180 days of the date normal power is restored. Based on the review of the revised emergency preparedness plan, the executive director may require additional or alternative auxiliary emergency facilities.

(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

Standard). Although not required, compliance with NFPA 110 Standard 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 Standard. Although not required, compliance with NFPA 110 Standard 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.

(3) Any community public water system that is an affected utility shall have an emergency preparedness plan approved by the executive director and must meet the requirements for emergency operations contained in subsection (h) of this section. This includes any affected utility that provides 100 gallons of elevated storage capacity per connection.

(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 gallons per unit;

(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.

(3) A noncommunity public water system that is an affected utility shall meet the requirements of subsection (h) of this section.

(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) (No change to the figure as it exists in TAC.)

(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.

(4) A noncommunity public water system that is an affected utility shall meet the requirements of subsection (h) of this section.

(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, fire flow capacities, if required by §290.46(x) and (y) of this title 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.

(4) A wholesaler that is an affected utility must meet the requirements specified in subsection (h) of this section.

(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 and §290.46(x) and (y) of this title 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 and comply with the requirements found in §290.46(x) and (y) of this title. 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.

(iv) A public water system that is an affected utility must conduct the modeling requirements contained in clauses (i) - (iii) of this subparagraph using the requirements specified in subsection (h) of this section.

(B) Emergency power facilities must be maintained and provided with necessary appurtenances to assure immediate and dependable operation in case of normal power interruption. A public water system that is an affected utility must meet the requirements specified in subsection (h) of this section.

(i) The facilities must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 Standard 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 uninterrupted 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.

(h) Affected utilities. This subsection applies to all affected utilities and is in addition to any other requirements pertaining to emergency power requirements found in this subchapter.

(1) Affected utilities must provide one of the following options of sufficient power to meet the capacity requirements of paragraph (1) or (2) of this subsection,

whichever is applicable, and in accordance with the affected utility's approved emergency preparedness plan:

(A) the maintenance of automatically starting auxiliary generators;

(B) the sharing of auxiliary generator capacity with one or more affected utilities;

(C) the negotiation of leasing and contracting agreements, including emergency mutual aid agreements with other retail public utilities, exempt utilities, or providers, or conveyors of potable or raw water service, if the agreements provide for coordination with the division of emergency management in the governor's office;

(D) the use of portable generators capable of serving multiple facilities equipped with quick-connect systems;

(E) the use of on-site electrical generation or electrical distributed generation facilities;

(F) hardening of the electric transmission and electric distribution system against damage from natural disasters during an extended power outage;

(G) for existing facilities, the maintenance of direct engine or right angle drives; or

(H) any other alternative determined by the executive director to be acceptable.

(2) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall install and maintain automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(3) Emergency generators used as part of an approved emergency preparedness plan must be maintained, tested, and operated in accordance with the manufacturer's specifications.

(4) An affected utility may adopt and is encouraged to enforce limitations on water use while the utility is providing emergency operations.

(5) As soon as safe and practicable following the occurrence of a natural disaster, an affected utility must operate in accordance with its approved emergency preparedness plan, which may include using elevated storage. An affected utility may meet the requirements of Texas Water Code, §13.1395, including having a currently approved emergency preparedness plan, in lieu of any other rules regarding elevated storage requirements, provided that, under normal operating conditions, the affected utility continues to meet the pressure requirements of §290.46(r) of this title and the production, treatment, total storage and service pump capacity requirements of this subchapter.

(6) An affected utility must maintain on-site, or make readily available during emergency operations, an amount of fuel necessary to operate any required emergency power equipment necessary to maintain emergency operations.

§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 including the required elements of a sanitary survey as defined in §290.38 [§290.38(71)] of this title (relating to Definitions). 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 an accredited laboratory. (A list of the accredited laboratories can be obtained by contacting the executive director.) The samples shall be submitted to the executive director in a manner prescribed by 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 milligrams per liter (mg/L); or

(B) a chloramine residual of 0.5 mg/L (measured as total chlorine) for those systems that <u>distribute chloraminated water</u> [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 or the Texas Hazard Communication Act, Texas Health and Safety Code, Chapter 502.

(C) 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.

(D) Effective September 1, 2016, reverse ~~Reverse~~ osmosis or nanofiltration membrane systems must have operators that have successfully completed at least one executive director-approved training course or event specific to the operations and maintenance of reverse osmosis or nanofiltration membrane treatment.

(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 Production [Unit] I course and the Surface Water Production [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 Production [Unit] I course and the Surface Water Production [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 Production [Unit] I course and the Surface Water Production [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 Production [Unit] I course and the Surface Water Production [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 and be available to the executive director upon request.

(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 and distributed:

(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 and distributed 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 distributed [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 distributed [treated] each week. [;]

(IV) Systems that serve 250 or more connections or serve 750 or more people and also add chemicals or provide pathogen or chemical removal shall maintain a record of the amount of water treated each day.

(V) Systems that serve fewer than 250 connections, serve fewer than 750 people, use only groundwater or purchase treated water, and also add chemicals or provide pathogen or chemical removal 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. For systems using reverse osmosis or nanofiltration, maintain records of each clean-in-place process including the date, duration, and procedure used for each event; 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 calibration records for laboratory equipment, flow meters, rate-of-flow controllers, on-line turbidimeters, and on-line disinfectant residual analyzers;

(v) the records of backflow prevention device programs;

(vi) the raw surface water monitoring results and source water monitoring plans required by §290.111 of this title (relating to Surface Water Treatment) must be retained for three years after bin classification required by §290.111 of this title;

(vii) notification to the executive director that a system will provide 5.5-log *Cryptosporidium* treatment in lieu of raw surface water monitoring; [and]

(viii) except for those specified in subparagraphs (C)(iv) and (E)(i) of this paragraph, the results of all surface water treatment monitoring that are used to demonstrate log inactivation or removal; [.]

(ix) free and total chlorine, monochloramine, ammonia, nitrite, and nitrate monitoring results if chloramines are used in the water system; and

(x) the records of treatment effectiveness monitoring for systems using reverse osmosis or nanofiltration membranes. Treatment effectiveness monitoring includes the parameters for determining when maintenance is required.

Examples of parameters to be monitored include conductivity (or total dissolved solids) on each membrane unit, pressure differential across a membrane vessel, ~~solids),~~ ~~transmembrane pressure differential,~~ flow, flux, and water temperature. At a minimum, systems using reverse osmosis or nanofiltration membranes must monitor the conductivity (or total dissolved solids) of the feed and permeate water once per day.

(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;

(iii) the Recycling Practices Report form and other records pertaining to site-specific recycle practices for treatment plants that recycle; and

(iv) the turbidity monitoring results and exception reports for individual filters as required by §290.111 of this title.

(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;

(iii) the results of inspections (as required by subsection (m)(2) of this section) for all pressure filters;

(iv) documentation of compliance with state approved corrective action plan and schedules required to be completed by groundwater systems that must take corrective actions;

(v) documentation of the reason for an invalidated fecal indicator source sample and documentation of a total coliform-positive sample collected at a location with conditions that could cause such positive samples in a distribution system;

(vi) notification to wholesale system(s) of a distribution coliform positive sample for consecutive systems using groundwater;

(vii) Consumer Confidence Report compliance documentation;

(viii) records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the executive director-approved minimum specified disinfectant residual for a period of more than four hours for groundwater systems providing 4-log treatment; and

(ix) records of executive director-specified compliance requirements for membrane filtration, records of parameters specified by the executive director for approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than four hours for groundwater systems. Membrane filtration can only be used if it is approved by the executive director and if it can be properly validated.

(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;

(iv) copies of the Customer Service Inspection reports required by subsection (j) of this section;

(v) copy of any Initial Distribution System Evaluation (IDSE) plan, report, approval letters, and other compliance documentation required by §290.115 of this title (relating to Stage 2 Disinfection Byproducts (TTHM and HAA5));

(vi) state notification of any modifications to an IDSE report;

(vii) copy of any 40/30 certification required by §290.115 of this title;

(viii) documentation of corrective actions taken by groundwater systems in accordance with §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques);

(ix) any monitoring plans required by §290.121(b) of this title (relating to Monitoring Plans); and

(x) records of the executive director-approved minimum specified disinfectant residual for groundwater systems providing 4-log treatment, including wholesale, consecutive, and mixed systems, regulated under §290.116(c) of this title.

(F) A public water system shall maintain records relating to lead and copper requirements under §290.117 of this title (relating to Regulation of Lead and Copper) for no less than 12 years. Any system subject to the requirements of §290.117 of this title shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, executive determinations, and any other information required by the executive director under §290.117 of this title. These records include, but are not limited to, the following items: tap water monitoring results including the location of each site and date of collection; certification of the volume and validity of first-draw-tap sample criteria via a copy of the laboratory analysis request

form; where residents collected the sample; certification that the water system informed the resident of proper sampling procedures; the analytical results for lead and copper concentrations at each tap sample site; and designation of any substitute site not used in previous monitoring periods.

(G) 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 licensed water works operator.

(5) All public water systems that are affected utilities must maintain the following records for as long as they are applicable to the system:

(A) An emergency preparedness plan approved by the executive director and a copy of the approval letter.

(B) All required operating and maintenance records for auxiliary power equipment, including periodic testing of the auxiliary power equipment under load and any associated automatic switch over equipment.

(C) Copies of the manufacturer's specifications for all generators that are part of the approved emergency preparedness plan.

(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 American Water Works Association (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 0.25% [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 commission Form 20699 [§290.47(d) of this title] 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 (TSBPE).

(B) Customer service inspectors who have completed a commission-approved course, passed an examination administered by the executive director, and hold current professional license 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(f) [§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 General Applicability).

(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 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.

(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.

(7) Reverse osmosis or nanofiltration membrane systems shall be cleaned, or replaced, in accordance with the allowable operating conditions of the manufacturer and shall be based on one or more of the following: increased salt passage, increased or decreased pressure differential, and/or change in normalized permeate flow.

(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 nephelometric turbidity unit (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(d) [§290.47(g)] of this title).

(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 pounds per square inch (psi)), water outages, microbiological samples found to contain *Escherichia 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(c) [§290.47(e)] of this title. 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(e) [§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. As soon as safe and practicable following the occurrence of a natural disaster, a public water system that is an affected utility shall maintain a minimum of 35 psi throughout the distribution system during an extended power outage.

(s) Testing equipment. Accurate testing equipment or some other means of monitoring the effectiveness of any chemical treatment or pathogen inactivation or removal processes must be used by the system.

(1) Flow-measuring devices and rate-of-flow controllers that are required by §290.42(b) and (d) [§290.42(d)] of this title (relating to Water Treatment) shall be calibrated at least once every 12 months. Well meters required by §290.41(c)(3)(N) of this title (relating to Water Sources) 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) Chemical disinfectant residual analyzers shall be properly calibrated.

(i) The accuracy of manual disinfectant residual analyzers shall be verified at least once every 90 days using chlorine solutions of known concentrations.

(ii) The accuracy of continuous disinfectant residual analyzers shall be checked at least once every seven days with a chlorine solution of known concentration or by comparing the results from the on-line analyzer with the result of approved benchtop method in accordance with §290.119 of this title (relating to Analytical Procedures).

(iii) If a disinfectant residual analyzer produces a result which is not within 15% of the expected value, the cause of the discrepancy must be determined and corrected and, if necessary, the instrument must be recalibrated.

(D) Analyzers used to determine the effectiveness of chloramination in §290.110(c)(5) of this title shall be properly verified in accordance with the manufacturer's recommendations every 90 days. These analyzers include monochloramine, ammonia, nitrite, and nitrate equipment used by the public water system.

(E) [(D)] Ultraviolet (UV) light disinfection analyzers shall be properly calibrated.

(i) The accuracy of duty UV sensors shall be verified with a reference UV sensor monthly, according to the UV sensor manufacturer.

(ii) The reference UV sensor shall be calibrated by the UV sensor manufacturer on a yearly basis, or sooner if needed.

(iii) If used, the UV Transmittance (UVT) [Ultraviolet Transmittance (UVT)] analyzer shall be calibrated weekly according to the UVT analyzer manufacturer specifications.

(F) [(E)] Systems must verify the performance of direct integrity testing equipment in a manner and schedule approved by the executive director.

(G) Conductivity (or total dissolved solids) monitors and pressure instruments used for reverse osmosis and nanofiltration membrane systems shall be calibrated at least once every 12 months.

(H) Any temperature monitoring devices ~~devises~~ used for reverse osmosis and nanofiltration shall be verified and calibrated in accordance with the manufacturer's specifications.

(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.

(w) Security. All systems shall maintain internal procedures to notify the executive director by a toll-free reporting phone number immediately of the following events, if the event may negatively impact the production or delivery of safe and adequate drinking water:

(1) an unusual or unexplained unauthorized entry at property of the public water system;

(2) an act of terrorism against the public water system;

(3) an unauthorized attempt to probe for or gain access to proprietary information that supports the key activities of the public water system;

(4) a theft of property that supports the key activities of the public water system; or

(5) a natural disaster, accident, or act that results in damage to the public water system.

(x) Public safety standards. This subsection only applies to a municipality with a population of 1,000,000 or more, with a public utility within its corporate limits; a

municipality with a population of more than 36,000 and less than 41,000 located in two counties, one of which is a county with a population of more than 1.8 million; a municipality, including any industrial district within the municipality or its extraterritorial jurisdiction (ETJ), with a population of more than 7,000 and less than 30,000 located in a county with a population of more than 155,000 and less than 180,000; or a municipality, including any industrial district within the municipality or its ETJ, with a population of more than 11,000 and less than 18,000 located in a county with a population of more than 125,000 and less than 230,000.

(1) In this subsection:

(A) "Regulatory authority" means, in accordance with the context in which it is found, either the commission or the governing body of a municipality.

(B) "Public utility" means any person, corporation, cooperative corporation, affected county, or any combination of these persons or entities, other than a municipal corporation, water supply or sewer service corporation, or a political subdivision of the state, except an affected county, or their lessees, trustees, and receivers, owning or operating for compensation in this state equipment or facilities for the transmission, storage, distribution, sale, or provision of potable water to the public or for the resale of potable water to the public for any use or for the collection,

transportation, treatment, or disposal of sewage or other operation of a sewage disposal service for the public, other than equipment or facilities owned and operated for either purpose by a municipality or other political subdivision of this state or a water supply or sewer service corporation, but does not include any person or corporation not otherwise a public utility that furnishes the services or commodity only to itself or its employees or tenants as an incident of that employee service or tenancy when that service or commodity is not resold to or used by others.

(C) "Residential area" means:

(i) an area designated as a residential zoning district by a governing ordinance or code or an area in which the principal land use is for private residences;

(ii) a subdivision for which a plat is recorded in the real property records of the county and that contains or is bounded by public streets or parts of public streets that are abutted by residential property occupying at least 75% of the front footage along the block face; or

(iii) a subdivision a majority of the lots of which are subject to deed restrictions limiting the lots to residential use.

(D) "Industrial district" has the meaning assigned by Texas Local Government Code, §42.044, and includes an area that is designated by the governing body of a municipality as a zoned industrial area.

(2) When the regulatory authority is a municipality, it shall by ordinance adopt standards for installing fire hydrants in residential areas in the municipality. These standards must, at a minimum, follow current AWWA standards pertaining to fire hydrants and the requirements of §290.44(e)(6) of this title.

(3) When the regulatory authority is a municipality, it shall by ordinance adopt standards for maintaining sufficient water pressure for service to fire hydrants adequate to protect public safety in residential areas in the municipality. The standards specified in paragraph (4) of this subsection are the minimum acceptable standards.

(4) A public utility shall deliver water to any fire hydrant connected to the public utility's water system located in a residential area so that the flow at the fire hydrant is at least 250 gallons per minute for a minimum period of two hours while maintaining a minimum pressure of 20 psi throughout the distribution system during emergencies such as fire fighting. That flow is in addition to the public utility's maximum daily demand for purposes other than fire fighting.

(5) When the regulatory authority is a municipality, it shall adopt the standards required by this subsection within one year of the effective date of this subsection or within one year of the date this subsection first applies to the municipality, whichever occurs later.

(6) A public utility shall comply with the standards established by a municipality under both paragraphs (2) and (3) of this subsection within one year of the date the standards first apply to the public utility. If a municipality has failed to comply with the deadline required by paragraph (5) of this subsection, then a public utility shall comply with the standards specified in paragraphs (2) and (4) of this subsection within two years of the effective date of this subsection or within one year of the date this subsection first applies to the public utility, whichever occurs later.

(y) Fire hydrant flow standards [Hydrant Flow Standards].

(1) In this subsection [section]:

(A) "Municipal utility" means a retail public utility, as defined by Texas Water Code (TWC), §13.002, that is owned by a municipality.

(B) "Residential area" means an area used principally for private residences that is improved with at least 100 single-family homes and has an average density of one home per half acre.

(C) "Utility" includes a "public utility" and "water supply or sewer service corporation" as defined by TWC, §13.002.

(2) The governing body of a municipality by ordinance may adopt standards set by the executive director requiring a utility to maintain a minimum sufficient water flow and pressure to fire hydrants in a residential area located in the municipality or the municipality's ETJ. The municipality must submit a signed copy of the ordinance to the executive director within 60 days of the adoption of an ordinance by its governing body.

(3) In addition to a utility's maximum daily demand, the utility must provide, for purposes of emergency fire suppression:

(A) a minimum sufficient water flow of at least 250 gallons per minute for at least two hours; and

(B) a minimum sufficient water pressure of at least 20 psi.

(4) If a municipality adopts standards for a minimum sufficient water flow and pressure to fire hydrants, the municipality must require a utility to maintain at least the minimum sufficient water flow and pressure described by paragraph (3) of this subsection in fire hydrants in a residential area located within the municipality or the municipality's ETJ. If the municipality adopts a fire flow standard exceeding the minimum standards set in paragraph (3) of this subsection, the standard adopted by the municipality must be based on:

(A) the density of connections;

(B) service demands; and

(C) other relevant factors.

(5) If the municipality owns a municipal utility, it may not require another utility located in the municipality or the municipality's ETJ to provide water flow and pressure in a fire hydrant greater than that provided by the municipal utility as determined by the executive director.

(6) If the municipality does not own a municipal utility, it may not require a utility located in the municipality or the municipality's ETJ to provide a minimum sufficient water flow and pressure greater than the standard established by paragraph (3) of this subsection.

(7) An ordinance under paragraph (2) of this subsection may not require a utility to build, retrofit, or improve infrastructure in existence at the time the ordinance is adopted.

(8) A municipality with a population of less than 1.9 million that adopts standards under paragraph (2) of this subsection or that seeks to use a utility's water for emergency fire suppression shall enter into a written memorandum of understanding with the utility.

(A) The memorandum of understanding must provide for:

(i) the necessary testing of fire hydrants; and

(ii) other relevant issues pertaining to the use of the water and maintenance of the fire hydrants to ensure compliance with this subsection.

(B) The municipality must submit a signed copy of the memorandum of understanding to the executive director within 60 days of the execution of the memorandum of understanding between its governing body and the utility.

(9) A municipality may notify the executive director of a utility's failure to comply with a standard adopted under paragraph (3) of this subsection.

(10) On receiving the notice described by paragraph (9) of this subsection, the executive director shall require a utility in violation of a standard adopted under this subsection to comply within a reasonable time established by the executive director.

(z) Nitrification Action Plan (NAP). Any water system distributing chloraminated water ~~using chloramines~~ must create a NAP ~~to prevent nitrification~~. The system must create a written NAP that:

(1) contains the system-specific plan for monitoring free ammonia, monochloramine, total chlorine, nitrite, and nitrate levels;

(2) contains system-specific action levels of the above monitored chemicals where action must be taken;

(3) contains specific corrective actions to be taken if the action levels are exceeded; and

(4) is maintained as part of the system's monitoring plan in §290.121 of this title.

§290.47. Appendices.

(a) Appendix A. Recognition as a Superior or Approved Public Water System.

Figure: 30 TAC §290.47(a) (No change to the figure as it currently exists in TAC.)

(b) Appendix B. Sample Retail Service Agreement.

Figure: 30 TAC §290.47(b)
[Figure: 30 TAC §290.47(b)]

Appendix B: Sample Retail Service Agreement [RETAIL 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 system construction or configuration on the retail connection owner's side of the meter. The purpose of this service agreement is to notify each customer of the restrictions which are in place to provide this protection. The public water system enforces these restrictions to ensure the public health and welfare. Each retail customer must sign this agreement before the NAME OF WATER SYSTEM will

begin service. In addition, when service to an existing retail 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 0.25% [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% [0.2 percent] 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. Boil Water Notification. [Sample Sanitary Control Easement Document for a Public Water Well.]

Figure: 30 TAC §290.47(c)
[Figure: 30 TAC §290.47(c)]

Appendix C: Boil Water Notification

Due to conditions which have occurred recently in the water system, the Texas Commission on Environmental Quality has required the water 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 <**Water System Official(s)**>at <**Official's Telephone Number(s)**>.

Instructions:
1. List more than one water system official and phone number.

2. Do not list the commission as the primary contact.

3. If a customer wishes to call the Texas Commission on Environmental Quality, please have them call (512) 239-4691.

(d) Appendix D. Operator and/or Employment Notice. [Customer Service Inspection Certification.]

Figure: 30 TAC §290.47(d)
[Figure: 30 TAC §290.47(d)]

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.

Appendix D: Operator and/or Employment Notice

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

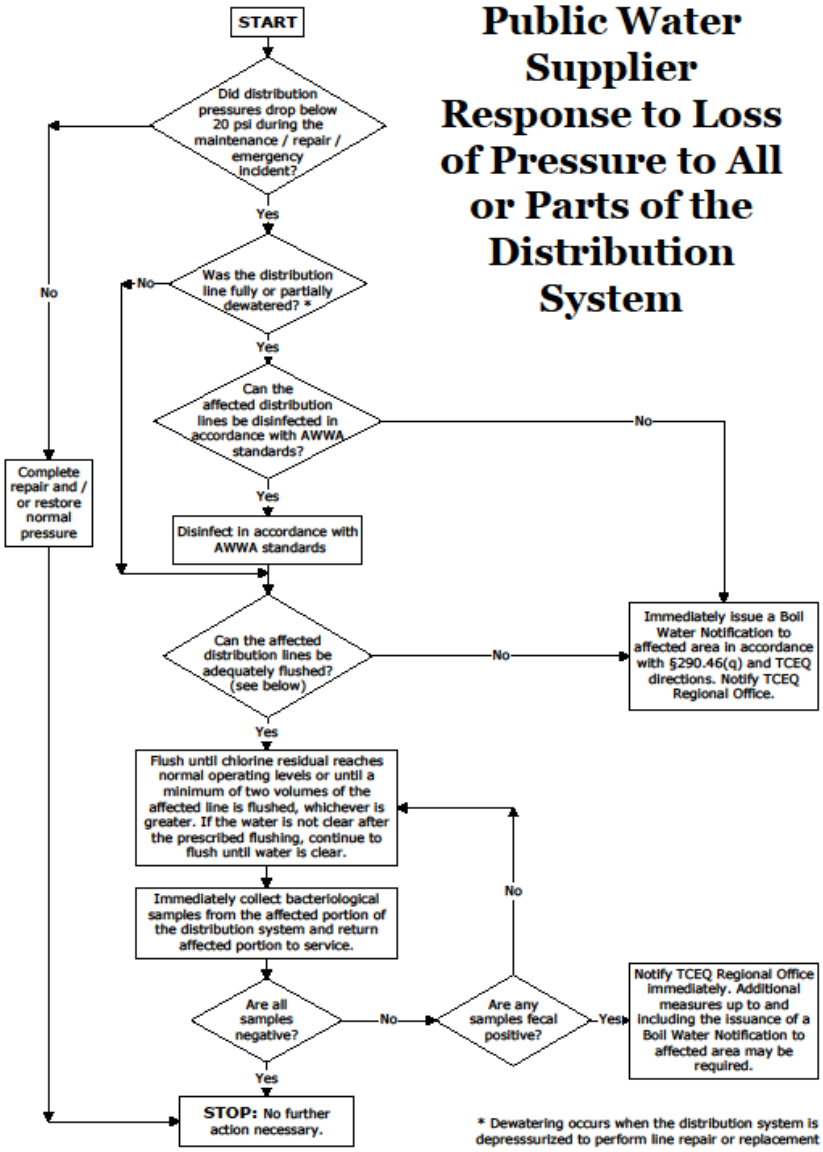
_____
Name of Water System Owner or Responsible Official / Title of Owner or Responsible Official

(e) Appendix E. Special Precautions. [Boil Water Notification.]

Figure: 30 TAC §290.47(e)
[Figure: 30 TAC §290.47(e)]

Appendix E: Special Precautions

Figure: 30 TAC §290.47(e)



(f) Appendix F. Assessment of Hazards and Selection of Assemblies. [Sample Backflow Prevention Assembly Test and Maintenance Report.]

Figure: 30 TAC §290.47(f)
[Figure: 30 TAC §290.47(f)]

Appendix F: 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	RPBA or 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
Rainwater harvesting system	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	Assessment of Hazard	Required Assembly
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 bibs	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, back siphonage 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 RPBAs is required.

(g) Appendix G. Emergency Preparedness Plan Template. [Operator and/or Employment Notice.]

Figure: 30 TAC §290.47(g)
[Figure: 30 TAC §290.47(g)]

Appendix G: Emergency Preparedness Plan Template

This appendix contains information to assist an affected utility in preparing an emergency preparedness plan. A comprehensive guide and shell form, TCEQ Form No. 20536, for preparing a plan is available from the executive director upon request. A cover letter containing the name of the affected utility; the affected utility representative's name, title, and contact telephone number; and, if applicable, the public water system's identification number (PWS ID) and district number must be included with the plan submittal.

Information provided by an affected utility relating to its emergency preparedness plan is confidential and is not subject to disclosure under Texas Government Code, Chapter 552.

Rules. All of 30 TAC Chapter 291, Subchapter L applies to affected utilities that are not public water systems. The following commission rules apply to affected utilities that are public water systems:

Definitions: §290.38

General Provisions: §290.39(c)(4)(A) - (E) and (o)(1) - (5)

Water Distribution: §290.44(d)

Minimum Water System Capacity Requirements: §290.45(a)(7), (b)(3), (c)(3), (d)(4), (e)(4), (g)(5)(A)(iv), (g)(5)(B), and (h).

Minimum Acceptable Operating Practices for Public Drinking Water Systems: §290.46(f)(5) and (r).

Plan Options. A submitted emergency preparedness plan must include one of the following:

(1) Auxiliary generators equipped with automatic starting generators and switch over equipment. This equipment must have the ability to detect the failure of normal power from the electric grid; automatically start the generator; isolate necessary water equipment from the normal power grid; and switch the running generator's power to power the necessary water equipment to maintain the required minimum pressure.

(2) Two or more affected utilities may propose the sharing of auxiliary generator power. Necessary electrical and/or water connections equipped with automatic switch over and opening valves must be presented in the plan to demonstrate how one or more affected utilities will be able to maintain the required minimum pressure. Describe which equipment will share the auxiliary generator power and which equipment, if any, would receive power from only a single affected utility's auxiliary power equipment.

(3) Copies of negotiated leasing and contract agreements for emergency power equipment and any necessary fuel. This includes mutual aid agreements with other retail public utilities, exempt utilities, or providers or conveyors of potable or raw water service if the agreements provide for coordination with the division of emergency management in the governor's office. Consideration must be given to the location of where the other water supplier(s) are located as they may also be affected by the same natural disaster. In addition, when entering into a contract for leasing of emergency power equipment and necessary fuel, the contractual commitments of the supplier to other water suppliers and businesses within an area subject to the same natural disaster event must be taken into consideration.

(4) Use of portable generators capable of serving multiple facilities. The portable generator(s) and the necessary water equipment must be pre-equipped with quick-connect, mating electrical connectors to facilitate the rapid implementation of the emergency preparedness plan. The plan must address whether there is an adequate number of portable generators to operate all of the necessary water equipment in order to maintain the required minimum pressure in multiple pressure plans or at multiple systems, if affected by the same natural disaster event.

(5) In lieu of generators, alternative on-site electrical generation, or distributed electrical generation facilities, may be used. This may include the use of wind, solar or other power as a means of providing sufficient emergency power to operate the necessary water equipment to maintain the required minimum pressure.

(6) Hardening of the electric transmission and distribution system serving the affected utility. One alternative is to relocate electric transmission lines for the system from overhead to underground and protect them from flooding. Another alternative is to replace overhead transmission lines, poles, and related appurtenances with ones that can withstand historical hurricane-force wind velocities, and trim or remove any trees next to and above the overhead transmission lines. Either alternative must include documentation on the ability of applicable power plant(s) and station(s) to withstand hurricane-force winds.

(7) Engines equipped with direct or right angle drives can be used as auxiliary power sources. Each pump or other equipment must be equipped with appropriate mechanical fittings to facilitate the use of engines. The plan must address the operation of chemical feed pumps using a generator(s).

(8) Any other alternative determined by the executive director to be acceptable.

Plan Contents. An emergency preparedness plan must provide for any applicable production, treatment, transfer and service pumps at an adequate flow rate and at a minimum pressure of 35 pounds per square inch in the far reaches of an affected distribution system, including multiple pressure planes. If applicable, provide the following information:

□ Contact information, including names, emergency telephone and pager numbers, and e-mail addresses.

□ List all ground, surface, and purchased water sources, with locations and individual capacities.

□ List all interconnections with other water providers; whether normally open or closed; size; whether wholesale, purchase, or both; available capacity; and any other pertinent information. Include the names of each interconnection and their contact information, including names, titles, telephone and pager numbers, and e-mail addresses.

□ List the capacity and power requirements of all treatment equipment.

□ For each chemical, list the type of storage, volume, and volume required per day during emergency operations.

□ Provide a copy of all water distribution and transmission piping maps.

□ Provide the maximum and average daily demands. If the emergency preparedness plan is for a proposed affected utility, the minimum specified capacities in §290.45 of this subchapter shall be used for the maximum daily demand.

□ List all primary electrical power sources.

□ List all equipment necessary to provide water to customers at the required minimum pressure and adequate flow rate, and the power requirements for each piece of equipment.

□ List the size, location and fuel requirement in gallons per hour at the load necessary to maintain emergency operations for all on-site manual and automatic auxiliary power equipment, and provide information as to how the affected utility determined the necessary fuel quantity.

□ Provide documentation as to how the affected utility will ensure that it maintains an adequate supply of fuel during emergency operations.

□ List the size, location, fuel requirement in gallons per hour at the load necessary to maintain emergency operations, and the name of the system sharing the equipment for all shared auxiliary power equipment. Include the other system's contact persons with their emergency telephone and pager numbers and e-mail addresses.

□ Provide a copy of any leasing and contracting agreements, including mutual aid agreements with other retail public utilities, exempt utilities, or providers or conveyors of potable or raw water service, if the agreements provide for coordination with the division of emergency management in the governor's office. If leasing, include the vendor's name, location, and contact information.

□ List all portable generators' power, phase, type of quick-connect, fuel type, and fuel demand in gallons per hour.

□ Provide specifications, a description, and detailed capacity information for all on-site electrical generation or distributive generation equipment. Include all fuel demands for this equipment.

□ List all direct or right angle drive emergency power equipment with the name, type of engine, fuel type, and fuel demand in gallons per hour.

□ Provide details for any other proposed alternative.

□ For each fuel tank, provide the location, volume, name of fuel suppliers, contact names, titles, telephone and pager numbers, and e-mail addresses.

□ List all local and state emergency responders and their emergency contact telephone and pager numbers. Include medical facilities.

□ List all priority water users, such as hospitals and nursing homes, and their emergency contact names, titles, telephone and pager numbers, and e-mail addresses.

□ List any bulk water haulers that could be used, including contact names, telephone and pager numbers, and e-mail addresses.

□ Provide the system's designated media spokesperson with a list of local media contact names, titles, type of media, telephone and pager numbers, and e-mail addresses.

□ Provide the water restrictions that the system will implement during an emergency response.

□ Provide a proposed time frame for full implementation of the emergency preparedness plan.

(h) Appendix H. Sample Language for Notification Upon Changing from Free Chlorine to Chloramines. [Special Precautions.]

Figure: 30 TAC §290.47(h)
[Figure: 30 TAC §290.47(h)]

Appendix H: Sample Language for Notification Upon Changing from Free Chlorine to Chloramines

A public water system (PWS) must notify its customers, in writing, at least 14 days before starting to use chloramines. This notification must contain the Sample Language for Notification Upon Changing from Free Chlorine to Chloramines included below. The notification should be provided to the news media, renal disease facilities, dialysis clinics, hospitals, physicians, local health departments, pet stores, zoos, and any other facilities that may be impacted by the change.

Sample Language for Notification Upon Changing from Free Chlorine to Chloramines

"On <**Date**>, the <**Water System Name**> will be changing the disinfectant that we use from chlorine to chloramines. This change is intended to benefit our customers by reducing the levels of disinfection byproducts in the system, while still providing protection from waterborne disease.

However, the change to chloramines can cause problems to persons dependent on dialysis machines. A condition known as hemolytic anemia can occur if the disinfectant is not

completely removed from the water that is used for the dialysate. Consequently, the pretreatment scheme used for the dialysis units must include some means, such as a charcoal filter, for removing the chloramine prior to this date. Medical facilities should also determine if additional precautions are required for other medical equipment. In addition, chloraminated water may be toxic to fish. If you have a fish tank, please make sure that the chemicals or filters that you are using are designed for use in water that has been treated with chloramines. You may also need to change the type of filter that you use for fish tanks."

Optional: "When the chloraminated water first flushes out the chlorinated water there may be a slight taste and odor, and possibly discoloration for a short period of time. This will not compromise the safety of the water."

Important notes:
1. The PWS may not begin using chloramines prior to the date shown in the notice.

2. The Texas Commission on Environmental Quality does not require the PWS to include the name or contact telephone number of a PWS employee that the customers can contact if they have questions; however, several PWSs have included this information as a courtesy to its customers.

[(i) Appendix I. Assessment of Hazard and Selection of Assemblies.]

[Figure: 30 TAC §290.47(i)]

[(j) Appendix J. Emergency Preparedness Plan Template.]

[Figure: 30 TAC §290.47(j)]

SUBCHAPTER F: DRINKING WATER STANDARDS GOVERNING DRINKING WATER QUALITY AND REPORTING REQUIREMENTS FOR PUBLIC WATER SYSTEMS

§§290.110, 290.111, 290.116

Statutory Authority

The amendments are adopted under Texas Water Code (TWC), §5.102, which establishes the commission's general authority necessary to carry out its jurisdiction; TWC, §5.103, which establishes the commission's general authority to adopt rules; TWC, §5.105, which establishes the commission's authority to set policy by rule; Texas Health and Safety Code (THSC), §341.031, which allows the commission to adopt rules to comply with standards established by the United States Environmental Protection Agency pursuant to the federal Safe Drinking Water Act, 42 United States Code, §§300f to 300j-6; and, THSC, §341.0315, which requires public water systems to comply with commission rules adopted to ensure the supply of safe drinking water.

The adopted amendments implement TWC, §§5.102, 5.103, and 5.105, and THSC, §341.031 and §341.0315.

§290.110. Disinfectant Residuals.

(a) Applicability. All public water systems shall properly disinfect water before it is distributed to any customer and shall maintain acceptable disinfectant residuals within the distribution system.

(b) Minimum and maximum acceptable disinfectant concentrations. Public water systems shall provide the minimum levels of disinfectants in accordance with the provisions of this section. Public water systems shall not exceed the maximum residual disinfectant levels (MRDLs) provided in this section.

(1) The disinfection process used by public water systems must ensure that water has been adequately disinfected before it enters the distribution system.

(A) The disinfection process used by public water systems treating surface water sources or groundwater sources that are under the direct influence of surface water must meet the requirements of §290.111(d) of this title (relating to Surface Water Treatment).

(B) The executive director may require the disinfection process used by public water systems treating groundwater sources that are not under the direct influence of surface water to meet the requirements of §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques).

(C) The disinfection process at other types of treatment plants shall provide the level of disinfection required by the executive director.

(2) The residual disinfectant concentration in the water entering the distribution system shall be at least 0.2 milligram per liter (mg/L) free chlorine or 0.5 mg/L chloramine (measured as total chlorine).

(3) The chlorine dioxide residual of the water entering the distribution system shall not exceed an MRDL of 0.8 mg/L.

(4) The residual disinfectant concentration in the water within the distribution system shall be at least 0.2 mg/L free chlorine or 0.5 mg/L chloramine (measured as total chlorine).

(5) The running annual average of the free chlorine or chloramine residual (measured as total chlorine) of the water within the distribution system shall not exceed an MRDL of 4.0 mg/L.

(c) Monitoring requirements. Public water systems shall monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels

are maintained. All monitoring conducted pursuant to the requirements of this section must be conducted at sites designated in the public water system's monitoring plan.

(1) Entry point compliance monitoring for surface water and groundwater under the direct influence of surface water. Public water systems that treat surface water or groundwater under the direct influence of surface water must verify that they meet the disinfection requirements of subsection (b)(2) of this section.

(A) Public water systems that treat surface water or groundwater under the direct influence of surface water and sell treated water on a wholesale basis or serve more than 3,300 people must continuously monitor and record the disinfectant residual of the water at each entry point [entering the distribution system]. If there is a failure in the continuous monitoring equipment, grab sampling every four hours may be conducted in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

(B) Public water systems that treat surface water or groundwater under the direct influence of surface water, serve 3,300 or fewer people and do not sell treated water on a wholesale basis must monitor and record the disinfectant residual of the water at each entry point [entering the distribution system] with either continuous monitors or grab samples.

(i) If a system uses grab samples, the samples must be collected on an ongoing basis at the frequency prescribed in the following table.

Figure: 30 TAC §290.110(c)(1)(B)(i) (No change to the figure as it exists in TAC.)

(ii) The grab samples cannot be taken at the same time and the sampling interval is subject to the executive director's review and approval.

(iii) Treatment plants that use grab samples and fail to detect an appropriate disinfectant residual must repeat the test at four-hour or shorter intervals until compliance has been reestablished.

(C) Continuous monitors must record the disinfectant residual of the water every 30 minutes.

(2) Entry point compliance monitoring for groundwater and purchased water. Public water systems that treat groundwater or that purchase and resell treated water must, upon the request of the executive director, verify that they meet the disinfection requirements of subsection (b)(2) of this section.

(A) A system that uses free chlorine must measure free chlorine.

(B) A system that has a chloramine residual must measure total chlorine.

(3) Chlorine dioxide compliance monitoring. Each treatment plant using chlorine dioxide must monitor and record the chlorine dioxide residual of the water entering the distribution system at least once each day. If the chlorine dioxide residual in the water entering the distribution system exceeds the MRDL contained in subsection (b)(3) of this section, the treatment plant must conduct additional tests.

(A) If the public water system does not have additional chlorination facilities in the distribution system, it must conduct three additional tests at the service connection nearest the treatment plant where an elevated chlorine dioxide residual was detected. The first additional test must be conducted within two hours after detecting an elevated chlorine dioxide residual at the entry point to the distribution system. The two subsequent tests must be conducted at six-hour to eight-hour intervals thereafter.

(B) If the public water system has additional chlorination facilities in the distribution system, it must conduct an additional test at the service connection

nearest the treatment plant where an elevated chlorine dioxide residual was detected, an additional test at the first service connection after the point where the water is rechlorinated, and an additional test at a location in the far reaches of the distribution system. The additional test at the location nearest the treatment plant must be conducted within two hours after detecting an elevated chlorine dioxide residual at the entry point to the distribution system. The two other tests must be conducted at six-hour to eight-hour intervals thereafter.

(4) Distribution system compliance monitoring. Public water systems shall monitor the disinfectant residual at various locations throughout the distribution system.

(A) Public water systems that use groundwater or purchased water sources only and serve fewer than 250 connections and fewer than 750 people daily, must monitor the disinfectant residual at representative locations in the distribution system at least once every seven days.

(B) Public water systems that serve at least 250 connections or at least 750 people daily, and use only groundwater or purchased water sources must monitor the disinfectant residual at representative locations in the distribution system at least once per day.

(C) Public water systems using surface water sources or groundwater under the direct influence of surface water must monitor the disinfectant residual tests at least once per day at representative locations in the distribution system.

(D) All public water systems must monitor the residual disinfectant concentration each time that a bacteriological sample is collected, as specified in §290.109 of this title (relating to Microbial Contaminants).

(E) All public water systems with a chloramine residual must monitor the total chlorine residual downstream of any chlorine and ammonia injection points, in conjunction with the chloramine effectiveness sampling in paragraph (5)(C) of this subsection, in the distribution system weekly and whenever the chemical dose is changed.

(5) Chloramine effectiveness ~~Chloramine-effectiveness~~ sampling. Public water systems with a chloramine residual shall monitor to ensure that monochloramine is the prevailing chloramine species and that nitrification is controlled. Sample sites and procedures used for chloramine effectiveness sampling must be documented in the system's nitrification action plan (NAP) required by §290.46(z) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems). Sample

results determined by monitoring required under this paragraph will not be used to determine compliance with the maximum contaminant levels, MRDLs, action levels, or treatment techniques of this subchapter.

(A) Source water. Public water systems must monitor source water (including raw and treated purchased water) to establish baseline ammonia, nitrite, and nitrate levels (all as nitrogen) at least once to determine the availability of ammonia for chloramine formation and to provide a reference for downstream nitrite and nitrate levels that may indicate nitrification. If any source has more than 0.5 mg/L free ammonia (as nitrogen) in the initial sample, then raw water ammonia (as nitrogen) shall be monitored monthly for six months to determine the baseline free ammonia level.

(B) Water entering distribution system. Public water systems that have chloramines present shall perform sampling to represent the water entering the distribution system.

(i) Total chlorine, free ammonia (as nitrogen) and monochloramine shall be monitored weekly at all entry points to the distribution system or at a location before the first customer.

(ii) Nitrite and nitrate (as nitrogen) levels at the first customer shall be monitored monthly for at least six months to determine baseline nitrite and nitrate levels in the water prior to consumption. Nitrite and nitrate samples collected at the first customer will not be used for compliance with §290.106 of this title (relating to Inorganic Contaminants).

(iii) Nitrite and nitrate (as nitrogen) shall be monitored quarterly at the first customer after establishing the baseline. Nitrite and nitrate samples collected at entry points for compliance with §290.106 of this title may be used for these quarterly samples.

(C) Treatment sampling. Public water systems that inject chlorine at any location to form chloramines or to convert from chloramines to free chlorine must monitor to ensure that chemical addition is effective and the proper chlorine to ammonia (as nitrogen) ratio is achieved. Samples must be collected and analyzed weekly and whenever the chemical dosage is changed.

(i) Sampling must be performed upstream of the chlorine or ammonia chemical injection point, whichever is furthest upstream.

(ii) Sampling must be performed downstream of all the chlorine and ammonia chemical injection points.

(iii) The residual of the chemical injected upstream must ~~should~~ be determined to properly dose the downstream chemical where sample taps are present or required under §290.42(e)(7)(C)(ii) of this title (relating to Water Treatment).

(iv) The total chlorine, ammonia (as nitrogen), and monochloramine residuals must all be monitored if the treatment occurs before the entry point.

(v) The ammonia (as nitrogen) and monochloramine residuals must all be monitored if the treatment occurs in the distribution system. The monitoring must occur at the same time as a compliance sampling required under paragraph (4)(E) of this subsection.

(D) Distribution system. Public water systems that distribute water and have a chloramine residual must ensure the efficacy of disinfection within the distribution system.

(i) Monochloramine and free ammonia (as nitrogen) must be monitored weekly at the same time as a compliance sample required under paragraph (4) of this subsection.

(ii) Nitrite and nitrate (as nitrogen) must be monitored quarterly.

(d) Analytical requirements. All monitoring required by paragraphs (1) and (2) of this subsection [this section] must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures). All monitoring for chloramine effectiveness required by paragraphs (3) - (6) of this subsection must be analyzed to the accuracy provided therein.

(1) The free chlorine or chloramine residual (measured as total chlorine) must be measured to a minimum accuracy of plus or minus 0.1 mg/L. Color comparators may be used for distribution system samples only. When used, a color comparator must have current reagents, an unfaded and clear color comparator, a sample cell that is not discolored or stained, and must be properly stored in a cool, dark location where it is not subjected to conditions that would result in staining. The color comparator must be used in the correct range. If a sample reads at the top of the range,

the sample must be diluted with chlorine-free water, then a reading taken and the resulting residual calculated. [Samples tested using a colorimetric method must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator.]

(2) The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(A) the amperometric titration method using a titrator with platinum-platinum electrodes;

(B) the spectrophotometric Lissamine Green B method; or

(C) with the written permission of the executive director, the DPD-glycine method using a colorimeter or spectrophotometer.

(3) The free ammonia level must be measured to a minimum accuracy of plus or minus 0.1 mg/L.

(4) The monochloramine level must be measured to a minimum accuracy of plus or minus 0.15 mg/L using a procedure that has the ability to distinguish between monochloramine and other forms of chloramine.

(5) The nitrate (as nitrogen) level must be measured to a minimum accuracy of plus or minus 0.1 ~~0.5~~ mg/L.

(6) the nitrite (as nitrogen) level must be measured to a minimum accuracy of plus or minus 0.01 ~~0.05~~ mg/L.

(e) Reporting requirements. Any owner or operator of a public water system subject to the provisions of this section is required to report to the executive director the results of any test, measurement, or analysis required by this section.

(1) Systems exceeding the MRDL for chlorine dioxide in subsection (b)(3) of this section must report the exceedance to the executive director within 24 hours of the event.

(2) Public water systems that use surface water sources or groundwater sources under the direct influence of surface water must submit a Surface Water Monthly Operating Report (commission Form 0102C), a Surface Water Monthly

Operating Report (commission Form 0102D) for alternative technologies, or a Surface Water Monthly Operational Report for Plants That Do Not Have a Turbidimeter on Each Filter [Operating Report for 2-Filter Plants] (commission Form 0103) each month.

(3) Public water systems that use chlorine dioxide must submit a Chlorine Dioxide Monthly Operating Report (commission Form 0690) each month.

(4) Public water systems that use purchased water or groundwater sources only must complete a Disinfection Level Quarterly Operating Report (commission Form 20067) [(DLQOR, commission Form 20067)] each quarter.

(A) Community and nontransient noncommunity public water systems must submit the Disinfection Level Quarterly Operating Report each quarter, by the tenth day of the month following the end of the quarter.

(B) Transient noncommunity public water systems must retain the Disinfection Level Quarterly Operating Reports and must provide a copy if requested by the executive director.

(5) Systems that use chloramines must retain their NAP required under §290.46(z) of this title and must provide a copy upon request by the executive director.

(6) [(5)] Monthly and quarterly reports required by this section must be submitted to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(f) Compliance determinations. Compliance with the requirements of this section shall be determined using the following criteria.

(1) All samples used for compliance must be obtained at sampling sites designated in the monitoring plan.

(A) All samples collected at sites designated in the monitoring plan as microbiological and disinfectant residual monitoring sites shall be included in the compliance determination calculations.

(B) Samples collected at sites in the distribution system not designated in the monitoring plan shall not be included in the compliance determination calculations.

(2) A public water system that fails to conduct the monitoring tests required by this section commits a monitoring violation.

(3) A public water system that fails to report the results of the monitoring tests required by this section commits a reporting violation.

(4) A public water system that uses surface water sources or groundwater sources under the direct influence of surface water and fails to meet the requirements of subsection (b)(2) of this section for a period longer than four consecutive hours commits a nonacute treatment technique violation. A public water system that fails to conduct the additional testing required by subsection (c)(1)(B)(iii) of this section also commits a nonacute treatment technique violation.

(5) A public water system that uses chlorine dioxide and exceeds the level specified in subsection (b)(3) of this section violates the MRDL for chlorine dioxide.

(A) If a public water system violates the MRDL for chlorine dioxide and any of the three additional distribution samples exceeds the MRDL, the system commits an acute MRDL violation for chlorine dioxide.

(B) If a public water system violates the MRDL for chlorine dioxide and fails to collect each of the three additional distribution samples required by subsection (c)(3) of this section, the system commits an acute MRDL violation for chlorine dioxide.

(C) If a public water system violates the MRDL for chlorine dioxide but none of the three additional distribution samples violates the MRDL, the system commits a nonacute MRDL violation for chlorine dioxide.

(6) A public water system that fails to meet the requirements of subsection (b)(4) of this section, in more than 5.0% of the samples collected each month, for any two consecutive months, commits a nonacute treatment technique violation. Specifically, the system commits a nonacute violation if the value "V" in the following formula exceeds 5.0% per month for any two consecutive months:

Figure: 30 TAC §290.110(f)(6)
[Figure: 30 TAC §290.110(f)(6)]

$$V = \frac{b \times 100}{a}$$

Where:

a = number of instances where the residual disinfectant concentration is measured during the month; and

b = number of instances during the month where the residual disinfectant concentration is measured but is detected at less than 0.2 milligrams per liter

(mg/L) [mg/L] free chlorine or less than 0.5 mg/L chloramine (measured as total chlorine).

(7) A public water system violates the MRDL for chlorine or chloramine (measured as total chlorine) if, at the end of any quarter, the running annual average of monthly averages exceeds the level specified in subsection (b)(5) of this section.

(8) Notwithstanding the MRDLs listed in subsection (b) of this section, operators shall increase residual disinfectant levels of chlorine or chloramines, measured as total chlorine, (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.

(9) If a public water system's failure to monitor makes it impossible to determine compliance with the MRDL for chlorine or chloramines (measured as total chlorine), the system commits an MRDL violation for the entire period covered by the annual average.

(10) A public water system that fails to issue a required public notice or certify that it has issued that notice commits a violation.

(g) Public notification requirements. 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 fails to meet the requirements of subsection (b)(3) of this section, shall notify the executive director within 24 hours of the event and the customers in accordance with the requirements of §290.122 of this title (relating to Public Notification).

(A) A public water system that has an acute violation of the MRDL for chlorine dioxide must notify the customers in accordance with the requirements of §290.122(a) of this title.

(B) A public water system that has a non-acute violation of the MRDL for chlorine dioxide must notify the customers in accordance with the requirements of §290.122(b) of this title.

(2) A public water system that uses surface water sources or groundwater sources under the direct influence of surface water and fails to meet the minimum disinfection requirements of subsection (b)(2) of this section shall notify the executive

director by the end of the next business day and the customers in accordance with the requirements of §290.122(b) of this title.

(3) A public water system that fails to meet the requirements of subsection (b)(4) of this section in more than 5.0% of the samples collected each month for two consecutive months must notify its customers.

(A) A public water system that uses surface water or groundwater under the direct influence of surface water must notify its customers in accordance with the requirements of §290.122(b) of this title.

(B) A public water system that uses only groundwater or purchased water must notify its customers when it issues its annual consumer confidence report.

(4) A public water system that fails to meet the requirements of subsection (b)(5) of this section shall notify the executive director by the end of the next business day and the customers in accordance with the requirements of §290.122(b) of this title.

(5) A public water system which fails to conduct the monitoring required by subsection (c)(1) - (4) of this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

(6) A public water system that uses chloramines shall notify their retail and wholesale customers of the use of chloramines.

(A) This notification must contain the exact wording included in Appendix H of §290.47 of this title (relating to Appendices).

(B) Prior to initially providing the chloraminated water to its existing customers, the water system must provide notification by mail or direct delivery at least 14 days before the change.

(C) Additionally, the notification must be provided to the news media, hospitals, renal disease facilities, dialysis clinics, physicians, local health departments, and entities which maintain live fish directly by letter, e-mail, or hand delivery.

(D) New customers must also be notified before they begin receiving water from the water system.

(E) Where appropriate, the notice must be multilingual.

§290.111. Surface Water Treatment.

(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.

(1) A public water system that treats surface water must comply with the requirements of this section beginning on the effective date of the rule.

(2) A public water system that treats groundwater under the direct influence of surface water must comply with the requirements of this section beginning on 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.

(3) A public water system that treats both surface water and groundwater under the direct influence of surface water must meet the compliance date in paragraph (1) of this subsection at plants that treat any surface water and must meet the compliance date in paragraph (2) of this subsection at plants that treat only groundwater under the direct influence of surface water.

(b) Raw surface water monitoring. A public water system that treats surface water or groundwater under the direct influence of surface water must conduct at least two rounds of special raw surface water monitoring at each surface water intake and at each well producing groundwater under the direct influence of surface water for the purpose of establishing minimum treatment technique requirements for *Cryptosporidium* and other pathogens. The executive director may waive the raw surface water monitoring requirements for an intake or a well if the combination of pathogen removal and disinfection processes used to treat the raw water achieves at least a 5.5-log total removal and inactivation of *Cryptosporidium parvum*.

(1) Raw water monitoring plans. A system must submit a proposed raw surface water monitoring plan when requested by the executive director. The proposed plan must identify all of the system's intakes and wells; provide the location of each raw water sampling point; include the parameters that will be monitored and the frequency and dates that samples will be collected; and specify the laboratories that will perform the analyses. Raw surface water monitoring must be conducted in accordance with a monitoring plan that has been approved by the executive director. The executive director shall not approve a raw surface water monitoring plan unless it indicates that the system will meet the requirements of 40 Code of Federal Regulations (CFR) §§141.701 - 141.707.

(2) Sampling location. A system must collect each raw water sample at a location approved by the executive director. Samples must be collected from the raw water line prior to any treatment and before the first point where a recycled stream is returned to the treatment process.

(3) Sampling parameters and frequency. A system must collect raw water samples at a frequency approved by the executive director.

(A) Unless the executive director approves an alternate sampling regimen, a system must monitor turbidity, *Escherichia coli* (*E. coli*), [*E. coli*,] and *Cryptosporidium* levels in the raw water at least once each month for a period of not less than 24 consecutive months if the system:

(i) serves at least 10,000 people; or

(ii) is part of combined distribution system in which one or more systems serve at least 10,000 people and the system with the well or intake regularly provides water to another public water supply.

(B) A system that is not required to monitor under subparagraph (A) of this paragraph must either monitor in accordance with the requirements of

subparagraph (A) of this paragraph or monitor *E. coli* levels in their raw water at least once every two weeks for a period of not less than 12 consecutive months. A system that does not initially monitor for *Cryptosporidium* and has elevated *E. coli* levels must conduct additional raw water monitoring.

(i) A system must conduct additional monitoring if the average *E. coli* level exceeds 100 [50] colony-forming units per 100 milliliters in the raw water produced by a surface water intake located on a river or flowing stream or the raw water from a well producing groundwater under the direct influence of surface water located closest to a river or flowing stream.

(ii) A system must conduct additional monitoring if the average *E. coli* level exceeds 100 [10] colony-forming units per 100 milliliters in the raw water from a surface water intake not located on a river or flowing stream or the raw water produced by a well producing groundwater under the direct influence of surface water not located on a river or flowing stream.

(iii) A system that must conduct additional monitoring must monitor *Cryptosporidium* levels in the raw water at least twice each month for a period of not less than 12 consecutive months, or at least once each month for a period of not less than 24 consecutive months.

(C) The executive director may approve an alternate sampling frequency for intakes and wells that operate only part of the year.

(4) Sampling schedule and dates. A system must collect raw water samples in accordance with a schedule approved by the executive director.

(A) Except as provided in subparagraph (B) of this paragraph, a system must begin each round of raw source water monitoring no later than the date shown in the following table titled "Raw Source Water Monitoring Schedule."

Figure: 30 TAC §290.111(b)(4)(A) (No change to the figure as it exists in TAC.)

(B) If a system installs a new well or intake after the date the first round of raw source water monitoring must begin, the system must:

(i) submit a proposed monitoring schedule for the first round of special raw surface water monitoring no later than three months after first placing the new source in operation; and

(ii) begin the second round of special raw surface water monitoring no later than six years after initial bin classification.

(C) A system must collect a raw water sample no sooner than two days before the date approved by the executive director and no later than two days after the approved date, unless an extreme condition or situation exists that poses a danger to the sample collector.

(D) A system which is unable to collect a sample within this five-day period must collect the sample as close as possible to the approved date and must notify the executive director in writing why the sample was not collected on the approved date.

(5) Replacement samples. If, for any reason, the laboratory is unable to report a valid analytical result for a scheduled sample, the system must submit a replacement sample on a date approved by the executive director.

(6) Analytical requirements. Raw water samples collected pursuant to this subsection must be analyzed at an United States Environmental Protection Agency (EPA) approved or a Texas Commission on Environmental Quality accredited laboratory.

(A) *Cryptosporidium* samples must be analyzed using one of the methods approved in 40 CFR §141.704(a) and by a laboratory that is approved under EPA's [United States Environmental Protection Agency's (EPA)] Laboratory Quality Assurance Evaluation Program for Analysis of *Cryptosporidium* in Water.

(B) *E. coli* samples must be analyzed using one of the methods approved in 40 CFR §136.3(a) for the enumeration of *E. coli* in source water and by a laboratory that is [certified or] accredited by the executive director.

(i) Systems must ensure that samples are maintained between 0 degrees Celsius [C] and 10 degrees Celsius [C] during storage and transportation to the laboratory.

(ii) The time between sample collection and the initiation of the analysis may not exceed 30 hours without the prior approval of the executive director.

(iii) The executive director may allow up to 48 hours between sample collection and the initiation of the analysis if the analysis is conducted by the Colilert reagent version of Standard Method 9223B.

(C) Turbidity samples must be analyzed using a method and at a laboratory approved by the executive director.

(7) Reporting requirements for raw surface water sample results. The owner or operator of a public water system must provide to the executive director with a copy of the results of any test, measurement, or analysis required by this subsection.

(A) Results must be submitted using the Raw Surface Water Sampling Report (commission Form 20358) or in another format that is approved by the executive director and contains the information required by 40 CFR §141.706(e).

(i) If the sample was not collected within the five-day window described in paragraph (4)(C) of this subsection, the result must be accompanied by the information required in paragraph (4)(D) of this subsection.

(ii) If the laboratory report indicates that a valid analytical result could not be reported, the laboratory report must be accompanied by a request to collect a replacement sample.

(B) The results must be submitted within ten days of their receipt by the public water system and no later than ten [10] days after the end of the first month following the month that the sample was collected.

(C) The results and any additional information must be mailed to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087.

(c) Treatment technique requirements. A system that treats surface water or groundwater under the direct influence of surface water must meet minimum treatment technique requirements before the water reaches the entry point to the distribution system.

(1) The combination of pathogen removal and disinfection processes used by a public water system must achieve at least a 4.0-log removal/inactivation of viruses.

(2) The combination of pathogen removal and disinfection processes used by a public water system must achieve at least a 3.0-log removal/inactivation of *Giardia lamblia*.

(3) A public water system that is required by subsection (b) of this section to conduct raw surface water monitoring must comply with the requirements of this paragraph.

(A) The average *Cryptosporidium* level and bin classification [Bin Classification] shall be determined in accordance with the requirements established by 40 CFR §141.710.

(i) For systems that collect a total of at least 48 *Cryptosporidium* samples, the average concentration is equal to the arithmetic mean of all sample concentrations.

(ii) For systems that collect a total of at least 24 samples, but not more than 47 *Cryptosporidium* samples, the average concentration is equal to the highest arithmetic mean of all sample concentrations in any 12 consecutive months during which *Cryptosporidium* samples were collected.

(iii) For systems that serve fewer than 10,000 people and monitor for *Cryptosporidium* for only one year (i.e., collect 24 samples in 12 months), the average concentration is equal to the arithmetic mean of all sample concentrations.

(iv) For systems with plants operating only part of the year that monitor fewer than 12 months per year under 40 CFR §141.701(e), the bin concentration is equal to the highest arithmetic mean of all sample concentrations during any year of *Cryptosporidium* monitoring.

(v) If the monthly *Cryptosporidium* sampling frequency varies, systems must first calculate a monthly average for each month of monitoring. Systems must then use these monthly average concentrations, rather than individual sample concentrations, in the applicable calculation for bin classification in paragraphs.

(B) Unless otherwise specified in this paragraph, the combination of pathogen removal and disinfection processes must achieve the removal/inactivation of *Cryptosporidium parvum* specified in the following table titled "Treatment Technique Requirements for *Cryptosporidium*," beginning 36 months after being assigned a bin classification [Bin Classification] by the executive director.

Figure: 30 TAC §290.111(c)(3)(B) (No change to the figure as it exists in TAC.)

(i) A system that conducts the first round of special raw surface water monitoring according to the schedule contained in subsection (b)(4)(A) of

this section must comply with the requirements of this paragraph no later than the date shown in the following table, titled "Compliance Date for Existing Sources."

Figure: 30 TAC §290.111(c)(3)(B)(i) (No change to the figure as it exists in TAC.)

(ii) A system that conducts the first round of special raw surface water monitoring according to the schedule contained in subsection (b)(4)(B)(i) of this section must comply with the requirements of this paragraph no later than six years after beginning the first round of monitoring on the new source.

(iii) The executive director may allow a system making capital improvements an additional two years to comply with the treatment requirement of this paragraph.

(C) A system that has been assigned to Bin 3 or Bin 4 must achieve at least 1.0-log removal/inactivation of *Cryptosporidium* using one or a combination of the following: bag filters, cartridge filters, chlorine dioxide, membranes, ozone, or ultraviolet light (UV).

(D) Prior to the effective date of subparagraph (B) of this paragraph, the combination of disinfection and filtration processes used by a public water system to treat for *Cryptosporidium* must achieve at least a 2.0-log removal/inactivation of *Cryptosporidium parvum*.

(4) The combination of disinfection and filtration processes at plants that do not monitor each source in accordance with the requirements of subsection (b) of this section must achieve at least a 5.5-log removal /inactivation of *Cryptosporidium parvum*.

(5) The executive director may require additional levels of treatment in cases of poor source water quality.

(6) The executive director may establish minimum design, operational, and reporting requirements for watershed control programs and treatment processes used to meet the treatment technique requirements of this subsection.

(d) Microbial inactivation requirements. A system that treats surface water or groundwater under the direct influence of surface water must meet minimum disinfection requirements before the water is supplied to any consumer.

(1) Inactivation table. The disinfection process must achieve the minimum microbial inactivation levels shown in the following table.

Figure: 30 TAC §290.111(d)(1) (No change to the figure as it exists in TAC.)

(A) The disinfection process at treatment plants not described in the Microbial Inactivation Requirements table must provide the level of disinfection required by the executive director.

(B) The executive director may require additional levels of treatment in cases of poor source water quality.

(C) The executive director may reduce the inactivation requirement for plants that meet the individual filter effluent performance criteria contained in subsection (g)(1) of this section and have been assigned a Bin 1 classification under the provisions of subsection (c)(3) of this section.

(D) A system that fails to meet the inactivation requirements of this section for a period of longer than four consecutive hours commits a nonacute treatment technique violation. A system that fails to conduct the additional testing required by

paragraph (2)(C) of this subsection also commits a nonacute treatment technique violation.

(E) A system that has a plant assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3) of this section and uses UV disinfection facilities to meet the treatment technique requirements for *Cryptosporidium* must meet the inactivation requirements of this subsection in at least 95% of the water treated each month.

(2) Monitoring requirements for chemical disinfectants. Public water systems must monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels are maintained. All monitoring conducted pursuant to the requirements of this subsection must be conducted at sites designated in the public water system's monitoring plan.

(A) The disinfectant residual, pH, temperature, and flow rate of the water in each disinfection zone must be measured at least once each day during a time when peak hourly raw water flow rates are occurring.

(B) Disinfection contact time will be based on tracer study data or a theoretical analysis submitted by the system owner or their designated agent and

approved by the executive director and the actual flow rate that is occurring at the time that monitoring occurs.

(C) Treatment plants that fail to demonstrate an appropriate level of treatment must repeat these tests at four-hour or shorter intervals until compliance has been reestablished.

(3) Monitoring requirements for UV disinfection facilities. Public water systems must monitor the performance of the UV disinfection facilities.

(A) A system must continuously monitor and record UV intensity as measured by a UV sensor, lamp status, the flow rate through the unit, and other parameters prescribed by the executive director to ensure that the units are operating within validated conditions.

(B) A system with a plant that has been assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3) of this section must also monitor and record the amount of water treated by each UV unit each month and the amount of water produced each month when the unit was not operating within validated conditions.

(4) Analytical requirements. All monitoring required by this subsection must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(A) The pH analysis must be conducted using a pH meter with a minimum accuracy of plus or minus 0.1 pH units.

(B) The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(C) The free chlorine or chloramine residual (measured as total chlorine) must be measured to a minimum accuracy of plus or minus 0.1 milligrams per liter (mg/L). Color comparators may be used for distribution system samples only. When used, a color comparator must have current reagents, an unfaded and clear color comparator, a sample cell that is not discolored or stained, and must be properly stored in a cool, dark location where it is not subjected to conditions that would result in staining. The color comparator must be used in the correct range. If a sample reads at the top of the range, the sample must be diluted with chlorine-free water, then a reading taken and the resulting residual calculated. [Samples tested using a colorimetric method

must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator.]

(D) The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(i) Amperometric titrator with platinum-platinum electrodes; or

(ii) Lissamine Green B.

(E) The ozone residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using the Indigo Method and using a colorimeter or spectrophotometer.

(F) The UV dose must be measured by a calibrated sensor approved by the executive director.

(e) Filtration requirements for conventional filters. A system that uses granular media filters to treat surface water or groundwater under the direct influence of surface

water must meet minimum filtration requirements before the water is supplied to any consumer.

(1) Treatment technique requirements for combined filter effluent. Treatment plants using conventional media filtration must meet the following turbidity requirements.

(A) The turbidity level of the combined filter effluent must never exceed 1.0 nephelometric turbidity unit (NTU).

(B) 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) Performance criteria for individual filter effluent. The filtration techniques must ensure the public water system meets the following performance criteria.

(A) The turbidity from each individual filter effluent should never exceed 1.0 NTU.

(B) At a public water system that serves 10,000 people or more, the turbidity from each individual filter effluent should not exceed 0.5 NTU at four hours after the individual filter is returned to service after backwash or shutdown.

(3) Routine turbidity monitoring requirements. A system must monitor the performance of its filtration facilities.

(A) A system that serves fewer than 500 people and continuously monitors 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) A system that serves at least 500 people and continuously monitors 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.

(C) Except as provided in subparagraph (D) of this paragraph, a system must continuously monitor the filtered water turbidity at the effluent of each individual filter and record the turbidity value every 15 minutes.

(D) A system that serves fewer than 10,000 people and monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) of this title (relating to Water Treatment) must:

(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.

(4) Special investigation requirements. A system which fails to produce water with acceptable turbidity levels must investigate the cause of the problem and take appropriate corrective action. The executive director can waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(A) A public water system that fails to meet the turbidity criteria specified in paragraph (2) of this subsection must conduct additional monitoring.

(i) Each time a filter exceeds an applicable filtered water turbidity level specified in paragraph (2) of this subsection 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.

(ii) Each time a filter exceeds the filtered turbidity level specified in paragraph (2)(A) of this subsection 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.

(iii) 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 (CPE). If the system serves at least 10,000 people, the CPE must be conducted within 90 days of the first exceedance in the second month. If the system serves fewer than 10,000 people, the CPE must be conducted within 120 days of the first exceedance in the second month.

(B) A system that serves fewer than 10,000 people, monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity, and fails to meet the turbidity criteria in paragraph (1)(A) of this subsection 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.

(i) 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.

(ii) 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.

(iii) 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 CPE [comprehensive performance evaluation] within 120 days of the first exceedance in the second month.

(5) Analytical requirements for turbidity. All monitoring required by this subsection 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).

(A) Turbidity must be measured with turbidimeters that use one of the following methods:

(i) EPA Method 180.1 and Standard Method 2130B;

(ii) Great Lakes Instruments Method 2; or

(iii) Hach FilterTrak Method 10133.

(B) A system monitoring the performance of individual filters with on-line turbidimeters and recorders may monitor combined filter effluent turbidity levels by either continuously monitoring turbidity levels with an on-line turbidimeter or measuring the turbidity level in grab samples with a bench-top turbidimeter.

(C) Continuous turbidity monitoring must be conducted using a continuous, on-line turbidimeter and a device that records the turbidity level reading at least once every 15 minutes.

(i) Turbidity data may be recorded electronically by a supervisory control and data acquisition system (SCADA) 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.

(ii) If there is a failure in the continuous turbidity monitoring equipment at a system serving 10,000 people or more, 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.

(iii) If the continuous turbidity monitoring equipment at a system serving fewer than 10,000 people malfunctions, 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.

(D) A system that monitors 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.

(f) Filtration requirements for other filters. A system that uses cartridge filters, membrane filters, or other unconventional filtration systems to treat surface water or groundwater under the direct influence of surface water must meet minimum filtration requirements before the water is supplied to any consumer.

(1) Treatment technique requirements. A system that uses unconventional filtration technologies such as membrane filters or cartridge filters must meet treatment technique requirements prescribed by the executive director.

(A) The filtration facilities must meet combined filter effluent and individual filter effluent turbidity limits established by the executive director.

(B) The filtration facilities must be operated and maintained in accordance with requirements that the executive director determines are needed to demonstrate the amount of *Giardia* and *Cryptosporidium* removal achieved.

(2) Monitoring requirements. A system must monitor the performance of its filtration facilities.

(A) A system that serves fewer than 500 people and continuously monitors the turbidity level of each individual cartridge or membrane unit must

measure and record the turbidity level of the combined effluent at least once each day that the plant is in operation.

(B) A system that serves at least 500 people and continuously monitors the turbidity level of each individual cartridge or membrane unit must measure and record the turbidity level of the combined effluent at least every four hours that the system serves water to the public.

(C) A system using membranes must use a method approved by the executive director to continuously monitor the quality of the water produced by each membrane unit and record the monitoring results at least once every five minutes. The executive director may approve monitoring parameters other than turbidity and decrease the frequency to once every 15 minutes if the approved operating parameters will allow consecutive readings to be obtained between backwash or backflush cycles.

(D) A system using membranes must conduct direct integrity testing on each membrane unit using a procedure approved by the executive director.

(i) Direct integrity tests must be conducted in a manner that will detect a membrane defect of 3 microns or smaller and demonstrates a removal

efficiency equal to or greater than the removal credit awarded to the membrane filtration process by the executive director.

(ii) Direct integrity test method must calculate the log removal value for a 3-micron size particle and establish an upper control limit which assures that the unit is capable of meeting the removal credit approved by the executive director.

(iii) A system that has been assigned a Bin 1 classification under the provisions of subsection (c)(3)(B) of this section must conduct direct integrity tests at least once every seven days. The executive director [directed] may reduce the testing requirements for other membrane units.

(iv) A system that has been assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3)(B) of this section must conduct direct integrity tests at least once each day that the membrane unit is used for filtration. The executive director may approve less frequent testing, based on demonstrated process reliability, the use of multiple barriers effective for *Cryptosporidium* removal or inactivation, or reliable process safeguards.

(v) A system must immediately conduct a direct integrity test on any membrane unit that produces filtered water with turbidity level above 0.15 NTU on two consecutive readings. The executive director must establish alternate site-specific control limits for systems that use other approved technology in lieu of turbidimeters to continuously monitor the performance of membrane units.

(vi) A system must immediately remove any membrane unit that fails a direct integrity test from service until the membrane modules in that unit are inspected and, if necessary, repaired. A membrane unit that has been removed from service may not be returned to service until it has passed a direct integrity test.

(E) A system that uses cartridge filters must continuously monitor the performance of the filtration process in a manner approved by the executive director.

(3) Analytical requirements. All monitoring required by this subsection 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.

(A) Turbidity of the combined effluent must be measured with turbidimeters that meet the requirements of subsection (e)(5)(A) of this section.

(B) The turbidity of the water produced by each membrane unit must be measured using the Hach FilterTrak Method 10133. The executive director may approve the use of alternative technology to monitor the quality of the water produced by each membrane unit.

(C) A system continuously monitoring the performance of individual cartridges or membrane units may monitor combined effluent turbidity levels by either continuously monitoring turbidity levels with an on-line turbidimeter, or by measuring the turbidity level in grab samples with a bench-top turbidimeter.

(D) Data collected from on-line instruments may be recorded electronically by a SCADA system or on a strip chart recorder. The recorder must be designed so that the operator can accurately determine the value of readings at the monitoring interval approved by the executive director.

(i) If there is a failure in the continuous monitoring equipment at a system serving 10,000 people or more, 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.

(ii) If there is a failure in the continuous monitoring equipment at a system serving fewer than 10,000 people, 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.

(E) A system that uses cartridge filters and does not continuously monitor the turbidity of each filter unit must monitor the performance of individual filters at least once each day using a bench-top turbidimeter.

(g) Other treatment credits for systems in Bins 2 through 4. The executive director may grant additional pathogen removal and inactivation credit to systems that meet enhanced design, operational, maintenance, and reporting requirements.

(1) Individual filter effluent. The executive director may approve an additional 1.0-log removal credit for *Giardia* and *Cryptosporidium* to a treatment plant that uses conventional granular media filters.

(A) The executive director will approve the additional credit for a plant if:

(i) the system continuously monitored the filtered water turbidity at the effluent of each individual filter and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell;

(ii) the turbidity level at each individual filter effluent is less than or equal to 0.15 NTU in at least 95% of the measurements recorded during the month; and

(iii) no individual filter produced water with turbidity level above 0.3 NTU in two consecutive 15-minute readings.

(B) The executive director may also approve the additional credit for a plant that does not meet the requirements of subparagraph (A) of this paragraph if:

(i) the executive director determines that the failure to meet the requirements of subparagraph (A) of this paragraph could not have been prevented through optimizing plant operations, design, or maintenance; and

(ii) the system has experienced no more than two such failures within the most recent 12 months.

(2) Combined filter effluent. The executive director may approve an additional 0.5-log removal credit for *Cryptosporidium* to a treatment plant that uses conventional granular media filters if:

(A) the system continuously monitored the filtered water turbidity at the effluent of each individual filter and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell;

(B) the turbidity level at the combined filter effluent is less than or equal to 0.15 NTU in at least 95% of the measurements recorded during the month; and

(C) the plant does not receive additional treatment credit under paragraph (1) of this subsection.

(3) Second stage filtration. The executive director will approve an additional 0.5-log removal credit for *Giardia* and *Cryptosporidium* to a treatment plant that uses a second, separate stage of conventional granular media filters if:

(A) the filters in both stages meet minimum design criteria approved by the executive director;

(B) all of the water produced by the plant passes through both stages of filtration;

(C) the system continuously monitored the filtered water turbidity at the effluent of each individual filter in the first stage of filtration and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell; and

(D) no individual filter in the first stage of filtration produced water with turbidity level above 1.0 NTU in two consecutive 15-minute readings.

(4) Other pathogen control strategies. The executive director may approve an additional removal or inactivation credit for other pre-filtration, filtration, or post-filtration strategies that can demonstrate effective, consistent levels of enhanced pathogen control.

(A) The alternative strategy must achieve a quantifiable reduction in the risk of waterborne disease in all of the treated water produced by the plant.

(B) The alternative strategy must conform to any applicable requirement of 40 CFR §§141.715 - 141.720.

(C) The executive director may establish minimum site-specific design, operational, maintenance, and reporting requirements for any alternative strategy used to meet minimum treatment technique requirements of subsection (c) of this section.

(D) The executive director may not approve additional removal credit under the provisions of this paragraph to any strategy that includes a treatment process has been assigned additional removal or inactivation credit under any other provision of this subsection.

(h) Reporting requirements. Public water systems must properly complete and submit periodic reports to demonstrate compliance with this section.

(1) A system that has a turbidity level exceeding 1.0 NTU in the combined filter effluent must consult with the executive director within 24 hours.

(2) A system [that continuously monitors the performance of individual filters must submit a Surface Water Monthly Operating Report (commission Form

0102C) each month for each plant] that treats surface water sources or groundwater sources under the direct influence of surface water must submit a Surface Water Monthly Operating Report each month for each plant.

(A) A system that uses alternative treatment technologies or has been assigned a Bin 2, Bin 3, or Bin 4 classification under subsection (c)(3)(B) of this section must submit a Surface Water Monthly Operating Report (commission Form 0102D) for alternative technologies.

(B) A system that continuously monitors the performance of individual filters, but is not required to submit commission Form 0102D, must submit a Surface Water Monthly Operating Report (commission Form 0102C).

(C) A system that is allowed by the executive director to submit combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must submit a Surface Water Monthly Operational Report for Plants That Do Not Have a Turbidimeter on Each Filter (commission Form 0103) each month for each plant that treats surface water or groundwater under the direct influence of surface water.

[(3) A system that monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must submit a Surface Water Monthly Operating Report for 2-Filter Plants (commission Form 0103) each month for each plant that treats surface water or groundwater under the direct influence of surface water.]

(3) [(4)] A system that must complete the additional monitoring required by subsection (e)(4)(A)(i) or (B)(i) of this section must submit a Filter Profile Report for Individual Filters (commission Form 10276) with its Surface Water Monthly Operating Report.

(4) [(5)] A system that must complete the additional monitoring required by subsection (e)(4)(A)(ii) or (B)(ii) of this section must submit a Filter Assessment Report for Individual Filters (commission Form 10277) with its Surface Water Monthly Operating Report.

(5) [(6)] A system that must complete the additional monitoring required by subsection (e)(4)(A)(iii) or (B)(iii) of this section must submit a Comprehensive Performance Evaluation Request Form (commission Form 10278) with its Surface Water Monthly Operating Report.

[(7) A system that uses membranes must submit a Membrane Monthly Operating Report (commission Form 20356) for each plant that treats surface water or groundwater under the direct influence of surface water. The report must accompany the plant's Surface Water Monthly Operating Report.]

[(8) A system that uses UV disinfection to meet the minimum treatment technique requirements for surface water or groundwater under the direct influence of surface water must submit a UV Monthly Operating Report (commission Form 20357) with its Surface Water Monthly Operating Report. The report must accompany the plant's Surface Water Monthly Operating Report.]

(6) [(9)] A system must submit any additional reports required by the executive director to verify the level of pathogen removal or inactivation achieved by the system's treatment plants.

(7) [(10)] A system must submit its *Cryptosporidium* bin classification.

(8) [(11)] A system must submit reports required by subsection (b)(7) of this section.

(9) [(12)] Periodic reports required by this section must be submitted to the Water Supply Division, Texas Commission on Environmental Quality, MC 155, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(i) Compliance determination. Compliance with the requirements of this section must be determined using the criteria of this subsection.

(1) A public water system that fails to complete source water monitoring or conduct the routine monitoring tests and any applicable special investigations required by this section commits a monitoring violation.

(2) A public water system that fails to submit a report required by subsection (h) of this section commits a reporting violation.

(3) A public water system using conventional filters that has a turbidity level exceeding 5.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(4) A public water system using membrane filters that has a turbidity level exceeding 1.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(5) Except as provided in paragraphs (3) and (4) of this subsection, a public water system that violates the requirements of subsections (c), (d)(1), (e)(1), and (f)(1) of this section commits a nonacute treatment technique violation.

(6) A system that fails to request a bin classification [Bin Classification] within six months of completing a round of source water monitoring commits a treatment technique violation.

(7) A system that fails to correct the performance-limiting factors identified in a comprehensive performance evaluation conducted under the requirements of subsection (e)(4)(A)(iii) or (B)(iii) of this section commits a violation.

(8) A system that fails to properly issue a public notice required by subsection (j) of this section commits a violation.

(j) Public notification. 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 commits an acute treatment technique violation must notify the executive director and the water system customers of the acute violation within 24 hours 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 has a turbidity level exceeding 1.0 NTU in the combined filter effluent must consult with the executive director within 24 hours of the violation.

(A) Based on the results of the consultation, the executive director will determine whether the water system must notify its customers in accordance with the requirements of §290.122(a) or (b) of this title.

(B) A water system that fails to consult with the executive director as required by this paragraph must notify its customers in accordance with the requirements of §290.122(a) of this title.

(3) Except as provided in paragraphs (1) and (2) of this subsection, a public water system that fails to meet the treatment technique requirements of subsections (c), (d)(1), (e)(1), or (f)(1) of this section must 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 that 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.

§290.116. Groundwater Corrective Actions and Treatment Techniques.

(a) Applicability. All groundwater public water systems, including such systems that use surface water or groundwater under the direct influence of surface water (mixed systems), must comply with one or more of the treatment techniques and corrective actions of this section if a raw groundwater source sample was positive for fecal indicators, if a significant deficiency was identified, or if the system is not required to conduct raw groundwater source monitoring because it provides at least 4-log treatment of viruses at each groundwater source.

(1) A groundwater system must provide written notification to the executive director that it is not required to meet the raw groundwater source monitoring requirements under §290.109(c)(4) of this title (relating to Microbial Contaminants) because it provides at least 4-log treatment of viruses for the specified groundwater source and must begin compliance monitoring in accordance with subsection (c) this section. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission. If the executive director determines and documents in writing that 4-log treatment of viruses is no longer necessary for a specified groundwater source or if the system discontinues 4-log treatment of viruses before the first connection for any groundwater source, the system must document this in writing and conduct raw groundwater source sampling as required under §290.109(c)(4) of this title.

(2) A groundwater system that places a groundwater source in service after November 30, 2009, that is not required to meet the raw source monitoring requirements under §290.109(c)(4) of this title because the system provides at least 4-log treatment of viruses for a specified groundwater source must begin compliance monitoring within 30 days of placing the source in service in accordance with subsection (c) of this section. The system must provide written notification to the executive director that it provides at least 4-log treatment of viruses before the first connection for the specified groundwater source. The notification must include engineering, operational,

and other information required by the executive director to evaluate the submission. The system must conduct triggered source monitoring under §290.109(c)(4) of this title until the executive director provides written approval of the system's request to provide the 4-log treatment. If the system discontinues 4-log treatment of viruses before the first connection for a groundwater source, the system must conduct raw groundwater source sampling as required under §290.109(c)(4) of this title.

(b) Groundwater corrective action plan. All public water systems using groundwater must submit a corrective action plan and implement corrective action if a raw groundwater source sample was positive for fecal indicators or if a significant deficiency was identified.

(1) If a groundwater source sample was found to be fecal indicator positive or if a significant deficiency was identified, the system must consult with the executive director regarding appropriate corrective action and have an approved corrective action plan in place within 30 days of receiving written notification from a laboratory of the fecal indicator positive source sample collected under §290.109(c)(4) of this title or within 30 days of receiving written notification from the executive director of the identification of a significant deficiency.

(2) Within 120 days of receiving written notification from a laboratory of the fecal indicator positive source sample or receiving written notification from the executive director of a significant deficiency, the system must have completed corrective action or be in compliance with an approved corrective action plan and schedule.

(3) Any changes to the approved corrective action plan or schedule must be approved by the executive director.

(4) The executive director may require interim measures for the protection of public health pending approval of the corrective action plan. The system must comply with these interim measures as well as with any schedules specified by the executive director.

(5) Systems that are required to complete corrective action must implement one or more of the procedures in this paragraph and the details of the implementation must be specified in the approved corrective action plan.

(A) The system may disinfect the groundwater source where the fecal indicator positive source sample was collected following the American Water Works Association (AWWA) standards for well disinfection and start monthly fecal indicator sampling at that source within 30 days after well disinfection. The executive

director may discontinue the monthly source sampling requirement if corrective action is sufficient.

(B) The system may eliminate the groundwater source that was found to be fecal indicator positive and provide an alternate groundwater source if necessary. Eliminated groundwater sources must be disconnected from the distribution system until the contamination is corrected and the executive director approves it for use.

(C) The system may identify and eliminate the source of fecal contamination followed by well disinfection according to AWWA well disinfection standards and begin monthly fecal indicator sampling within 30 days after well disinfection. The executive director may allow the system to discontinue the monthly source sampling requirement after making a determination that corrective action is sufficient.

(D) The system may provide treatment that reliably achieves at least 4-log treatment of viruses using inactivation, removal or an executive director-approved combination of inactivation and removal before the first connection of the groundwater source.

(E) Correct all significant deficiencies.

(F) Assessment source monitoring for a period of 12 months or a time period specified by the executive director from the raw groundwater source in accordance with §290.109(c)(4)(E) of this title.

(c) Microbial inactivation requirements. A system that treats groundwater in response to a fecal indicator positive source sample, significant deficiency, or in lieu of the raw groundwater source monitoring shall meet minimum disinfection requirements demonstrating at least 4-log treatment of viruses before the water is distributed to the first connection of the specified groundwater source.

(1) Monitoring requirements for chemical disinfectants. Groundwater systems shall monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels are maintained every day the specified source serves the public. All monitoring conducted pursuant to the requirements of this section must be conducted at sites designated in the system's monitoring plan in accordance with §290.121 of this title (relating to Monitoring Plans).

(A) Groundwater systems serving a population greater than 3,300 must continuously monitor the residual disinfectant concentration in accordance with

the analytical methods specified in 40 Code of Federal Regulations (CFR) §141.74(a)(2) at a location approved by the executive director and must record the lowest residual disinfectant concentration every day the groundwater source serves the public.

(i) The groundwater system must maintain the executive director-approved minimum specified disinfectant residual every day the groundwater system serves water from the specified groundwater source to the public. If there is a failure in the continuous monitoring equipment, the groundwater system must conduct grab sampling every four hours until the continuous monitoring equipment is returned to service.

(ii) The system must resume continuous residual disinfectant monitoring within 14 days.

(B) Groundwater systems serving a population of 3,300 or fewer must monitor the disinfectant residual in accordance with the analytical methods specified in 40 CFR §141.74(a)(2) in each disinfection zone at least once each day that water from the specified groundwater source is served to the public during either a time when peak hourly raw water flow rates are occurring or at another time specified by the executive director. The system must record and maintain the disinfectant residual every day the system serves water from the groundwater source to the public. The system

must collect a daily grab sample during the hour of peak flow or at another time specified by the executive director. If any daily grab sample measurement falls below the executive director-approved minimum specified disinfectant residual, the groundwater system must collect follow-up samples every four hours until the residual disinfectant concentration is restored to the executive director-approved level. Alternatively, a groundwater system that serves 3,300 or fewer people may monitor the residual disinfectant concentration continuously and meet the requirements of subparagraph (A) of this paragraph.

(C) Disinfection contact time will be based on tracer study data or a theoretical analysis submitted by the system owner or their designated agent and approved by the executive director.

(D) Groundwater treatment plants that fail to demonstrate an appropriate level of treatment must repeat these tests at four-hour or shorter intervals until compliance has been reestablished.

(2) Monitoring and operating requirements for commission-approved alternative treatment, including ultraviolet light (UV) disinfection facilities and other methods that can obtain 4-log inactivation of viruses and can be properly validated. Public water systems shall monitor the UV intensity as measured by a UV sensor, lamp

status, the flow rate through the unit, and other parameters prescribed by the executive director as specified in §290.42(g)(5) of this title (relating to Water Treatment) to ensure that the units are operating within validated conditions.

(3) Analytical requirements. All monitoring required by this section must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(A) The pH analysis must be conducted using a pH meter with a minimum accuracy of plus or minus 0.1 pH units.

(B) The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(C) The free chlorine or chloramine residual (measured as total chlorine) must be measured to a minimum accuracy of plus or minus 0.1 milligrams per liter (mg/L) [mg/L]. Color comparators may be used for distribution system samples only. When used, a color comparator must have current reagents, an unfaded and clear color comparator, a sample cell that is not discolored or stained, and must be properly stored in a cool, dark location where it is not subjected to conditions that would result in

staining. The color comparator must be used in the correct range. If a sample reads at the top of the range, the sample must be diluted with chlorine-free water, then a reading taken and the resulting residual calculated. [Samples tested using a colorimetric method must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator.]

(D) The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(i) Amperometric titrator with platinum-platinum electrodes; or

(ii) Lissamine Green B.

(E) The ozone residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using an indigo method that uses a colorimeter or spectrophotometer.

(4) Recordkeeping requirements for microbial inactivation treatment. Groundwater systems, including wholesale, consecutive, and mixed systems, regulated

under this subsection must comply with §290.46 of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(d) Reporting requirements. Groundwater systems conducting 4-log treatment in lieu of the raw groundwater source monitoring or required to conduct corrective action in response to a fecal indicator positive source sample, or a significant deficiency, must report to the executive director in accordance with this subsection.

(1) A groundwater system required to conduct compliance monitoring for chemical disinfectants must complete a Groundwater Treatment Monthly Operating Report (commission Form 20362) for groundwater disinfection facilities monthly. Groundwater systems must maintain the reports on site and make them available to the executive director upon request.

(2) A groundwater system must provide written notification to the executive director that it is not required to meet the raw groundwater source monitoring requirements under §290.109(c)(4) of this title because it provides at least 4-log treatment of viruses for a specified groundwater source and <u>must</u> begin compliance monitoring in accordance with subsection (c) of this section. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission.

(3) A groundwater system required to complete corrective action under subsection (b) of this section must notify the executive director within 30 days of completing the corrective action.

(4) If a groundwater system is subject to the triggered source monitoring requirements of §290.109(c)(4)(A) of this title and does not conduct source monitoring, the system must provide written documentation that it was providing 4-log treatment of viruses for the specified groundwater source or that it met the criteria set out in §290.109(c)(4)(D) of this title within 30 days of the positive distribution coliform sample.

(5) A groundwater system conducting compliance monitoring under subsection (a) of this section must notify the executive director any time the system fails to meet any executive director-specified requirements (including, but not limited to, minimum residual disinfectant concentration, and alternative treatment operating criteria) if the operation in accordance with the criteria or requirements is not restored within four hours. The system must notify the executive director as soon as possible, but no later than the end of the next business day.

(e) Compliance determination. In accordance with this subsection, the executive director shall determine compliance for groundwater systems required to conduct corrective action within 120 days, or pursuant to a groundwater corrective action plan.

(1) A groundwater system is in violation of the treatment technique requirement if it does not complete corrective action in accordance with the executive director-approved corrective action plan or any interim measures required by the executive director.

(2) A groundwater system is in violation of the treatment technique requirement if it is not in compliance with the executive director-approved corrective action plan and schedule.

(3) A groundwater system subject to the requirements of subsection (c) of this section that fails to maintain at least 4-log treatment of viruses is in violation of the treatment technique requirement if the failure is not corrected within four hours. The groundwater system must notify the executive director as soon as possible but no later than the next business day if there is a failure in maintaining the 4-log treatment for more than four hours.

(4) A groundwater system that fails to conduct the disinfectant monitoring required under subsection (c) of this section commits a monitoring violation.

(5) A groundwater system that fails to report the results of the disinfectant monitoring required under subsection (c) of this section commits a reporting violation.

(6) A groundwater system that fails to issue a required public notice or certify that the public notice has been performed commits a public notice violation.

(f) Public notification. A groundwater system that commits a treatment technique, monitoring, or reporting violation or situation as identified in this section must notify its customers of the violation in accordance with the requirements of §290.122 of this title (relating to Public Notification).

(1) Special notice to the public of significant deficiencies or source water fecal contamination for community systems. In addition to the applicable public notice requirements of §290.122(a) of this title, a community groundwater system that receives notice from the executive director of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated under §290.109(d)(2) of this title must inform the public served by the water system of the fecal indicator-positive source sample or of any significant deficiency that has not been

corrected in its Consumer Confidence Report as specified in §290.272(g)(7) and (8) of this title (relating to Content of the Report).

(2) Special notice to the public of significant deficiencies or source water fecal contamination for noncommunity systems. In addition to the applicable public notice requirements of §290.122(a) of this title, a noncommunity groundwater system that receives notice from the executive director of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated under §290.109(d)(2) of this title must inform the public served by the water system of any significant deficiency that has not been corrected within 12 months of being notified by the executive director, or earlier if directed by the executive director. The system must continue to inform the public annually until the significant deficiency is corrected. The information must include:

(A) posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection; and

(B) any other method reasonably calculated to notify other persons served by the system, if they would not normally be notified by the methods set out in subparagraph (A) of this paragraph. Such persons may include those who may not see a

posted notice because the notice is not in a location they routinely frequent. Other methods may include publication in a local newspaper, newsletter, or e-mail; or, delivery of multiple copies in central locations (e.g., community centers).

(C) If directed by the executive director, a noncommunity groundwater system with significant deficiencies that have been corrected must inform its customers of the significant deficiencies, how deficiencies were corrected, and the dates of correction.

States, or in an auxiliary service of one of those branches of the armed forces.

(b) An applicant shall provide documentation of the applicant's status as a military service member, military veteran, or military spouse. Acceptable documentation includes, but is not limited to, copies of official documents such as military service orders, marriage licenses, and military discharge records. The application of a person who fails to provide documentation of his or her status shall not be processed under the requirements of this section.

(c) Upon request, an applicant shall provide acceptable proof of current licensure issued by another jurisdiction. Upon request, the applicant shall provide proof that the licensing requirements of that jurisdiction are substantially equivalent to the licensing requirements of this state.

(d) The Board's authority to require an applicant to undergo a criminal history background check, and the timeframes associated with that process, are not affected by the requirements of this section.

(e) For an application for a license submitted by a verified military service member or military veteran, the applicant shall receive credit towards any licensing or apprenticeship requirements, except an examination requirement, for verified military service, training, or education that is relevant to the occupation, unless he or she holds a restricted license issued by another jurisdiction or if he or she has an unacceptable criminal history as described by the Act and this chapter.

(f) An applicant who is a military spouse who holds a current license issued by another jurisdiction that has substantially equivalent licensing requirements shall complete and submit an application form and fee. The Board shall issue a license to a qualified applicant who holds such a license as soon as practicable and the renewal of the license shall be in accordance with subsection (i) of this section.

(g) In accordance with Occupations Code, §55.004(c), the executive secretary may waive any prerequisite to obtaining a license after reviewing the applicant's credentials and determining that the applicant holds a license issued by another jurisdiction that has licensing requirements substantially equivalent to those of this state.

(h) A military spouse who within the five years preceding the application date held the license in this state that expired while the applicant lived in another state for at least six months is qualified for licensure based on the previously held license, if there are no unresolved complaints against the applicant and if there is no other bar to licensure, such as criminal background or non-compliance with a Board order.

(i) If the Board issues an initial license to an applicant who is a military spouse in accordance with subsection (f) of this section, the Board shall assess whether the applicant has met all licensing requirements of this state by virtue of the current license issued by another jurisdiction. The Board shall provide this assessment in writing to the applicant at the time the license is issued. If the applicant has not met all licensing requirements of this state, the applicant must provide proof of completion at the time of the first application for license renewal. A license shall not be renewed, shall be allowed to expire, and shall become ineffective if the applicant does not provide proof of completion at the time of the first application for licensure renewal.

[~~(b) The spouse of a person serving on active duty as a member of the armed forces of the United States who holds a current license issued by another state that has substantially equivalent licensing requirements shall complete and submit an application form and fee. In accordance with Texas Occupations Code, §55.004(c), the executive secretary may waive any prerequisite to obtaining a license after reviewing the applicant's credentials and determining that the applicant holds a license issued by another jurisdiction that has licensing requirements substantially equivalent to those of this state.~~]

[~~(c) The spouse of a person serving on active duty as a member of the armed forces of the United States who within the five years preceding the application date held the license in this state that expired while the applicant lived in another state for at least six months is qualified for licensure based on the previously held license, if there are no unresolved complaints against the applicant and if there is no other bar to licensure, such as criminal background or non-compliance with a board order.~~]

The agency certifies that legal counsel has reviewed the proposal and found it to be within the state agency's legal authority to adopt.

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Charles Beasley, PhD
Chair
Texas Board of Licensure for Professional Medical Physicists
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For further information, please call: (512) 776-6972

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TITLE 30. ENVIRONMENTAL QUALITY

PART 1. TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

CHAPTER 290. PUBLIC DRINKING WATER

The Texas Commission on Environmental Quality (TCEQ, agency, or commission) proposes to amend §§290.38, 290.39, 290.41 - 290.47, 290.110, 290.111 and 290.116.

Background and Summary of the Factual Basis for the Proposed Rules

This rulemaking proposes to amend Chapter 290 for consistency with Texas Water Code (TWC), §12.013 and Chapter 13; existing federal regulations and guidance; and, provide clarification on existing state rules. The proposed rulemaking will address: federal changes to the lead and *Escherichia Coli (E. coli)* thresholds; desalination; chloramination; plan review submittal process; enforceability of exceptions; and other drinking water matters.

State Statutes

The proposed state revision to Chapter 290 is necessary to reflect changes to TWC, §12.013 and Chapter 13, made during the 83rd Texas Legislature, 2013, in §2.96 of House Bill (HB) 1600 and §§1, 4, 95, and 96 of Senate Bill (SB) 567, related to transfer of the utilities and rates program to the Public Utility Commission of Texas (PUC). The majority of the rule changes required to implement HB 1600 and SB 567 will occur under Rule Project Number 2013-057-291-OW. In this rulemaking, the executive director's staff proposes to remove a requirement in existing §290.39(j)(3), related to the submittal of Certificates of Public Convenience and Necessity (CCN) with changes or additions to a public water system (PWS), as the TCEQ no longer has jurisdiction over CCNs, effective September 1, 2014.

Federal Regulations

Reduction of Lead in Drinking Water Act -- The federal Reduction of Lead in Drinking Water Act reduced the allowed lead content of pipes, pipe fittings, and plumbing fittings and fixtures from 8.0% to 0.25%, effective January 4, 2014. Changes are proposed within Chapter 290 to address this federal revision.

E. coli Threshold -- Additionally, the United States Environmental Protection Agency's (EPA's) Long Term 2 Enhanced Surface Water Treatment (LT2) rule required PWSs with surface water or groundwater under the direct influence of surface water sources to monitor for *Cryptosporidium.* The EPA gave states the discretion to allow small PWSs, those with a population less than 10,000, to monitor for *E. coli* instead. Subsequent federal guidance established an *E. coli* trigger level of 100 *E. coli/*100 milliliters, no matter the source of water. Changes are proposed within Chapter 290 to address this federal revision.

Additional Staff Recommendations -- Additionally, staff-initiated rule changes within Chapter 290 are proposed to address: the process for TCEQ's approval of desalination technology; chloramine disinfection criteria; modification of the plan review submittal process; enforceability of exceptions; clarification for well construction review process; alternative appurtenances for overflow devices; water storage; water distribution crossings; the removal of three Appendices in existing §290.47, and the related establishment of three agency forms.

Process for Approving Desalination Technology -- The proposed rule changes will allow the use of desalination technologies for chemical removal without submitting an exception request, which is required when proposing the use of any technology that does not have design, operation, maintenance, monitoring, and reporting standards within Chapter 290 at this time. These technologies, which are not mentioned in the rules, are considered innovative/alternate treatment technologies and require site-specific review and approval as an exception to the rule.

The use of reverse osmosis membranes and other desalination technologies for water treatment has been in use for decades. Over 15,000 desalination plants were in use worldwide in 2002. Given this length of time in production and the widespread use of desalination, the executive director's staff proposes to develop design, operation, maintenance, monitoring, and reporting standards for desalination. Historically, desalination has been approved on a case-by-case basis through the executive director's exception process for innovative/alternate treatments under §290.39(l). Desalination has become a common technology used by PWSs; therefore, the TCEQ's practices for approving these technologies have become well developed. By placing the specific requirements for desalination through reverse osmosis and nanofiltration within Chapter 290, a PWS can implement the technology without the added time of requesting and receiving an exception before submitting the plans and specifications for staffs' review.

PWSs can use desalination to remove salts from water that is high in total dissolved solids, making the water more palatable, or to comply with the maximum contaminant level (MCL) for a regulated inorganic chemical like arsenic or fluoride. Under the on-going drought conditions, there has been increased interest in using desalination because of the degradation of potential source water quality. Desalination can be accomplished through reverse osmosis or nanofiltration technology.

On May 9, 2014, and June 3, 2014, the executive director's staff met with a group of interested stakeholders including representatives of PWSs, government agencies, design engineers, membrane vendors, and other interested participants. The purpose of the stakeholder process was to solicit feedback for proposed rules that would allow the approval of desalination technology for chemical removal through reverse osmosis and nanofiltration without obtaining an exception to the rule as is currently required by §290.42(g). With the exclusion of treatment for pathogen control and the treatment of seawater (both of which have unique challenges), the stakeholder process worked to develop a path for PWSs and their design engineers to use rule-based criteria to demonstrate that the desalination process would be effective, reliable and safe. With that goal, the executive director's staff presented a discussion outline that included plant design, engineering report, capacity requirements, operator licensing, operating records and reports, and instrument calibration. Among the stakeholders, there was a consensus that the modeling tools of the membrane vendor were sufficiently developed to allow these models as a basis for configuring a reverse osmosis or nanofiltration system. The TCEQ has an existing process for allowing these modeling tools for the design of brackish groundwater treatment systems, but not for the treatment of any primary contaminants. In an effort to allow the most flexibility to the design engineer, many of the stakeholders were resistant to design rules that prescribed defined trigger limits for maintenance/cleaning activities and for when (and how frequently) performance monitoring data was collected (such as conductivity). The preferred process was to allow the design engineer to present the engineering arguments that would support these decisions in an engineering report and then to validate some (or most) of these decisions in a second report after the plant is placed in service. Once a general agreement for the engineering submittal process was completed, the stakeholder discussion continued to address general criteria for plant operations, operator licensing, and capacity. The completed stakeholder process provided the executive director's staff with sufficient feedback to develop proposed rules for desalination through reverse osmosis or nanofiltration that meet the concerns of the regulated community while being protective of public health.

The proposed design requirements in this rulemaking related to desalination through reverse osmosis or nanofiltration include allowable pretreatment, post-treatment for removal of dissolved gases and re-mineralization, pipes and pipe galleries, conductivity or total dissolved solids monitoring, chemical containment, flow metering for dose calculation, sample taps for monitoring and dosing correctly, and technology-specific flux determination monitoring facilities. The proposed operational requirements related to desalination through reverse osmosis or nanofiltration include: operator licensing; periodic maintenance cleaning; set points for when maintenance is required; and monitoring, reporting, and recordkeeping.

Chloramine Disinfection Criteria -- The proposed rule change will allow the use of chloramines in most cases without applying for and being granted an exception. PWSs use chloramines as a compliance option for MCLs for trihalomethanes and haloacetic acids and to ensure a long-lasting disinfectant residual. Design, operation, maintenance, and recordkeeping requirements must be added to the rule to no longer require an exception for any unit process. The design requirements related to chloramination include pump and tank sizing, chemical containment, flow metering for dose calculation, sample taps for monitoring and dosing correctly, and the ability to drain the tanks as needed. The operational requirements for chloramination include notification, monitoring, recordkeeping, maintenance, and the ability to respond to nitrification, which can occur when nitrifying bac-

teria uses free ammonia as a food source, causing the loss of residual disinfectant and the potential formation of undesirable nitrite and nitrate.

Modification of the Plan Review Submittal Process -- The proposed rule change will provide a more efficient submittal process and will clarify the definition of a "significant change." Under the federal Safe Drinking Water Act's special primacy requirements (40 Code of Federal Regulations (CFR), Chapter 142), the TCEQ is required to review all plans for PWSs, but the EPA grants primacy agencies flexibility regarding the design and operation requirements as long as those requirements are protective of public health. Existing §290.39 instructs PWSs to first notify the TCEQ of significant changes and then submit plans and specifications upon the TCEQ's request. The executive director's staff proposes to amend §290.39 by requiring PWSs to submit plans and specifications for significant changes to reduce confusion in the regulated community and to reduce staffs' processing time currently spent issuing requests for the submission of plans and specifications. The executive director's staff further proposes to amend §290.39 by simplifying the criteria for a change to be considered as "significant" under the rule.

Enforceability of Exceptions -- Under §290.39(l)(2), if a PWS does not meet the requirements of a granted exception, the exception can be revoked through a time-consuming and cumbersome process. To streamline this process and ensure that PWSs follow the conditions established in the granted exception, the executive director's staff proposes to clarify that failing to follow the conditions of a granted exception is a violation. Once adopted, the TCEQ's field investigators can directly issue violations for failure to follow an exception's conditions, rather than contacting Central Office staff to request that they revoke the exception, wait for the exception's revocation, and then issue the violation.

Clarification for Well Construction Review Process -- The proposed rule change will clarify PWS well construction conditions by including the requirements from the American Water Works Association (AWWA) standards into the rule so that PWSs will have to consult only one source for requirements on well design; specifically, cementing requirements and annular space requirements for PWS wells. Currently, engineers and regulated entities must have access to the AWWA standards and many do not.

Alternative Appurtenances for Overflow Devices -- The proposed rule change will allow the use of alternative appurtenances, which will allow PWSs to use these designs without requesting an exception from the TCEQ. This proposed change can save the PWS and TCEQ staff time.

Water Storage -- The proposed rule change will allow PWSs more flexibility when designing water storage tanks by allowing tanks of other materials approved by the AWWA.

Water Distribution Crossings -- The proposed rule will align the TCEQ's water and wastewater rules for water distribution pipe crossings and help PWSs protect public health by ensuring pipe integrity when wastewater lines and water lines are near each other.

Section by Section Discussion

The commission proposes administrative changes throughout the proposed rules to correct typographical and syntax errors; update citations, cross-references, and terminology; and, conform with *Texas Register* requirements.

State Statutes -- The commission proposes to amend §290.39(j)(3) by removing the requirement to submit a CCN to the commission with changes or additions to a PWS since the commission no longer has jurisdiction over CCNs.

Federal Regulations

Reduction of Lead in Drinking Water Act -- The federal requirement for the lead content of pipes, pipe fittings, and plumbing fittings and fixtures was reduced from 8.0% to 0.25%, effective January 4, 2014, therefore the commission proposes to amend §§290.41(c)(3)(B), 290.44(b)(1), and 290.46(i), and Figure: 30 TAC §290.47(b) by reducing the allowable lead content from 8.0% to 0.25% to be in compliance with the Reduction of Lead in Drinking Water Act. The commission further proposes to amend Figure: 30 TAC §290.47(b) to conform with *Texas Register* requirements. The commission also proposes to add §290.44(b)(3) and (3)(A) and (B) to incorporate the federal exemptions to be consistent with the federal Reduction of Lead in Drinking Water Act. With the proposed amendment to Figure: 30 TAC §290.47(b), the commission revisited the other figures in existing §290.47 and decided to propose the removal of existing Figures: 30 TAC §290.47(c), (d), and (f) and the relettering of existing Figures: 30 TAC §290.47(e), (g), (h), (i), and (j) as Figures: 30 TAC §290.47(c), (d), (e), (f), and (g), respectively, as a result of the proposed revisions. Additionally, updated cross-references to the relettered Appendices are proposed in §§290.39(c)(4)(A) and (o)(1); 290.44(h)(1)(A) and (4); and, 290.46(j)(2), (p)(2), and (q)(1) and (2).

The removal of existing Figure: 30 TAC §290.47(c), *Sample Sanitary Control Easement Document for a Public Water Well;* existing Figure: 30 TAC §290.47(d), *Customer Service Inspection Certificate,* and existing Figure: 30 TAC §290.47(f), *Sample Backflow Prevention Assembly Test and Maintenance Report* are proposed to allow the executive director's staff to be able to make revisions to these forms outside of a formal rulemaking. Figure: 30 TAC §290.47(c), *Sample Sanitary Control Easement Document for a Public Water Well,* is an example only and is not required to be used by the regulated community. An agency form that can be amended outside of a rulemaking process allows the example to be revised as improvements are suggested after consideration by the regulated community through the TCEQ's Drinking Water Advisory Work Group and its subcommittees instead of amending the form during a formal rulemaking. The proposed revision will also allow this document to be provided in a format that can be modified as needed by a PWS to incorporate the PWS's specific information. Existing Figure: 30 TAC §290.47(d), *Customer Service Inspection Certificate,* and existing Figure: 30 TAC §290.47(f), *Sample Backflow Prevention Assembly Test and Maintenance Report,* are proposed to be made into agency forms which will allow the regulated community to use the forms in a recordable, electronic format. The existing Appendices are available only as portable document formats, PDFs, thus the regulated community must retype the certificate or report if they would like to keep an electronic record or fill in the portions of the certificate or report that are applicable to each PWS. Providing these two Appendices as forms will facilitate the end user's ability to comply with applicable records retention requirements by being able to retain the forms electronically. Once this rulemaking is effective, the commission's forms will be available as: No. 20698, *Sanitary Control Easement;* No. 20699, *Customer Service Inspection Certificate;* and No. 20700, *Backflow Prevention Assembly Test and Maintenance Report.* Additionally, references to the existing Appendices that are proposed to be issued as agency forms once this rulemaking

is adopted are also proposed to be updated in §§290.39(e)(4), 290.44(h)(4)(C), and 290.46(j). Further, amendments to existing §290.38(70) and §290.44(h)(4)(B) are proposed to refer to agency forms to further clarify their usage.

E. coli Threshold -- The commission proposes to amend §290.111(b)(3)(B)(i) to change the average acceptable *E. coli* level at a surface water plant located on a river from 50 to 100 *E. coli/*100 milliliters and also proposes to amend §290.111(b)(3)(B)(ii) to change the average acceptable *E. coli* level at a surface water plant located on a lake from 10 to 100 *E. coli/*100 milliliters. The EPA's LT2 rule required PWSs with surface water or groundwater under the direct influence of surface water sources to monitor for *Cryptosporidium.* The EPA gave states the discretion to allow small PWSs, those with a population less than 10,000, to monitor for *E. coli* instead. Subsequent federal guidance established that the appropriate *E. coli* trigger level is 100 *E. coli/*100 milliliters, no matter the source of water. The proposed changes to §290.111(b)(3)(B)(i) and (ii) will align the TCEQ rule with EPA's guidance. The commission proposes to amend §290.110(b)(6) to identify which entity approves or accredits a laboratory for consistency with the existing Chapter 290 requirements and to reduce confusion in the regulated community. The commission also proposes to amend §290.111(b)(6)(B) to remove an outdated reference as the TCEQ no longer certifies laboratories.

Additional Staff Recommendations

Process for Approving Desalination Technology -- The proposed rule change will allow the use of desalination technologies without an exception request, which is required when approving the use of any technology that does not have design, maintenance, monitoring, and reporting standards within Chapter 290. Technologies that are not mentioned in the rule are considered as innovative/alternate treatment technologies and require specific review and approval as an exception to the rule. Desalination can be accomplished through reverse osmosis or nanofiltration technology. The commission proposes to amend §290.38 as part of a staff-initiated change to allow the use of reverse osmosis and nanofiltration technologies for chemical removal without an exception, but to still require an exception for pathogen treatment. An exception is a separate site-specific review for innovative/alternate treatments. Currently, an exception which includes a pilot study, or data from an alternative site, is required by §290.42(g) for PWSs proposing the use of innovative/alternate treatment. Since January 2012, PWSs have been allowed to submit computer models instead of a pilot study or alternative site information for reverse osmosis or nanofiltration membrane systems. Also, the exception and plan review processes have been performed concurrently when plans and computer models have been submitted. The commission proposes to formalize this process by removing reverse osmosis and nanofiltration membrane systems from the technologies that are considered innovative/alternate treatment (when proposed for treatment other than pathogens); thus, an exception would no longer be required if the reverse osmosis or nanofiltration treatment is used for any treatment other than pathogen removal. To facilitate these changes, the proposed rules introduce new terminology in the rule language or, in some cases, change the meaning of existing definitions in the rule. To assure that the terminology referenced in the rule change (for PWSs using reverse osmosis or nanofiltration) is clearly understood by all users of the rule, new definitions are proposed to be added and several existing definitions are proposed to be modified in §290.38. The commission proposes to add §290.38(10), (30), (57), (79), and (82), defining "Baseline performance," "Flux," "Pass," "Stage," and "Vessel," respectively. For the definition of "Flux" in proposed §290.38(30), the proposed language is taken from the EPA's *Membrane Filtration Guidance Manual.* For the definition of "Stage" in proposed §290.38(79), the proposed language is from the AWWA's *Manual of Water Supply Practices M46.* The other definitions proposed by the commission in §290.38(10), (57), and (82) are consistent with the intent of the proposed rule and based on standard operation of these technologies. The commission proposes to amend existing §290.38(34), which defines "innovative/alternate treatment," by deleting the examples of treatment types that were considered innovative/alternate treatment prior to this rulemaking. In addition, the proposed change in the definition of "Innovative/alternate treatment" will help prevent the misinterpretation of treatment types that would be innovative/alternate treatment in some circumstances. The commission also proposes to renumber the definitions to maintain alphanumeric order. Additionally, the commission propose to amend §290.38 and its subdivisions to provide and/or update citations, cross-references, and terminology and to conform with *Texas Register* requirements.

The commission proposes to add §290.39(e)(6) and (7) as part of a staff-initiated change to allow use of reverse osmosis and nanofiltration technologies for desalination without the need for a granted exception. Specifically, these proposed changes will require planning materials in an engineering report and an addendum to be submitted to and approved by the executive director prior to the construction and use of a reverse osmosis or nanofiltration membrane system. The desalination technology's engineering report requirements are specified in proposed §290.39(e)(6) and its subdivisions. The engineering report is proposed to require a clear source description, reverse osmosis or nanofiltration modeling analysis (or one of the accepted alternatives), proof of conformance with appropriate NSF International (NSF) standards, blending calculations, analysis of disinfection byproduct potential, and process control details. When the desalination facility is placed into service, the design engineer must prepare an addendum to the engineering report to document the system's performance. The addendum's requirements are specified in proposed §290.39(e)(7) and its subdivisions. The addendum shall include initial baseline performance (for net driving pressure, normalized permeate flow, and salt rejection), set points for membrane cleaning or replacement, verification of the design model's accuracy, verification of plant capacity, and a complete physical and chemical analysis of the raw and treated water. Some of these additional engineering report requirements provide engineering criteria and performance validation data that were previously required by the pilot study requirements in existing §290.42(g) for innovative/alternate treatment. The proposed rule in §290.39(e)(6) formalizes the option to use industry-accepted manufacturer's modeling tools (and submit the modeling results in the engineering report) and then requires validation data for the full-scale treatment process after the start-up of the facility (and requires the PWS to report that data as an addendum to the previously submitted engineering report required by proposed §290.39(e)(7)). This proposed rule allows the design engineer to use pilot testing in cases where the pilot process would be beneficial.

The commission proposes to add §290.42(b)(2)(D) and (9) and its subdivisions to allow the use of reverse osmosis and nanofiltration technologies for treatment by providing acceptable design standards. The proposed change to §290.42(b)(2)(D) and (9) and its subdivisions will also allow a PWS to imple-

ment the technology without the added time of requesting and receiving an exception before submitting the plans and specifications for the executive director's review. Because proposed §290.42(b)(2)(D) defines specific design parameters for the approval of groundwater systems using reverse osmosis or nanofiltration, the use of these technologies will no longer be considered innovative/alternate treatment. To complement the addition of reverse osmosis and nanofiltration design requirements in §290.42(b)(9) and its subdivisions, the commission proposes in §290.42(b)(9)(C)(i) to allow a design process based on the industry-accepted modeling tools of the membrane's manufacturer to demonstrate the efficacy of the reverse osmosis or nanofiltration membrane for groundwater treatment. Existing §290.42(b)(2) states that groundwater treatment facilities shall be provided in conformance with established and proven methods. To expand the list of established and proven options, the commission proposes to add §290.42(b)(2)(D), which directs PWSs proposing to use reverse osmosis or nanofiltration for groundwater treatment to the proposed design requirements in §290.42(b)(9) and its subdivisions. Section 290.42(b)(9) and its subdivisions replace the design information that was previously submitted to the TCEQ under the exception requirements in existing §290.42(g). Specifically, this proposed paragraph includes a rule for a design based on an approved method of production validation (modeling, pilot, alternate site, or allowable manufacturer parameters), acceptable methods of pretreatment, post-treatment for corrosion control and re-mineralization, pipes and pipe galleries, chemical storage, cross connection protection, and process monitoring equipment. The commission also proposes to add §290.42(d)(17) to allow PWSs treating surface water or groundwater under the direct influence of surface water to use the reverse osmosis and nanofiltration design requirements as outlined in proposed §290.42(b)(9) and its subdivisions for groundwater systems, which would be applicable only when this technology is proposed for chemical removal treatment, not pathogen treatment. This proposed change will extend the benefits of the rule for the use of reverse osmosis and nanofiltration technologies to PWSs treating surface water or groundwater under the direct influence of surface water as long as the required microbiological control is achieved through other approved treatments and technologies. The commission also proposes to amend §290.42(j) to correct the references to American National Standards Institute (ANSI) NSF Standards 60 and 61 as the terms "direct additives" and "indirect additives" are no longer used in the ANSI/NSF Standards 60 and 61 descriptions. For ANSI/NSF Standard 60, "direct additives" has changed to "Drinking Water Treatment Chemicals." For ANSI/NSF Standard 61, "indirect additives" has changed to "Drinking Water System Components." The commission further proposes to amend §290.42(l) to ensure that the plant operations manual includes additional information when reverse osmosis or nanofiltration technologies are used. The additional information in the plant operations manual must include the system's configuration, baseline performance data, and any set point for membrane cleaning or replacement. The additional information is required so that operators can know: 1) when the membrane systems should be cleaned; and 2) what the baseline performance of the membrane was when new. By comparing present day performance with baseline performance, the operators can see if: the cleaning is working; the membranes are still performing adequately; or, whether it is time for the membrane's replacement. Failing membranes should be replaced because they will not provide the quantity or quality of the water expected by the PWS's customers.

The commission proposes to amend §290.45(a)(6) and its subdivisions to ensure that the production capacity of PWSs using reverse osmosis or nanofiltration membrane systems is calculated properly. The calculated capacity must consider any water losses associated with the membrane processes, such as concentrate and permeate used for cleaning, when calculating the capacity of the treatment units.

The commission proposes to add §290.46(e)(2)(D) to require operators who operate a reverse osmosis or nanofiltration membrane system to obtain reverse osmosis or nanofiltration membrane specific training by successfully completing at least one executive director-approved course or training event. Currently, the existing operator licensing rules do not provide course work that addresses the unique operating processes at a membrane treatment plant. Once this rulemaking is effective, the TCEQ's Occupational Licensing Section will begin approving reverse osmosis or nanofiltration membrane specific training courses and events. Those meeting current requirements for training credit will be approved. The commission proposes to amend §290.46(e)(5)(C) and (D), and (6)(A) and (B) to update the course titles to be consistent with existing 30 TAC §30.390(f). The commission proposes to amend §290.46(f)(3)(A)(vi) to ensure that PWSs are maintaining records of each reverse osmosis or nanofiltration membrane cleaning event for at least two years. These records are necessary as evidence that the membrane facility is operated in accordance with the conditions of approval. Typically, any conditions of approval for the use of reverse osmosis or nanofiltration desalination technologies will require a treatment facility to clean or replace membranes based on a specified limit for salt passage, pressure differential, or another similar parameter to prevent irreparable damage to the membrane equipment. The commission proposes to add §290.46(f)(3)(B)(x) to ensure that PWSs using reverse osmosis or nanofiltration membranes maintain records of treatment effectiveness monitoring for at least three years. These records are necessary as evidence that the membrane facility is operated in accordance with the conditions of approval. The conditions of approval, based on the commission's review of the engineering report and supplemental addenda, will require any membrane treatment facility to make operational adjustments based on any critical change in performance in the membrane equipment. The proposed requirement in §290.46(f)(3)(B)(x) to keep these records for at least three years should help existing and new personnel at the PWSs better understand the required frequency of and benefits to these operational adjustments. The commission proposes to add §290.46(m)(7) to ensure that PWSs using reverse osmosis or nanofiltration membranes maintain the good working condition of the system's facilities and equipment. This proposed rule limits reverse osmosis or nanofiltration plant operations to the allowable operating conditions of the membrane manufacturer and requires membrane cleaning or replacement based on predetermined set points for changes in salt passage, pressure differential, and/or normalized permeate flow to prevent irreparable damage to the membrane equipment. The commission proposes to amend §290.46(s)(1) to ensure that flow-measuring devices and rate-of-flow controllers, as required by §290.42(b)(9)(J) for reverse osmosis or nanofiltration membrane systems, are properly calibrated at least once every 12 months for PWSs using reverse osmosis or nanofiltration. This proposed rule helps a PWS to know that the instruments used for flow measurement are accurate. The commission proposes to add §290.46(s)(2)(G) to ensure that conductivity (or total dissolved solids) monitors and pressure instruments are properly calibrated for PWSs using reverse osmosis or nanofil-

tration. This proposed amendment helps a PWS and the TCEQ to know that the instruments used to determine when maintenance or corrective measures are required are accurate. The commission also proposes to add §290.46(s)(2)(H) to ensure that temperature-measuring devices are properly calibrated for PWSs using reverse osmosis or nanofiltration. This proposed rule helps a PWS know that the instruments used to determine when maintenance or corrective measures are required are accurate. By placing the requirements for desalination through reverse osmosis and nanofiltration within Chapter 290, a PWS - including those impacted by on-going drought conditions - can implement this technology without undergoing the added time and expense associated with requesting and receiving an exception request before submitting the plans and specifications, including the required engineering report, for review by the executive director's staff.

Chloramine Disinfection Criteria -- The use of chloramines has become a common practice at PWSs. The TCEQ's current exception process prescribes the required public notice, sampling frequency, equipment requirements, nitrification action plans (NAPs), records retention, chemical injection locations, chemical feed and storage requirements for chloraminating PWSs. The commission is proposing to amend Chapter 290 to allow the use of chloramines without requiring a site-specific exception review to reduce the time involved for both the regulated community and TCEQ staff by moving the design, operation, maintenance, monitoring, and documentation criteria currently in the exception approvals to the rules to simplify the process for the TCEQ and PWSs. The commission proposes to add §290.39(e)(8) to require the submission of calculations for sizing feed pumps and chemical storage tanks along with the submission of engineering plans to support the proposed approval of chloramination without an exception request. Currently, the chloramine chemical pump and tank sizing are reviewed by the executive director's staff using the site-specific exception process to assure the chemical facilities can deliver and store the amount of chloramine chemical needed for effective dosing. By placing this requirement in the rule, this proposed change will allow staff to review this information during the review of the submitted plans and specifications and will also reduce confusion in the regulated community regarding when to submit the chemical pump and tank sizing information. Having this information readily available will also speed up TCEQ's review and prevent delays currently encountered while awaiting the submission of this required information.

The commission proposes to amend §290.42(e)(3)(B) to allow for manual control instead of automatic proportioning of disinfectant dosage at all treatment plants if the flow varies less than 50% above or below the average flow. The existing rule only allows manual controls at PWS using surface water or groundwater under the direct influence of surface water. The change is to ensure that disinfectant chemicals are dosed properly at all plants with automatically variable water flow rates or with highly variable flow rates, regardless of water source. The commission proposes to amend §290.42(e)(3)(D) to simplify the language by replacing the phrase "as well as" with the word "and" to make the rule easier to understand. The commission proposes to amend §290.42(e)(3)(G) to remove the requirement that all PWSs with chloramine residual in their drinking water must have a granted exception. By adding design and other requirements for chloramination to the proposed rule, once adopted, an exception will no longer be needed for most situations, thus saving the regulated community and TCEQ staff time. However, under amended §290.42(e)(3)(G), if chloraminated and chlorinated water will be blended, an exception request will be required to be submitted and a case-by-case review will be performed by the executive director's staff as chloramination is only successful when the ratio of chlorine and ammonia is carefully controlled. Improper mixing can cause a low disinfectant residual as well as unpleasant tasting and smelling water. An exception is needed when water containing chloramines will be blended with water containing free chlorine so that the executive director can review the specific design components and determine site-specific conditions based upon staffs' review. The commission proposes to add §290.42(e)(7) and its subdivisions to add the minimum chloramine design requirements to Chapter 290, thus making a chloramine exception unnecessary once the proposed rule is adopted. Design requirements regarding the order of chemical addition, mixing of chloramination chemicals, feed and storage of chemicals, laboratory equipment, and sampling taps are proposed in this rulemaking to incorporate the standard policies and procedures that have been required on a case-by-case basis for past exception reviews.

The TCEQ is seeking public comment on the way PWSs should inject the chloramine chemicals. The proposal has the following requirements: inject the first chemical, mix, and then inject the second chemical and mix. The best practice for controlling the chlorine-to-ammonia ratio is to measure the first chemical residual before adding the second chemical, because the second chemical dose can be based on the actual concentration of the first chemical, including loss due to demand, instead of dosing based on the calculated dose. In keeping with best practices, the commission is proposing in §290.42(e)(7)(C) to require a sample tap before and after each chemical injection point. By monitoring upstream of any injection, between the first and second chemical injections, and also downstream of the second chemical injection, operators will be able to know how much of the first chemical is needed based on the first sampling point, how much of the second chemical is needed based on the residual found in the water of the first chemical, and finally, after the last point, the disinfecting species - monochloramine - can be monitored to assure that the ratio and amount of chemicals added are appropriate. The TCEQ proposes these sampling taps because improper chloramine dosing can cause taste and odor issues, low disinfectant residual, and potentially nitrification. Furthermore, because low disinfectant and nitrification can lead to acute health risks, the TCEQ is proposing design requirements in §290.42(e)(7)(B) and (C) to allow the most accurate dosing of chemicals. The TCEQ invites public comment, during this rule's public comment period, on the effect this proposed design criteria will have on PWSs that are currently adding chloramines.

The commission proposes to amend §290.42(f) by removing the word "surface" to clarify that the chemical feed and storage facility rule applies to all PWSs. When initially adopted, only surface water systems required complex chemical feed and storage facilities; however, these design standards have been applied on a case-by-case basis through the TCEQ's exception process for innovative/alternate treatment involving chemical addition regardless of the water source, including chloramination and reverse osmosis. Because the proposed rulemaking will incorporate requirements for chloramination and reverse osmosis by rule, it is necessary to add the requirements of §290.42(f) to the rule so that groundwater and purchased water systems will also be designed to handle, store, and feed chemicals properly. Stakeholders also supported this proposed change. One impact of the proposed addition of chemical storage and feed

requirements relates to the use of day tanks. The commission proposes to amend §290.42(f)(1)(B) to specify that the day tanks in the proposed rule are only required for bulk storage tanks. A day tank holds the volume of chemical used in one typical day and the installation of a day tank can prevent the possibility of severely overfeeding the chemical from bulk storage. Small chemical storage tanks, such as a 55-gallon drum, would require a very small day tank if the rule were applied to all chemical storage. A very small day tank is impractical. The change is proposed to avoid confusion and the unnecessary installment of day tanks. The commission proposes to amend §290.42(f)(1)(E)(ii)(V) to exempt 55-gallon hypochlorite solution containers from spill containment. The existing rule allows 35-gallon hypochlorite solution containers to be installed without spill containment. The existing rule was intended to allow the exemption to non-permanent containers that are replaced instead of refilled, unlike permanent chemical storage facilities. Currently, 55-gallon non-permanent containers are commonly used, thus the proposed rule expands the volume allowed to the size of a commonly used, non-permanent chemical storage container.

Nitrification is a biological process that can occur in distribution pipes and storage tanks, causing a loss of residual and regrowth of bacteria. Nitrification of the PWS's distribution system is also a concern as it can raise nitrite and nitrate to levels that have been shown to potentially harm infants. In the past, some PWSs have had nitrifying organisms colonize a storage tank and have needed to drain the tank to fight nitrification. When a nitrification event occurs, PWSs should be able to quickly drain water storage tanks with high levels of nitrifying organisms, nitrite, or nitrate levels; however, some storage tanks were not designed for efficient draining, sometimes taking several days to drain, even with the use of pumps and other equipment. Therefore, the commission proposes to amend §290.43(c)(7) to add a requirement that storage tanks containing chloraminated water shall be designed to drain efficiently as a means to control nitrification.

The commission proposes to amend §290.46(d)(2)(B) to reword the type of distribution system and finished water storage tank that are required to have a chloramine residual. The existing rule states that only PWSs that feed ammonia may have a chloramine residual (measured as total chlorine). Chemically, chloramines are formed when free chlorine reacts with ammonia creating chlorinated compounds. When a PWS has chloramines in the water, no matter how the chemicals are added to create them, the disinfectant will be expressed as "total chlorine" when measured. "Free chlorine" is not present in correctly chloraminated water because the chlorine has reacted with ammonia to form a family of chlorinated nitrogen compounds that are measured as "total chlorine." Of the approximately 7,000 PWSs in Texas, approximately 800 have a chloramine residual in their PWS without adding ammonia. If the PWS purchases and redistributes water which already has a chloramine residual, or if the source of the water has naturally occurring ammonia, then only chlorine may be added. Since the monitoring equipment measures total chlorine in a chloraminated PWS (no matter what chemicals are added or occur naturally), the water from a PWS that purchases and redistributes chloraminated water, adds chlorine to water with naturally occurring ammonia, or adds ammonia to chlorinated water must still measure total chlorine to have meaningful results. The proposed change will apply the total chlorine residual requirement in §290.46(d)(2)(B) for PWSs that distribute chloraminated water, regardless of which chemicals are added by the system. The proposed rule change will allow the TCEQ to approve the use of chloramines without a site-specific exception review. Recordkeeping is one of the conditions applied with a granted exception. Existing §290.46(f)(3)(A)(ii) requires all water systems to keep the records of the volume of water treated for two years. There is some confusion regarding whether a purchased water system "treats" water and whether records of the volume should be kept. To reduce confusion while still requiring the same amount of recordkeeping, the commission proposes to amend §290.46(f)(3)(A)(ii) and its subdivisions to require all PWSs to keep records of the volume of water distributed. In support of the proposed rule change to approve chloramines based on design requirements instead of an exception, the commission also proposes in §290.46(f)(3)(A)(ii) to change the use of the word "treated" to "distributed" and to require groundwater and purchased water systems to keep records of the volume of water treated. In the proposed rule the word "treated" means that PWSs that add chemicals or provide pathogen or chemical removal "treat" the water. For some systems, the treated water and distributed water may be the same volume and may be monitored by the same flow meter. For example, a groundwater system that adds only chlorine will most likely have the same volume of distributed and treated water. Knowing the volume of water is essential to the operators of PWSs when dosing any chemicals and determining the system's water loss. The commission proposes to add §290.46(f)(3)(B)(ix) to require records on chloramination be kept for at least three years, which will give the PWSs sufficient information to identify seasonal trends in chloramination. The commission proposes to add §290.46(s)(2)(D), which adds a requirement for the calibration of the chloramine analyzers every 90 days. Calibration is necessary to assure that the analyzers used to monitor the effectiveness of the chloramination process and to check for potential nitrification chemicals provide accurate results. The commission proposes to reletter existing §290.46(s)(2)(D) and (E) with the addition of proposed §290.46(s)(2)(D). The commission proposes to amend §290.46(y) and (y)(1) to comply with *Texas Register* requirements and also correct a typographical error. The commission proposes to add §290.46(z) and its subdivisions, adding requirements for a PWS that uses chloraminated water to create a NAP. The NAP is a site-specific plan describing the levels of total chlorine, monochloramine, ammonia, nitrite, and nitrate that are acceptable and what levels should initiate actions such as additional sampling to determine the cause of the imbalance, which is usually a low disinfectant residual. Nitrification in the PWS's distribution system is a concern as it can cause a loss of residual that allows bacterial regrowth and raise nitrite and nitrate to levels that have been shown to potentially harm infants. Each PWS would be required to have a NAP to show what trends in the monitoring data suggest incipient nitrification, what steps to take to prevent nitrification, and actions to take if nitrification is found. The NAP is currently only required when a chloramination exception is granted.

The commission proposes to add new Figure: 30 TAC §290.47(h), Sample Language for Notification Upon Changing from Free Chlorine to Chloramines, to contain the required customer notification language of a pending change in the PWS's disinfectant from chlorine to chloramines. Due to the nature of chloramines, some health care facilities and persons with pet fish might need to change their equipment to accommodate the chloramines instead of chlorine. By notifying the customers, they can make any necessary changes before they begin receiving the chloraminated water. The proposed notification language will assure a correct and consistent message is

relayed to affected PWS customers. Exception approval letters for chloramines currently include this notification requirement and language; therefore, the chloramine requirement in the proposed rule should contain consistent language for customer notification.

The commission proposes to amend §290.110(b)(2), (4), and (5) to clarify the type of chloramine measurement that is used when determining whether a PWS meets the required minimum or maximum chloramine level. These requirements are currently required through site-specific exceptions. This rulemaking proposes minimum chloramine design requirements in Chapter 290, making a chloramine exception unnecessary once the proposed rule is adopted. Because the species of chloramines that provides disinfection is monochloramine, the proposed rule refers to monochloramine. By introducing monochloramine into the proposed rule, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. The executive director's staff proposes to add the clarification that the chloramine level in this condition shall be "measured as total chlorine." The commission proposes to amend §290.110(c)(1) - (4) by adding catchlines to differentiate the sampling location and purpose - whether for compliance or to manage treatment processes for effective chloramination. Catchlines are proposed to be added so that the regulated community can more easily identify the sampling requirements at each point in the PWS. The commission proposes to amend §290.110(c)(1)(A) and (B) by replacing the phrase "entering the distribution system" with the phrase "at each entry point" which is defined in existing §290.103(13). The commission also proposes to add §290.110(c)(1)(C) to specify the frequency at which the disinfectant residual must be recorded. This rulemaking proposes minimum chloramine design requirements in Chapter 290, making a chloramine exception unnecessary once the proposed rule is adopted. The proposed addition of §290.110(c)(1)(C) is contrasted with existing rule, §290.110(c)(1)(A) and (B), which states that the residual at the entry point must be recorded continuously. Since "continuous" is not defined, and as a true continuous recording is not possible, the commission proposes a 30-minute recording interval, which is consistent with existing guidance in Regulatory Guidance-211, *Monthly Testing and Reporting at Surface Water Treatment Plants.* The commission proposes to add §290.110(c)(2)(A) and (B) to add specificity by restating the requirements for entry point disinfection instead of cross-referencing to §290.110(b)(2). The commission proposes to further amend §290.110(c) to include the monitoring requirements included when a chloramine exception is granted. These proposed chloramine effectiveness monitoring requirements can be summarized in the following table. The commission proposes that a water system with a chloramine residual must, at a minimum, measure and record the following:

Figure: 30 TAC Chapter 290--Preamble

The commission proposes to add §290.110(c)(5) to include the chloramine effectiveness monitoring and to also demonstrate when the sample results will be used to determine compliance with the MCLs, maximum residual disinfectant levels (MRDLs), action levels, or treatment techniques. To clearly differentiate between results used for compliance and those not used for the MRDLs, action levels, or treatment technique compliance; total chlorine monitoring is proposed to be included in §290.110(c)(4). Total chlorine monitoring is not proposed to be included with the chloramine effectiveness monitoring because all total chlorine monitoring in the distribution system is used for MRDL compliance, thus it cannot be included with the proposed chloramine effectiveness monitoring. The commission proposes to add §290.110(c)(4)(E) to require that PWSs distributing chloraminated water test for chloramines (measured as total chlorine) at any distribution system site that adds chemicals to boost the chloramine residual. The testing is proposed to be completed weekly or whenever the chemical dosage is changed at the disinfection booster station. The monitoring is proposed to be in conjunction with proposed chloramine effectiveness sampling described in proposed §290.110(c)(5)(C). The commission proposes to add §290.110(c)(5) describing the sampling that must occur to assure that chloramines are being formed properly and that nitrification is controlled in the PWS. This supports the proposal to establish the chloramine requirements in a rule instead of requiring an exception request. The proposed addition has been required as a condition to a granted exception. Poor chloramine addition can result in taste and odor issues, low disinfectant residual, and nitrification. Low disinfectant residual levels and nitrification can both cause acute health effects. Sampling lets the PWS know what levels of chemicals exist throughout the PWS's distribution system. The sampling results inform the PWS if nitrification or poor chloramination is occurring. Proposed §290.110(c)(5)(A) requires monitoring of ammonia, nitrite, and nitrate at the water coming into the PWS at least once to determine if the source water has ammonia, nitrite, or nitrate. If the ammonia levels are higher than 0.5 milligram per liter free ammonia (as nitrogen), additional samples are required to determine if the ammonia level is consistent or variable. Free ammonia is used in the creation of chloramines so knowing the source water's concentration is necessary for downstream dosing and evaluating trends in the distribution system. Nitrite and nitrate monitoring is needed to allow a PWS's operator to know whether these chemicals are from the source or from nitrification. Knowing what the nitrite and nitrate levels are in the PWS's source water helps to determine if the nitrite or nitrate levels are rising. The PWS can take action when the levels first begin rising, not when they are near the level that can cause acute health effects to infants or complete loss of disinfectant residual. Proposed §290.110(c)(5)(B) and (B)(i) require sampling the chloraminated water that just entered the distribution system for total chlorine, ammonia and monochloramine. This sampling point is located after the chloramine chemical addition and can show if the chemical addition successfully made monochloramine. Nitrite and nitrate are proposed to be monitored in §290.110(c)(5)(B)(ii) for at least six months to find a baseline for the PWS and to develop the NAP. Nitrite and nitrate are proposed to be monitored in §290.110(c)(5)(B)(iii) to determine if any of the levels in the NAP have been exceeded. Knowing the entry point nitrite and nitrate levels in the water after treatment, but before distribution, will allow the PWS to determine if the nitrite or nitrate levels are rising, thus the PWS can take action when the levels first begin rising, not when they are near the level that can cause acute health effects. Proposed §290.110(c)(5)(B)(ii) explicitly disallows the use of the results of the nitrite and nitrate samples collected to determine the effectiveness of chloramination dosing from also being used for compliance with §290.106 because PWSs are directed to take them at the first customer, which is not a federal compliance site, and because they are taken with a field instrument, which is accurate but which does not use an EPA-approved method. In §290.110(c)(5)(B)(iii), the proposed rule explicitly allows the use of samples collected for compliance with §290.106 to also be used for chloramine treatment effectiveness sampling. Currently, those compliance

samples are collected by a TCEQ contractor, while process effectiveness samples are collected and potentially analyzed by the PWS. These "self-collected" samples are not to be used for compliance because they would not use an EPA-approved method, and would not be collected at the federal compliance location, but TCEQ contractor collected samples can be used for treatment effectiveness. Proposed §290.110(c)(5)(C) and its subdivisions describe the sampling that must be performed immediately upstream and downstream of the chloramine chemical injection points. These treatment samples are taken to be able to dose chloramines based on actual residual, not on a calculated dose. The process described in the proposed rule provides a more accurate chloramine dosing strategy and limits the potential health effects caused by low residual or nitrification. Proposed §290.110(c)(5)(C)(ii) and (iii) are added to inform the regulated community when the samples would be used for compliance. Proposed §290.110(c)(5)(C)(iv) and (v) describe which chemicals must be monitored if the treatment occurs before the entry point or if the treatment occurs in the distribution system. Proposed §290.110(c)(5)(D) and its subdivisions describe the sampling that must be performed in the PWS's distribution system. It is proposed that monochloramine and free ammonia be monitored once per week in conjunction with the disinfectant residual samples in the distribution system described in existing §290.110(c)(4). It is also proposed that nitrite and nitrate be monitored quarterly. Monochloramine, free ammonia, nitrite and nitrate are sampled in the distribution system to determine if nitrification is occurring. Changes in these levels can indicate nitrification. The PWS can then take the steps outlined in the PWS's NAP to control or prevent the nitrification. The commission proposes to amend §290.110(d) and its subdivisions to provide the analytical sensitivity required for the analysis methods for chloramine chemicals. The proposed changes in §290.110(d) and (d)(3) - (6) support the proposed chloramination requirements by providing analytical methods for the tests that need to be performed to monitor chloramination. Existing §290.110(d) includes a reference for nitrite and nitrate sampling in existing §290.119, which references EPA approved methods; however ammonia and monochloramine do not have EPA approved drinking water methods and the field methods commonly used to determine nitrite and nitrate are not EPA approved. The sensitivity for each test is described in proposed §290.110(d)(3) - (6), and will allow PWSs greater flexibility when choosing a test method. The proposed rule changes in §290.110(d) and its subdivisions also assures the test methods are sensitive enough to detect changes in water quality that could indicate nitrification, which could potentially cause acute health effects in infants. The commission proposes to amend §290.110(d)(1) to specify which chloramine test may be used to determine the chloramine residual. This rulemaking proposes minimum chloramine design requirements in Chapter 290, making a chloramine exception unnecessary once the proposed rule is adopted. Because the species of chloramines that provides disinfection is monochloramine, the proposed rule refers to monochloramine. By introducing the term "monochloramine" into the rule, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. Therefore, the commission proposes to add that the chloramine is "measured as total chlorine" to avoid confusion. Also, §290.110(d)(1) is proposed to be amended to no longer require written permission of the executive director to use a color comparator, commonly referred to as a "color wheel." This proposal supports the proposed chloramination use requirements by removing another requirement for written permission. The proposal will shorten the activities required and time spent by a PWS when electing to use chloramines. As proposed, §290.110(d)(1) would establish requirements on the appearance of the color comparator, the age of the comparator, the age of the reagents, proper storage of the comparator, and the range of the comparator. If the comparator or sample cells are old, discolored, or in a different range than the water, the test will provide inaccurate results, potentially providing inaccurate chloramine dosing or monitoring. The commission proposes to amend §290.110(e)(2) to incorporate forms needed to report disinfectant levels at the entry point and in the distribution system for PWSs using surface water or groundwater under the direct influence of surface water. There are currently three forms for PWSs that treat surface water and groundwater under the direct influence of surface water but only two are listed in the existing rule. This proposed rule change supports the proposed chloramination use requirements for Chapter 290 by proposing all three forms for use when reporting disinfection information. The commission proposes to amend §290.110(e)(5) and renumber existing §290.110(e)(5) and (6) as a result of the proposed addition. The proposed addition sets the report requirements for a NAP, which is kept at the PWS unless the plan is required to be seen by the executive director. The recordkeeping requirement in proposed §290.110(e)(5) is an existing condition on the current letter granting the chloramine exception. Keeping the NAP for three years will allow the regulated community to compare past NAPs to see how water quality has changed over time, as well as highlight any trends and seasonal fluctuations. The commission proposes to amend §290.110(f)(6) - (9) to specify which chloramine test may be used to determine the chloramine residual. Because the species of chloramines that provides disinfection is monochloramine, the proposed rule refers to monochloramine. By introducing monochloramine into the rules, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. Therefore, the commission proposes to add that the chloramine is "measured as total chlorine" to avoid confusion. The commission proposes to amend §290.110(g)(5) to clarify that the monitoring proposed for chloramines will not fall under the requirements for public notices required on federally mandated compliance monitoring and reporting violations. The chloramination monitoring is to ensure proper disinfection and avoid nitrification, and is not for federal compliance purposes. Nitrite and nitrate have MCLs, but they are measured at the entry point, not in the PWSs distribution system. The proposed rule change in §290.110(g)(5) is to avoid confusion and clearly state that public notice would be needed if a PWS fails to perform federally mandated compliance monitoring; however, a public notice is not required if the PWS fails to perform the chloramination effectiveness monitoring. The commission also proposes to add §290.110(g)(6) and its subdivisions to require PWSs notify their retail and wholesale customers when the PWS first provides chloraminated water and also when new customers begin receiving the chloraminated water. These proposed changes in §290.110(g)(6) and its subdivisions describe when the notification must be sent, how it must be sent, and who must be notified. Proposed §290.110(g)(6)(D) and (E) also clarify when new customers must be notified and state that the notice must be provided in multiple languages, if appropriate. This notification is currently required through a granted exception. Due to the nature of chloramines, some health-care facilities and persons with pet fish might need to change their equipment to accommodate the switch to chloramines. By amending the notice requirements,

customers of affected PWSs can make any changes needed before they begin receiving the chloraminated water.

The commission proposes to amend §290.111(d)(4)(C) to specify which chloramine test - total chlorine - may be used to determine the chloramine residual. Because the species of chloramines that provides disinfection is monochloramine, the proposed rule refers to monochloramine. By introducing monochloramine into the rule, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. Therefore, the commission proposes to add that the chloramine is "measured as total chlorine" to avoid confusion. Also, §290.111(d)(4)(C) is proposed to be amended to no longer require written permission of the executive director to use a color comparator. This proposed change in §290.111(d)(4)(C) supports the proposed chloramination use requirements by removing another requirement for written permission. The proposal will shorten the activities required and time spent by a PWS when electing to use chloramines. As proposed, §290.111(d)(4)(C) would establish requirements on the appearance of the color comparator, the age of the comparator and the reagents, proper storage of the comparator, and the range of the comparator. If the comparator or sample cells are old, discolored, or in a different range than the water, the test will provide inaccurate results, thus potentially providing inaccurate chloramine dosing and monitoring information. The commission proposes to amend §290.111(h)(2) and its subdivisions to incorporate forms needed to report disinfectant levels at the entry point and in the PWS's distribution system. There are currently three forms for PWSs that treat surface water and groundwater under the direct influence of surface water, but only two are listed in the existing rule. The proposed rule specifies which form is appropriate for use by the PWSs in §290.111(h)(2)(A) - (C). This proposal supports the proposed chloramination use requirements in Chapter 290 by proposing all three forms to use when reporting disinfection information. The commission proposes to delete §290.111(h)(3) because the requirement in this section was moved to proposed §290.111(h)(2)(C). The commission also proposes to delete §290.111(h)(7) and (8) as these have been incorporated into the forms required by §290.111(h)(2). The commission also proposes to renumber the paragraphs as a result of the proposed changes.

The commission proposes to amend §290.116(a)(1) and (d)(2) by adding the word "must" to address a syntax error. The commission proposes to amend §290.116(c)(3)(C) to specify which chloramine test - total chlorine - may be used to determine chloramine residual. Because the species of chloramines that provides disinfection is monochloramine, the proposed rule refers to monochloramine. By introducing monochloramine into the rule, it becomes unclear which measurement the PWSs should use to determine compliance when the word "chloramine" is used. Therefore, the commission proposes to add that the chloramine is "measured as total chlorine" to avoid confusion. Also, §290.116(c)(3)(C) is proposed to be amended to no longer require written permission of the executive director to use a color comparator. The proposed change in §290.116(c)(3)(C) supports the proposed chloramination use requirements by removing the requirement for written permission. The proposal will shorten the activities required and time spent by a PWS when electing to use chloramines. As proposed, §290.116(c)(3)(C) would establish requirements for the appearance of the color comparator, the age of the comparator, the age of the reagents, proper storage of the comparator, and the range of the comparator. If the comparator or sample cells are old, discolored or in a different range than the water, the test will provide inaccurate results, thus potentially providing inaccurate chloramine dosing and monitoring information.

Modification of the Plan Review Submittal Process -- The commission proposes to amend §290.39(i) by adding the words "previously approved" to describe the submittal of information on changes to plans that have already been approved by TCEQ, whereas other sections require plan submittal for new projects that have not been approved by TCEQ. This change is proposed to reduce confusion within the regulated community. The commission proposes to amend §290.39(j) and its subdivisions to provide a more efficient submittal process and clarify the definition of a "significant change" in §290.39(j)(1)(A) - (F). Existing §290.39(j) instructs PWSs to first notify the TCEQ of significant changes and then submit plans and specifications upon TCEQ's request. The executive director's staff proposes to amend §290.39(j)(1) by requiring PWSs to submit plans and specifications for significant changes to reduce confusion in the regulated community and reduce staffs' processing time currently spent issuing requests for plans and specification submission. The commission further proposes to amend §290.39(j)(1)(D) and (G) by simplifying the criteria for a change to be considered as "significant" under the rule. As proposed, amended §290.39(j)(1)(D) will be simplified to consider any changes greater than 10% of the number of connections, any change that results in the system's inability to comply with any of the applicable capacity requirements of §290.45 and any change that involves an interconnection with another PWS. This proposed distribution system criteria is 10% of connections, instead of, 10% of the existing distribution capacity or 250 connections, whichever is smaller. The two criteria for a significant change in distribution caused much confusion for the regulated community. The commission also proposes to amend §290.39(j)(2) and its subdivisions to move the requirement for approval of long term-treatment changes that will impact the corrosivity of the water and that need written approval from the executive director from existing §290.39(j)(1)(G) to proposed §290.39(j)(2) because the long-term treatment changes, though considered significant changes and must have approval, may not require the submittal of plans and specifications. Proposed §290.39(j)(2)(A) is a portion of existing §290.39(j)(1)(G) that provides examples of long-term treatment changes, while proposed §290.39(j)(2)(B) allows the executive director to determine the need for plan and specification submittal. Lastly, the commission proposes to add §290.39(j)(3) and its subdivisions to include the requirements for another entity to review plans and specification in lieu of the TCEQ's review, as taken from existing §290.39(j)(2)(B)(i) - (iii) and (C). The proposed amendments to existing §290.39(j)(1) and (2) providing for a more efficient submittal process and clarifying the definition of a "significant change" required a reorganization of this section, including the proposed movement of rule language from existing §290.39(j)(2)(B)(i) - (iii) and (C) to proposed §290.39(j)(3) and its subdivisions.

Enforceability of Exceptions -- The commission proposes to amend §290.39(l)(4) and also proposes to add §290.39(l)(5) to streamline the process when a PWS does not follow the conditions of a granted exception. Under existing §290.39(l)(2), if a PWS does not meet the requirements of a granted exception, the exception can only be revoked through a time-consuming and cumbersome process. To streamline this process while also ensuring a PWS follows the conditions established in the granted exception, the executive director's staff proposes to

clarify that failing to follow the conditions of a granted exception is a violation. Once adopted, the TCEQ's field investigators can directly issue violations for failure to follow an exception's granted conditions, rather than contacting Central Office staff to request that they revoke the exception, wait for the exception's revocation, and then issue the violation.

Clarification for Well Construction Review Process -- The commission proposes to amend §290.41(c)(3)(C) to clarify and specify well construction for a PWS. The commission proposes to amend §290.41(c)(3)(C) to specify the grouting mixture for pressure cementing as neat cement as specified in the most current AWWA Standard for Water Wells and to which a maximum of 6%, by dry weight, bentonite and 2%, by dry weight, calcium chloride may be added. The executive director's staff further proposes to amend §290.41(c)(3)(C) to specifically define well annular space for a PWS well as the minimum annular space between the outside diameter of the casing pipe and the borehole shall be no less than 1 1/2 inches in radial thickness or three inches in net diametrical difference and to clearly explain that well annular space pressure grouting shall be from the bottom upward utilizing one of the methods listed in §290.41(c)(3)(C) for all PWS groundwater well construction. Existing §290.41(c)(3)(C) refers to the current AWWA standard for determining pressure cementing method. The proposed change to §290.41(c)(3)(C) will reduce confusion in the regulated community and reduce staffs' processing time currently spent issuing continuing requests for documentation regarding proper construction and approval time for the regulated community. The proposed change serves also to consolidate the requirements for wells into one location, making them more accessible to the PWSs.

Alternative Appurtenances for Overflow Devices -- The commission proposes to amend §290.43(c)(3) to allow other acceptable options for a tank overflow cover. The existing rule requires a "gravity-hinged and weighted cover" at the end of the overflow pipe on water storage tanks; however, other designs have also proven to be effective at preventing backflow and the entrance of contaminants. The proposed rule would allow a duckbill or any other overflow cover that closes automatically to less than 1/16 inch gap. The proposed rule change allows any design that meets this specific criterion. The executive director's staff proposes a gap criteria of 1/16 inch because that is the size of a midge fly and the cover is used to prevent wildlife and insects from being able to enter the water storage tank. The midge fly, in particular, is a small insect that can enter the tank, lay eggs, and then distribute its hatched, red colored worms to the distribution system. Establishing the gap tolerance at 1/16 inch will prevent incursions from this insect. The existing rule requires PWSs receive case-by-case exception to use these other devices. The commission proposes to amend §290.43 to establish a standard to streamline the process for PWSs and to reduce staffs' time currently spent reviewing these exception requests.

Water Storage -- The commission proposes to amend §290.43(c) to remove the reference to AWWA D103 and address the perception that other types of bolted tanks are not allowed. The existing rule states "all facilities for potable water storage shall be covered and designed, fabricated, erected, tested, and disinfected in strict accordance with current AWWA standards." Thus, the existing rule already allows the use of any tank with an AWWA standard, and the reference to D103 is redundant and has caused misunderstanding of the rule. The proposed removal of the sentence in existing §290.43(c) will allow PWSs more flexibility when designing water storage tanks by allowing tanks of other materials approved by the AWWA. The commission proposes to amend §290.43(c)(9) by replacing the word "Commission" with the phrase "executive director" to correct a typographical error.

Water Distribution Crossings -- During a rule change in 1995, language applicable to waterlines crossing under wastewater lines was added to §290.44 which conflicted with the requirements for wastewater lines in 30 TAC §217.53. The commission proposes to amend §290.44(e)(4)(B) and its subdivisions to: adjust the water and wastewater line crossing requirements for protection of public health; reduce confusion within the regulated community and its consultants; and, remove the conflict with the requirements for wastewater lines in existing §217.53. Currently, the commission has an on-going rulemaking for wastewater, Rule Project Number 2012-040-217-OW, *Amendments to 30 TAC Chapter 217: Design Criteria for Domestic Wastewater Systems.* The TCEQ's Office of Water's wastewater and drinking water programs have been working together to maintain consistency across programs. The Chapter 217 rulemaking is tentatively scheduled for its proposal agenda during March, 2015. In this rulemaking, the commission also proposes to amend §290.44(e)(5) by inserting the word "manhole" between the words "main or" in the first two sentences of that paragraph to address a point of confusion in the regulated community. With its proposed addition of the word "manhole" in this paragraph, the commission seeks to clarify that a potable waterline is to be separated from a wastewater main manhole or lateral manhole or cleanout, instead of requiring separation from a wastewater main, lateral manhole, or cleanout as interpreted by some readers of this rule.

Fiscal Note: Costs to State and Local Government

Jeffrey Horvath, Analyst in the Chief Financial Officer's Division, has determined that for the first five-year period the proposed rules are in effect, no significant fiscal implications are anticipated for the agency or for other units of state or local government as a result of administration or enforcement of the proposed rules. The proposed rules are expected to result in more efficient administration of rules for PWSs and some related administrative cost savings for the agency and PWSs, though cost savings are not expected to be significant.

State Statutes -- The proposed rule make changes to Chapter 290 to reflect changes made during the 83rd Texas Legislature, 2013, by HB 1600 and SB 567, related to the transfer of the TCEQ's utilities and rates program to the PUC. The proposed amendment will remove a CCN requirement for PWSs to submit changes or additions to their system as the TCEQ will no longer has jurisdiction over CCNs, effective September 1, 2014. This administrative change will not have fiscal implications for the agency or for PWSs.

Federal Regulations

The proposed rules would amend Chapter 290 for consistency with existing federal regulations and guidance and to provide clarification on existing state rules. More specifically, the proposed rule changes would amend current rules so that they are consistent with the federal Reduction of Lead in Drinking Water Act and the federal LT2 rule.

The proposed amendments to incorporate the two federal rules will have no impact upon the TCEQ. The federal requirement for the lead content of pipes, pipe fittings, and plumbing fittings and fixtures was reduced from 8.0% to 0.25%, effective January 4, 2014. The lower lead content in water plumbing was announced in federal law in 2011 to allow time for manufacturers to change

their products. A PWS will now need to procure plumbing fixtures with the allowable lead level, but because the federal act applies to all manufacturers, there should only be products that meet the criteria on the market, so fiscal implications should be minimal.

The proposed rule would allow small PWSs to monitor for *E. coli* instead of *Cryptosporidium* in order to comply with the federal LT2 rule. This federal rule requires PWSs with surface water or groundwater under the direct influence of surface water to monitor for *Cryptosporidium.* The EPA provided states the discretion to allow small PWSs (those with a population less than 10,000) to monitor for *E. coli* instead. The TCEQ adopted the alternate monitoring process and established an *E. coli* trigger level based on the source of water.

The TCEQ has used the higher trigger level since the federal guidance was given. By raising the TCEQ's *E. coli* trigger level, fewer small PWSs have monitored for *Cryptosporidium* because the higher *E. coli* trigger level is more commonly achieved. The proposed rule would amend §290.111 to be consistent with the latest federal guidance and to continue to provide additional savings to small PWSs for monitoring costs.

Additional Staff Recommendations

In addition, the rulemaking proposes the following amendments to provide clarification on existing state rules.

Process for Approving Desalination Technology -- The proposed rules would allow the use of desalination technologies for chemical removal without an exception request. An exception request is required for TCEQ approval for PWS use of innovative/alternate treatment technologies. The use of reverse osmosis membranes and other desalination technologies for water treatment has been in use for decades. Over 15,000 desalination plants were in worldwide use in 2002. Given the potential for widespread use of desalination, the agency is proposing to develop design, operation, maintenance, monitoring, and reporting standards for desalination treatments after extensive input from the regulated community and interested stakeholders.

Chloramine Disinfection Criteria -- The existing rule allows the use of disinfectants other than chlorine within PWS distribution systems under the exception guidelines of §290.39. The use of chloramines has become a common practice at PWSs. TCEQ's current exception process for PWS use of chloramines describes the required public notice, sampling frequency, equipment requirements, NAPs, records retention, chemical injection locations, the use of chemicals, and storage requirements. The proposed rules would allow the use of chloramines without requiring this exception process review. This change is expected to reduce staff processing time and to simplify the process for the TCEQ and PWSs.

Modification of the Plan Review Submittal Process -- At present, PWSs must first notify the TCEQ of significant changes planned for their systems, and then submit plans and specifications upon the TCEQ's request. The proposed rule would eliminate the first notification and require PWSs to submit plans and specifications for significant changes. This change is expected to reduce confusion in the regulated community and to reduce staffs' processing time currently spent processing these requests. The proposed rule would also simplify the criteria for a change to be considered "significant" under the rule.

Enforceability of Exceptions -- Under the existing rule, if a PWS does not meet the requirements of a granted exception, the exception can be revoked through a time-consuming and cumbersome process. To streamline this process, and to ensure that PWSs follow the conditions established in the granted exception, the propose rule provides that it is a violation if a PWS fails to follow the conditions of a granted exception. This change would allow TCEQ's field investigators to directly issue violations for failure to follow an exception's granted conditions, rather than contacting Central Office staff to request that they revoke the exception, wait for the exception's revocation, and then issue the violation.

Clarification for Well Construction Review Process -- The proposed rule would incorporate existing language that details specific cementing requirements for PWS wells. The proposed change will consolidate the requirements for wells into one location, making the requirements more accessible and easier to understand for PWSs.

Alternative Appurtenances for Overflow Devices -- The existing rule requires a "gravity-hinged and weighted cover" at the end of the overflow pipe on water storage tanks. However, other designs have proven to be just as effective at preventing backflow and the entrance of contaminants into water storage tanks. The existing rule requires that PWSs must receive a case-by-case exception to use these other devices. The proposed rule would establish a standard to streamline the process for PWSs and allow the use of alternative appurtenances without having to request an exception. This proposed change is expected to reduce staffs' time currently spent reviewing these exception requests.

Water Distribution Crossings and Water Storage -- During a rule change in 1995, language applicable to waterlines crossing under wastewater lines was inadvertently added to §290.44 which conflicts with the requirement for wastewater lines in §217.53. The agency proposes to amend §290.44 for consistency with §217.53. The proposed rule for water storage would remove a sentence referencing AWWA Standard D103 in response to a rule petition. Neither of these technical corrections are expected to result in fiscal implications.

The listed clarifying amendments are not expected to result in significant fiscal implications for the agency though some administrative cost savings may be anticipated. The proposed rules formalize existing procedures, clarify requirements, and streamline processes that will either remove the need for an exception or streamline citing violations for not meeting the granted exception conditions. Since 2011, the Water Supply Division has worked with an increasing number of drought-stricken, new or expanding communities due to population growth. By decreasing the number of exceptions that would require processing by agency staff, the TCEQ can more efficiently direct its staff resources and conduct additional expedited exception reviews of drought-stricken, new or expanding PWSs while improving its customer service.

There are an estimated 3,018 PWS utilities in Texas that are owned or operated by units of local government. The proposed rules may result in costs savings for some of these utilities though any administrative cost savings are not expected to be significant and are difficult to quantify.

The proposed rules will either remove the need for an exception for these utilities or streamline the citing of violations for not meeting exception conditions. The PWSs would not have to spend time with correspondence or gathering supporting documentation to request an exception if the proposed rules are adopted.

By formalizing the enforceability of exception conditions, the PWSs would also save time. The current practice requires the revocation of an exception to allow the citation of a rule violation. For example, if the PWS was not performing sampling required by an exception for a well, the PWS would have to wait for TCEQ to revoke the original request, be cited for not meeting the requirement that the exception allowed, resubmit the exception request with the missing sampling results, and be re-granted the original exception, if warranted. By citing a notice of violation for the sampling deficiency directly, the PWS saves time and resources by not having to resubmit an exception.

Also, revoking exceptions can have a negative impact on public health. The majority of approved exceptions are related to wells or treatment. Wells and treatment are both necessary to provide communities safe and adequate drinking water. If TCEQ has to revoke many of the exceptions it has granted, it may be removing water sources or treatment from PWSs and leaving communities with not enough water or water that has not been adequately treated.

Public Benefits and Costs

Mr. Horvath has also determined that for each year of the first five years the proposed rules are in effect, the public benefit anticipated from the changes seen in the proposed rules will be compliance with federal law, more efficient administration of regulations for PWSs, and the potential for administrative cost savings for the agency and regulated entities.

No significant fiscal implications are anticipated for individuals or for businesses as a result of the administration or enforcement of the proposed rules. There may be administrative cost savings for some for profit PWSs, though any savings are not expected to be significant.

At this time, there are an estimated 3,704 PWSs that are for profit businesses. The proposed rules are expected to formalize existing procedures, clarify requirements and/or streamline practices. These changes may make it easier and more efficient for a PWS to comply with state requirements.

The proposed changes remove the need for an exception or they streamline the citing of violations for not meeting exception conditions thus resulting in more efficient administration of the requirements. A PWS would not have to spend time with correspondence and gathering supporting documentation to request an exception to the TCEQ's rule if the proposed changes are adopted.

By formalizing the enforceability of exception conditions, the PWSs would also save time. The current practice requires the revocation of an exception to allow the citation of a rule violation. If a PWS can be cited with a notice of violation without having the exception revoked first, the PWS could save some time and resources and the agency would not have to remove water sources or treatment from PWSs.

Small Business and Micro-Business Assessment

No adverse fiscal implications are anticipated for small or micro-businesses as a result of the proposed rules. Small PWSs would experience the same cost savings and efficiencies as larger systems. The amount of cost savings will vary among small businesses and will depend on their cost structures. Any amount of cost savings is not expected to be significant.

Small Business Regulatory Flexibility Analysis

The commission has reviewed this proposed rulemaking and determined that a small business regulatory flexibility analysis is not required because the proposed rules do not adversely affect a small or micro-business in a material way for the first five years that the proposed rules are in effect.

Local Employment Impact Statement

The commission has reviewed this proposed rulemaking and determined that a local employment impact statement is not required because the proposed rules do not adversely affect a local economy in a material way for the first five years that the proposed rules are in effect.

Draft Regulatory Impact Analysis Determination

The commission reviewed the proposed rulemaking in light of the regulatory analysis requirements of Texas Government Code, §2001.0225 and determined that the rulemaking is not subject to Texas Government Code, §2001.0225. A "major environmental rule" means a rule with a specific intent to protect the environment or reduce risks to human health from environmental exposure, and that may adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, or the public health and safety of the state or a sector of the state.

First, the proposed rulemaking does not meet the statutory definition of a "major environmental rule" because its specific intent is not to protect the environment or reduce risks to human health from environmental exposure. The specific intent of the proposed rulemaking is fourfold.

The first intent of the proposed rulemaking is to comply with requirements and standards established by the EPA pursuant to its federal requirements related to Texas' primary enforcement responsibility with regard to drinking water. Specifically, the federal drinking water standards changed regarding two contaminants. First, the lead content allowed in pipes, pipe fittings, and plumbing fittings and fixtures was reduced through federal legislation. Second, the EPA provided states the discretion to allow small PWSs using surface water or groundwater under the influence of surface water to monitor for *E. coli* rather than *Cryptosporidium.* Texas adopted this alternate monitoring, with a trigger level of 10 or 50 *E. coli/*100 milliliters, depending on the water source. Federal guidance subsequently established the *E. coli* trigger level of 100 *E. coli/*100 milliliters, no matter the water source. As a primacy state, Texas has the obligation of complying with EPA drinking water standards. The federal requirements that would be implemented through the proposed rulemaking are designed to reduce risks to human health from environmental exposure by limiting exposure to lead and microbial pathogens, but the changes in the proposed rules are intended to maintain compliance and consistency with EPA requirements and standards.

The second intent of the proposed rulemaking is to implement state legislation enacted during the 2013 legislative session. This legislation related to the transfer of the commission's utilities and rates program to the PUC. Specifically, the proposed rulemaking removes a requirement related to a CCN with notification of changes or additions to a PWS. CCNs are part of the utilities and rates program transferred effective September 1, 2014, and the agency no longer has jurisdiction over CCNs as they relate to Chapter 291. The proposed rulemaking implements HB 1600, §2.96 and SB §§1, 4, 95 and 96, both enacted by the 83rd Texas Legislature, though the majority of the rule changes necessary to implement this legislation will

occur in a different rulemaking, specifically Rule Project Number 2013-057-291-OW.

The third intent of the proposed rulemaking is to clarify existing rules and make them more efficient by amending language, correcting cross-references, and eliminating potential ambiguities. The proposed rulemaking provides a more efficient plan submittal process; clarifies that an exception once granted must be complied with; clarifies the well construction review process; provides alternative appurtenances to use for overflow devices; provides more flexibility for PWSs in selecting water storage tanks; and aligns the commission's water and wastewater rules related to pipes and water distribution. Part of this intent involves correction of typographical and syntax errors, updating of citations, cross-references, and terminology.

The fourth intent of the proposed rulemaking is to make the rules more cost-effective and efficient for the regulated community and for the agency by eliminating the requirement to process desalination treatment requests and requests for use of chloramines as a primary disinfectant through the exceptions process under existing rules. The exceptions process can be burdensome and time-consuming. Desalination has become of increasing interest in the regulated community because of the on-going drought and the degradation of potential source water quality. The use of desalination technologies has become common for PWSs and the proposed rulemaking contains adequate safeguards to ensure that safe drinking water is provided to the public, while streamlining approval for the use of such technologies. Chloramines have been used as a secondary disinfectant for several years; its use as a primary disinfectant under the current rules requires approval through the exceptions process. The proposed rulemaking streamlines the use of chloramines as a primary disinfectant while ensuring adequate safeguards to ensure the provision of safe drinking water to the public.

Second, the proposed rulemaking does not meet the statutory definition of a "Major environmental rule" because the proposed rules would not 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. It is not anticipated that the cost of complying with the proposed rules will be significant with respect to the economy as a whole or with respect to a sector of the economy; therefore, the proposed amendments will not adversely affect in a material way the economy, a sector of the economy, competition, or jobs.

Finally, the proposed rulemaking does not meet any of the four applicability requirements for a "Major environmental rule" listed in Texas Government Code, §2001.0225(a). Texas Government Code, §2001.0225 only applies to a major environmental rule, the result of which is to: 1) exceed a standard set by federal law, unless the rule is specifically required by state law; 2) exceed an express requirement of state law, unless the rule is specifically required by federal law; 3) exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government to implement a state and federal program; or 4) adopt a rule solely under the general powers of the agency instead of under a specific state law. The proposed rulemaking does not meet any of the preceding four applicability requirements because this rulemaking does not exceed any standard set by federal law for PWSs and is proposed to comply with standards set by the EPA; does not exceed any express requirement of state law under Texas Health and Safety Code (THSC), Chapter 341, Subchapter C; does not exceed a requirement of a delegation agreement or contract between the state and an agency or representative of the federal government but rather is proposed to comply with applicable federal standards related to the federal Safe Drinking Water Act; and is not proposed solely under the general powers of the agency, but specifically under THSC, §341.031, which gives the commission authority to establish standards ensuring the supply of safe drinking water, as well as the other general powers of the commission.

The commission invites public comment regarding this draft regulatory impact analysis determination. Written comments on the draft regulatory impact analysis determination may be submitted to the contact person at the address listed under the Submittal of Comments section of this preamble.

Takings Impact Assessment

The commission evaluated this proposed rulemaking and performed analysis of whether these proposed rules constitute a taking under Texas Government Code, Chapter 2007. The specific purpose of the proposed rules is to amend Chapter 290 for consistency with TWC, §12.013, and Chapter 13, and with existing federal legislation and guidance; and provide clarification on and increased efficiency under existing state rules. The proposed rules would substantially advance the stated purpose by amending the rules to reflect the reduced lead content allowed under federal legislation in pipes, pipe fittings, and plumbing fittings and fixtures; by changing the appropriate *E. coli* trigger level for small PWSs; by creating a process for approving desalination technology; by establishing chloramine disinfection criteria; by modifying the plan review submittal process; by clarifying the enforceability of exceptions; by clarifying the well construction review process; by providing alternative appurtenances for overflow devices; by clarifying water storage requirements; by clarifying the rules regulating water distribution crossings; by correcting typographical and syntax errors; and by updating citations, cross-references, and terminology.

The commission's analysis indicates that Texas Government Code, Chapter 2007, does not apply to these proposed rules based upon exceptions to applicability in Texas Government Code, §2007.003(b). First, the proposed rulemaking is an action that is reasonably taken to fulfill an obligation mandated by federal law, exempt under Texas Government Code, §2007.003(b)(4). In order to maintain primacy over public drinking water, the state must enact rules no less stringent than the federal requirements. Second, the proposed rulemaking includes a modification of an existing regulation that provides a unilateral expectation that does not rise to the level of a recognized interest in private real property, exempt under Texas Government Code, §2007.003(b)(5). Chapter 290 is a set of existing rules that regulate public drinking water. The unilateral expectation on the part of the agency is that the regulated community will comply with the amended rules in Chapter 290; the unilateral expectation on the part of the regulated community is that the agency will enforce the amended rules in Chapter 290. Neither unilateral expectation rises to the level of a recognized interest in private real property because Chapter 290 regulates public drinking water.

Further, the commission has determined that promulgation and enforcement of these proposed rules would be neither a statutory nor a constitutional taking of private real property. Specifically, there are no burdens imposed on private real property under the rules because the proposed rules neither relate to, nor have any impact on, the use or enjoyment of private real property, and there would be no reduction in property value as

a result of these rules. The rules require PWSs to comply with drinking water standards protective of human health and the environment, and the rules bring those standards into concurrence with the corresponding federal requirements. The rules also clarify and make existing rules more efficient, thereby streamlining regulation rather than making it burdensome. Therefore, the proposed rules would not constitute a taking under Texas Government Code, Chapter 2007.

Consistency with the Coastal Management Program

The commission reviewed the proposed rules and found that they are neither identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11(b)(2) or (4), nor will they affect any action/authorization identified in Coastal Coordination Act Implementation Rules, 31 TAC §505.11(a)(6). Therefore, the proposed rules are not subject to the Texas Coastal Management Program.

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

Announcement of Hearing

The commission will hold a public hearing on this proposal in Austin on February 26, 2015, at 2:00 p.m. in Building E, Room 201S, at the commission's central office located at 12100 Park 35 Circle. The hearing is structured for the receipt of oral or written comments by interested persons. Individuals may present oral statements when called upon in order of registration. Open discussion will not be permitted during the hearing; however, commission staff members will be available to discuss the proposal 30 minutes prior to the hearing.

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

Submittal of Comments

Written comments may be submitted to Derek Baxter, MC 205, Office of Legal Services, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 or faxed to (512) 239-4808. Electronic comments may be submitted at: *http://www1.tceq.texas.gov/rules/ecomments/*. File size restrictions may apply to comments being submitted via the eComments system. All comments should reference Rule Project Number 2013-046-290-OW. The comment period closes on March 10, 2015. Copies of the proposed rulemaking can be obtained from the commission's Web site at *http://www.tceq.texas.gov/nav/rules/propose_adopt.html*. For further information, please contact Marlo Wanielista Berg, P.E., Plan and Technical Review Section, (512) 239-6967.

SUBCHAPTER D. RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS

30 TAC §§290.38, 290.39, 290.41 - 290.47

Statutory Authority

The amendments are proposed under Texas Water Code (TWC), §5.102, which establishes the commission's general authority necessary to carry out its jurisdiction; TWC, §5.103, which establishes the commission's general authority to adopt rules; TWC, §5.105, which establishes the commission's authority to set policy by rule; Texas Health and Safety Code (THSC), §341.031, which allows the commission to adopt rules to comply with standards established by the United States Environmental Protection Agency pursuant to the federal Safe Drinking Water Act, 42 United States Code, §§300f to 300j-6; and THSC, §341.0315, which requires public water systems to comply with commission rules adopted to ensure the supply of safe drinking water.

The proposed amendments implement TWC, §§5.102, 5.103, and 5.105; THSC, §341.031 and §341.0315; and, House Bill 1600 and Senate Bill 567, both enacted during the 83rd Texas Legislature, 2013.

§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 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 Water Dictionary: A Comprehensive Reference of Water Terminology,* [~~*The Drinking Water Dictionary,*~~] prepared by the American Water Works Association.

(1) Affected utility--A retail public utility (§291.3 of this title (relating to Definitions of Terms)), exempt utility (§291.103(d)(1) of this title (relating to Certificates Not Required)), [~~(§291.3 of this title),~~] or provider or conveyor of potable or raw water service that furnishes water service to more than one customer:

(A) in a county with a population of 3.3 million or more; or

(B) in a county with a population of 550,000 or more adjacent to a county with a population of 3.3 million or more.

(2) 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.

(3) American National Standards Institute (ANSI) [~~ANSI~~] standards--The standards of the American National Standards Institute, Inc.[~~, 1430 Broadway, New York, New York 10018.~~]

(4) American Society of Mechanical Engineers (ASME) standards--The standards of the ASME.

(5) American Water Works Association (AWWA) standards--The latest edition of the applicable standards as approved and published by the AWWA.

(6) [~~(4)~~] Approved laboratory--A laboratory approved by the executive director to analyze water samples to determine their compliance with certain maximum or minimum allowable constituent levels.

[~~(5) ASME standards--The standards of the American Society of Mechanical Engineers, 346 East 47th Street, New York, New York 10017.~~]

(7) [~~(6)~~] ASTM International standards--The standards of ASTM International (formerly known as the American Society for Testing and Materials) [~~the American Society for Testing and Materials, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, Pennsylvania, 19428~~].

(8) [~~(7)~~] 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.

[~~(8) 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.~~]

(9) Bag filter [~~Filter~~]--Pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed of a non-rigid, fabric filtration media housed in a pressure vessel in which the direction of flow is from the inside of the bag to the outside.

(10) Baseline performance--In reference to a membrane treatment facility, the detailed assessment of observed operational conditions at the time the membrane facility is placed in service for the purpose of tracking changes over time and determining when maintenance or service is required. Examples of parameters where baseline performance data is collected include: net driving pressure, normalized permeate flow, salt rejection, and salt passage.

(11) [~~(10)~~] Cartridge filter--Pressure-driven separation device that removes particulate matter larger than 1 micrometer using an engineered porous filtration media. They are typically constructed as rigid or semi-rigid, self-supporting filter elements housed in pressure vessels in which flow is from the outside of the cartridge to the inside.

(12) [~~(11)~~] Certified laboratory--A laboratory certified by the commission to analyze water samples to determine their compliance with maximum allowable constituent levels. After June 30, 2008, laboratories must be accredited, not certified, in order to perform sample analyses previously performed by certified laboratories.

(13) [~~(12)~~] Challenge test--A study conducted to determine the removal efficiency (log removal value) of a device for a particular organism, particulate, or surrogate.

(14) [~~(13)~~] Chemical 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.

(15) [~~(14)~~] 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.

(16) [~~(15)~~] 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.

(17) [~~(16)~~] 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.

(18) [~~(17)~~] 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.

(19) [~~(18)~~] Direct integrity test--A physical test applied to a membrane unit in order to identify and isolate integrity breaches/leaks that could result in contamination of the filtrate.

(20) [~~(19)~~] Disinfectant--A chemical or a treatment which is intended to kill or inactivate pathogenic microorganisms in water.

(21) [~~(20)~~] Disinfection--A process which inactivates pathogenic organisms in the water by chemical oxidants or equivalent agents.

(22) [~~(21)~~] 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.

(23) [~~(22)~~] 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.

(24) [~~(23)~~] 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).

(25) [~~(24)~~] 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.

(26) [~~(25)~~] Emergency operations--The operation of an affected utility during an extended power outage at a minimum water pressure of 35 pounds per square inch.

(27) [~~(26)~~] 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.

(28) [~~(27)~~] Extended power outage--A power outage lasting for more than 24 hours.

(29) [~~(28)~~] Filtrate--The water produced from a filtration process; typically used to describe the water produced by filter processes such as membranes.

(30) Flux--The throughput of a pressure-driven membrane filtration system expressed as flow per unit of membrane area. For example, gallons per square foot per day or liters per hour per square meter.

(31) [~~(29)~~] Groundwater--Any water that is located beneath the surface of the ground and is not under the direct influence of surface water.

(32) [~~(30)~~] 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; or

(C) site-specific characteristics including measurements of water quality parameters, well construction details, existing geological attributes, and other features that are similar to groundwater sources that have been identified by the executive director as being under the direct influence of surface water.

(33) [~~(31)~~] 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.

(34) [~~(32)~~] 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.

(35) [~~(33)~~] Indirect integrity monitoring--The monitoring of some aspect of filtrate water quality, such as turbidity, that is indicative of the removal of particulate matter.

(36) [~~(34)~~] Innovative/alternate treatment--Any treatment process that does not have specific design requirements in §290.42(a) - (f) of this title (relating to Water Treatment). [~~For example, the adjustment of fluoride ion content, special treatment for metals, iron, manganese, organic and inorganic contaminant reduction, special methods for taste and odor control, demineralization, corrosion control processes, membrane filtration, bag/cartridge filters, ozone, chlorine dioxide, Ultraviolet (UV) light disinfection, and other treatment processes.~~]

(37) [~~(35)~~] Interconnection--A physical connection between two public water supply systems.

(38) [~~(36)~~] International Fire Code (IFC)--The standards of the International Code Council [~~, 500 New Jersey Avenue, NW, 6th Floor, Washington, DC 20001~~].

(39) [~~(37)~~] 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.

(40) [~~(38)~~] 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.

(41) [~~(39)~~] 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.

(42) [~~(40)~~] Log removal value (LRV)--Removal efficiency for a target organism, particulate, or surrogate expressed as $\log_{10}$ (i.e., $\log_{10}$ (feed concentration) - $\log_{10}$ (filtrate concentration)).

(43) [~~(41)~~] 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.

(44) [~~(42)~~] Maximum contaminant level (MCL)--The MCL for a specific contaminant is defined in the section relating to that contaminant.

(45) [~~(43)~~] Membrane filtration--A pressure or vacuum driven separation process in which particulate matter larger than one micrometer is rejected by an engineered barrier, primarily through a size-exclusion mechanism, and which has a measurable removal efficiency of a target organism that can be verified through the application of a direct integrity test; includes the following common membrane classifications microfiltration (MF), ultrafiltration (UF), nanofiltration (NF), and reverse osmosis (RO), as well as any "membrane cartridge filtration" (MCF) device that satisfies this definition.

(46) [~~(44)~~] Membrane $LRV_{C\text{-}Test}$--The number that reflects the removal efficiency of the membrane filtration process demonstrated during challenge testing. The value is based on the entire set of log removal values (LRVs) obtained during challenge testing, with one representative LRV established per module tested.

(47) [~~(45)~~] Membrane module--The smallest component of a membrane unit in which a specific membrane surface area is housed in a device with a filtrate outlet structure.

(48) [~~(46)~~] Membrane sensitivity--The maximum log removal value [~~(LRV)~~] that can be reliably verified by a direct integrity test.

(49) [~~(47)~~] Membrane unit--A group of membrane modules that share common valving, which allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance.

(50) [~~(48)~~] Milligrams per liter (mg/L)--A measure of concentration, equivalent to and replacing parts per million in the case of dilute solutions.

(51) [~~(49)~~] Monthly reports of water works operations--The daily record of data relating to the operation of the system facilities compiled in a monthly report.

(52) [~~(50)~~] National Fire Protection Association (NFPA) standards--The standards of the NFPA[~~, 1 Batterymarch Park, Quincy, Massachusetts, 02269-9101~~].

(53) [~~(51)~~] NSF International [~~National Sanitation Foundation (NSF)~~]--The organization and the standards, certifications, and [~~The NSF or reference to the~~] listings developed by NSF International (formerly known as the National Sanitation Foundation) related to drinking water [~~the foundation, P.O. Box 1468, Ann Arbor, Michigan 48106~~].

(54) [~~(52)~~] Noncommunity water system--Any public water system which is not a community system.

(55) [~~(53)~~] 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.

(56) [~~(54)~~] 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.

(57) Pass--In reference to a reverse osmosis or nanofiltration membrane system, stages of pressure vessels in series in which the permeate from one stage is further processed in a following stage.

[~~(55) psi--Pounds per square inch.~~]

(58) [~~(56)~~] 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.

(59) [~~(57)~~] 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.

(60) [~~(58)~~] 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.

(61) [~~(59)~~] Potable water customer service line--The sections of potable water pipe between the customer's meter and the customer's point of use.

(62) [~~(60)~~] 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.

(63) [~~(61)~~] 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.

(64) [~~(62)~~] 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.

(65) [~~(63)~~] Process control duties--Activities that directly affect the potability of public drinking water, including: making decisions regarding the day-to-day operations and maintenance of public water system production and distribution; maintaining system pressures; determining the adequacy of disinfection and disinfection procedures; taking routine microbiological samples; taking chlorine residuals and microbiological samples after repairs or installation of lines or appurtenances; and operating chemical feed systems, filtration, disinfection, or pressure maintenance equipment; or performing other duties approved by the executive director.

(66) psi--Pounds per square inch.

(67) [~~(64)~~] 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.

(68) [~~(65)~~] Public health engineering practices--Requirements in this subchapter or guidelines promulgated by the executive director.

(69) [~~(66)~~] 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.

(70) [~~(67)~~] Quality Control Release Value (QCRV)--A minimum quality standard of a non-destructive performance test [~~(NDPT)~~] established by the manufacturer for membrane module production that ensures that the module will attain the targeted log removal value [~~(LRV)~~] demonstrated during challenge testing.

(71) [~~(68)~~] Reactor Validation Testing--A process by which a full-scale ultraviolet [~~Ultraviolet~~] (UV) reactor's disinfection performance is determined relative to operating parameters that can be monitored. These parameters include flow rate, UV intensity as measured by a UV sensor and the UV lamp status.

(72) [~~(69)~~] Resolution--The size of the smallest integrity breach that contributes to a response from a direct integrity test in membranes used to treat surface water or groundwater under the direct influence of surface water.

(73) [~~(70)~~] 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. For an example, see commission Form 20698.

(74) [~~(71)~~] Sanitary survey--An onsite review of a public water system's adequacy for producing and distributing safe drinking water by evaluating the following elements: water source; treatment; distribution system; finished water storage; pump, pump facilities, and controls; monitoring, reporting, and data verification; system management, operation and maintenance; and operator compliance.

(75) [~~(72)~~] Sensitivity--The maximum log removal value (LRV) that can be reliably verified by a direct integrity test in membranes used to treat surface water or groundwater under the direct influence of surface water; also applies to some continuous indirect integrity monitoring methods.

(76) [~~(73)~~] 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.

(77) [~~(74)~~] Service pump--Any pump that takes treated water from storage and discharges to the distribution system.

(78) [~~(75)~~] Significant deficiency--Significant deficiencies cause, or have the potential to cause, the introduction of contamination into water delivered to customers. This may include defects in design, operation, or maintenance of the source, treatment, storage, or distribution systems.

(79) Stage--In reference to a reverse osmosis or nanofiltration membrane system, a set of pressure vessels installed in parallel.

(80) [~~(76)~~] 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.

(81) [~~(77)~~] 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.

(82) Vessel--In reference to a reverse osmosis or nanofiltration membrane system, a cylindrical housing unit where membrane modules are placed in a series to form one unit.

(83) [~~(78)~~] 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.

(84) [~~(79)~~] 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. Texas Water Code (TWC), [~~Chapter 13, Subchapter E,~~] §13.1395, prescribes the duties of the commission relating to standards for emergency operations of affected utilities. The statute requires that the commission ensure that affected utilities provide water service as soon as safe and practicable during an extended power outage following the occurrence of a natural disaster.

(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 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.

(4) Emergency Preparedness Plan for Public Water Systems that are Affected Utilities.

(A) Each public water system that is also an affected utility, as defined by §290.38 [~~§290.38(1)~~] of this title (relating to Definitions), is required to submit to the executive director, receive approval for, and adopt an emergency preparedness plan in accordance with §290.45 of this title (relating to Minimum Water System Capacity Requirements) using either the template in Appendix G [~~Appendix J~~] of §290.47 of this title (relating to Appendices) or another emergency preparedness plan that meets the requirements of this section. Emergency preparedness plans are required to be prepared under the direction of a licensed professional engineer when an affected utility has been granted or is requesting an alternative capacity requirement in accordance with §290.45(g) of this title, or is requesting to meet the requirements of TWC, §13.1395, as an alternative to any rule requiring elevated storage, or as determined by the executive director on a case-by-case [~~case by case~~] basis.

(B) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall include in its emergency preparedness plan under subparagraph (A) of this paragraph provision for the actual installation and maintenance of automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(C) The executive director shall review an emergency preparedness plan submitted under subparagraph (A) of this paragraph.

If the executive director determines that the plan is not acceptable, the executive director shall recommend changes to the plan. The executive director must make its recommendations on or before the 90th day after the executive director receives the plan. In accordance with commission rules, an emergency preparedness plan must include one of the options listed in §290.45(h)(1)(A) - (H) of this title.

(D) Each affected utility shall install any required equipment to implement the emergency preparedness plan approved by the executive director immediately upon operation.

(E) The executive director may grant a waiver of the requirements for emergency preparedness plans to an affected utility if the executive director determines that compliance with this section will cause a significant financial burden on customers of the affected utility. The affected utility shall submit financial, managerial, and technical information as requested by the executive director to demonstrate the financial burden.

(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 159, [~~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 transferable. 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. For an example, see commission Form 20698. [~~Section 290.47(c) of this title 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.

(6) For public water systems using reverse osmosis or nanofiltration membranes, the engineering report must include the requirements specified in paragraph (1)(A) - (H) of this subsection, and additionally must provide sufficient information to ensure effective treatment. Specifically:

(A) Provide a clear identification of the proposed raw water source.

(i) If the well has been constructed, a copy of the State of Texas Well Report according to 16 TAC Chapter 76 (relating to Water Well Drillers and Water Well Pump Installers), a cementing certificate (as required by §290.41(c)(3)(A) of this title), and a copy of the complete physical and chemical analysis of the raw water from the well as required by §290.41(c)(3)(G) of this title; or

(ii) If the well has not been constructed, the approximate longitude and latitude for the new well and the projected water quality.

(B) Provide a description of the pretreatment process that includes:

(i) target water quality of the proposed pretreatment process;

(ii) constituent(s) to be removed or treated;

(iii) method(s) or technologies used; and

(iv) operating parameters, such as chemical dosages, filter loading rates, and empty bed contact times.

(C) The design of a reverse osmosis or nanofiltration membrane system shall be based on the standard modeling tools of the manufacturer. The model must be run for both new membranes and end-of-life membranes. All design parameters required by the membrane manufacturer's modeling tool must be included in the modeled analysis. At a minimum, the model shall provide:

(i) system flow rate;

(ii) system recovery;

(iii) number of stages;

(iv) number of passes;

(v) feed pressure;

(vi) system configuration with the number of vessels per stage, the number of passes (if applicable), and the number of elements per vessel;

(vii) flux (in gallons per square foot per day) for the overall system;

(viii) selected fouling factor for new and end-of-life membranes; and

(ix) ion concentrations in the feed water for all constituents required by the manufacturer's model and the projected ion concentrations for the permeate water and concentrate water.

(D) In lieu of the modeling requirements as detailed in subparagraph (C) of this paragraph, the licensed professional engineer may provide either a pilot study or similar full-scale data in accordance with §290.42(g) of this title (relating to Water Treatment). Alternatively, for reverse osmosis or nanofiltration units rated for flow rates less than 300 gallons per minute, the design specifications can be based on the allowable operating parameters of the manufacturer.

(E) Provide documentation that the components and chemicals for the proposed treatment process conform to American National Standards Institute/NSF International (ANSI/NSF) Standard 60 for Drinking Water Treatment Chemicals and ANSI/NSF Standard 61 for Drinking Water System Components.

(F) Provide the details for post-treatment and re-mineralization to reduce the corrosion potential of the finished water. If carbon dioxide and/or hydrogen sulfide is present in the reverse osmosis permeate, include the details for a degasifier for post-treatment.

(G) For compliance with applicable drinking water quality requirements in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems), provide the projected water quality at the entry point to the distribution system and the method(s) used to make the water quality projections.

(H) When blending is proposed, provide the blending ratio, source of the water to be blended, and the calculations showing the concentrations of regulated constituents in the finished water.

(I) Provide a description of the disinfection byproduct formation potential based on total organic carbon and other precursor sample results.

(J) Provide the process control details to ensure the integrity of the membrane system. The engineering report shall identify specific parameters and set points that indicate when membrane cleaning, replacement, and/or inspection is necessary.

(i) The parameters shall be based on one, or more of the following: increased salt passage, increased or decreased pressure differential, and/or change in normalized permeate flow.

(ii) Define the allowable change from baseline performance.

(7) Before reverse osmosis or nanofiltration membrane systems can be used to produce drinking water, but after the reverse osmosis or nanofiltration membrane system has been constructed at the water system, the licensed professional engineer must submit an addendum to the engineering report required by paragraph (6) of this subsection to the executive director for review and approval. The addendum shall include the following verification data of the full-scale treatment process:

(A) Provide the initial baseline performance of the plant. The baseline net driving pressure, normalized permeate flow, salt rejection (or salt passage) must be documented when the reverse osmosis or nanofiltration membrane systems are placed online.

(B) Provide the frequency of cleaning or membrane replacement. The frequency must be based on a set time interval or at a set point relative to baseline performance of the unit(s).

(C) If modeling is used as the basis for the design, provide verification of the model's accuracy. If the baseline performance evaluation shows that the modeling projection in the engineering report were inaccurate, the licensed professional engineer shall determine if the deviation from the modeled projections resulted from incorrect water quality assumptions or from other incorrect data in the model. The model shall be considered inaccurate if the overall salt passage or the required feed pressure is 10% greater than the model projection. For any inaccurate model, provide a corrected model with the addendum to the engineering report.

(D) Provide verification of plant capacity. The capacity of the reverse osmosis and nanofiltration membrane facility shall be based on the as-built configuration of the system and the design parameters in the engineering report with adjustments as indicated by the baseline performance. Refer to paragraph (6)(C) of this subsection and §290.45(a)(6) of this title for specific considerations.

(E) Provide a complete physical and chemical analysis of the water. The analyses shall be in accordance with §290.41(c)(3)(G) of this title for the raw water (before any treatment), the water produced from the membrane systems, and the water after any post-treatment. Samples must be submitted to an accredited laboratory for chemical analyses.

(8) The calculations for sizing feed pump(s) and chemical storage tank(s) must be submitted to demonstrate that a project meets chemical feed and storage capacity requirements.

(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 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 Chapter 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 previously approved 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. Significant changes in existing systems or supplies [~~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. Any long-term change in water treatment that will impact the corrosivity~~] shall not be instituted without the prior approval of the executive director.

(1) Public water systems shall submit plans and specifications to the executive director for the following [~~The following changes are considered to be~~] significant changes:

(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 number of connections, [~~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, or involves interconnection with another public water system;

(E) proposed replacement or change of membranes modules; and

(F) any other material changes specified by the executive director.[; and]

[(G) examples of long-term treatment changes that could impact the corrosivity of the water include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants, and switching corrosion inhibitor products. Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes.]

(2) Public water systems shall notify the executive director in writing of the addition of treatment chemicals, including long-term treatment changes, that will impact the corrosivity of the water. These are considered to be significant changes that require written approval from the executive director. [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) Examples of long-term treatment changes that could impact the corrosivity of the water include the addition of a new treatment process or modification of an existing treatment process. Examples of modifications include switching secondary disinfectants, switching coagulants, and switching corrosion inhibitor products. Long-term changes can include dose changes to existing chemicals if the system is planning long-term changes to its finished water pH or residual inhibitor concentration. Long-term treatment changes would not include chemical dose fluctuations associated with daily raw water quality changes. [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) After receiving the notification, the executive director will determine whether the submittal of plans and specifications will be required. 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. [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) Plans and specifications may not be required for changes that are specifically addressed in paragraph (1)(D) of this subsection in the following situations: [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.]

(A) 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.

(B) 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 (A) 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 (A) of this paragraph.

(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.

(4) The executive director may establish site-specific [~~site specific design, operation, maintenance, and reporting~~] requirements for systems that have been granted [~~issued~~] an exception [~~to the subchapter~~]. The requirements may include, but are not limited to: site-specific design, operation, maintenance, and reporting requirements.

(5) Water systems that are granted an exception shall comply with the requirements established by the executive director under paragraph (4) of this subsection.

(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.

(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;

(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.

(o) Emergency Preparedness Plans for Affected Utilities.

(1) Each public water system that is also an affected utility and that exists as of November 1, 2011 is required to adopt and submit to the executive director an emergency preparedness plan in accordance with §290.45 of this title and using the template in Appendix G [~~Appendix J~~] of §290.47 of this title or another emergency preparedness plan that meets the requirements of this subchapter no later than February 1, 2012. Emergency preparedness plans are required to be prepared under the direction of a licensed professional engineer when an affected utility has been granted or is requesting an alternative capacity requirement in accordance with §290.45(g) of this title, or is requesting to meet the requirements of TWC, §13.1395, as an alternative to any rule requiring elevated storage, or as determined by the executive director on a case-by-case [~~case by case~~] basis.

(2) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall include in its emergency preparedness plan under this subsection provisions for the actual installation and maintenance of automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(3) The executive director shall review an emergency preparedness plan submitted under this subsection. If the executive director determines that the plan is not acceptable, the executive director shall recommend changes to the plan. The executive director must make its recommendations on or before the 90th day after the executive director receives the plan. In accordance with the commission rules, an emergency preparedness plan must include one of the options listed in §290.45(h)(1)(A) - (H) of this title.

(4) Not later than June 1, 2012, each affected utility shall implement the emergency preparedness plan approved by the executive director.

(5) An affected utility may file with the executive director a written request for an extension not to exceed 90 days, of the date by which the affected utility is required under this subsection to submit the affected utility's emergency preparedness plan or of the date by which the affected utility is required under this subsection to implement the affected utility's emergency preparedness plan. The executive director may approve the requested extension for good cause shown.

(6) The executive director may grant a waiver of the requirements for emergency preparedness plans to an affected utility if the executive director determines that compliance with this section will cause a significant financial burden on customers of the affected utility. The affected utility shall submit financial, managerial, and technical information as requested by the executive director to demonstrate the financial burden.

§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).

(1) A retail public utility as defined by Texas Water Code, §13.002(19) and each entity from which the utility is obtaining wholesale water service for the utility's retail system shall report to the executive director when the utility or entity is reasonably certain that the water supply will be available for less than 180 days. The reporting must be accomplished by utilizing the online "PWS Drought Contingency Plan Reporting Form."

(2) If reporting cannot be accomplished in accordance with paragraph (1) of this subsection, then the retail public utility or entity from which the utility is obtaining wholesale water service may report to the executive director by United States Postal Service mail, program e-mail, [~~electronic mail,~~] or facsimile.

(c) Groundwater sources and development.

(1) Groundwater sources shall be located so that there will be no danger of pollution from flooding or from unsanitary 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, 4, and 5 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 subparagraph [~~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 (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 0.25% [~~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 most current AWWA Standard for Water Wells (A100), [~~(A100-06),~~] Appendix C: Section C.2 (Positive Displacement Exterior Method); Section C.3 (Interior Method Without Plug); Section C.4 (Positive Placement, Interior Method, Drillable Plug); and Section C.5 (Placement Through Float Shoe Attached to Bottom of Casing). The grouting mixture used to pressure cement the annular space shall be neat cement as specified in the most current AWWA Standard for Water Wells and to which a maximum of 6%, by dry weight, bentonite and 2%, by dry weight, calcium chloride may be added. The minimum annular space between the outside diameter of the casing pipe and the borehole shall be no less than 1 1/2 inches in radial thickness or three inches in net diametrical difference and the pressure grouting shall be from the bottom upward utilizing one of the methods listed in this subparagraph for all public water system groundwater well construction. 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 accredited by the Texas Commission on Environmental Quality.

(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 an accredited 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 accredited 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 [~~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 159, [~~MC 153,~~] P.O. Box 13087, Austin, Texas 78711-3087.

(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.

(5) All systems with new springs or similar sources must monitor microbiological source water quality at the new springs or similar sources in accordance with §290.111 of this title (relating to Surface Water Treatment) on a schedule determined by the executive director. The system must notify the agency of the new spring or similar source prior to construction. The executive director may waive these requirements if the spring or similar source has been determined not to be under the direct influence of surface water.

(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 §§321.1 - 321.11 of this title (relating to Boat Sewage Disposal).

(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, *Escherichia 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.

(G) All systems with new surface water intakes or new bank filtration wells must monitor microbiological source water quality at the new surface water intakes or new bank filtration wells in accordance with §290.111 of this title on a schedule determined by the executive director. The system must notify the agency of the new surface water intake or bank filtration well prior to construction.

(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 groundwater 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 wastes, 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)(11) 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 minute per square foot (gpm/sq ft) [~~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.

(D) If reverse osmosis or nanofiltration membrane systems are used, the design shall conform to the requirements in paragraph (9) of this subsection.

(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.

(8) The executive director may require 4-log removal or inactivation of viruses based on raw water sampling results required by §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques).

(9) Reverse osmosis or nanofiltration membrane systems used for the treatment of primary and secondary contaminants defined in Subchapter F of this chapter (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Systems), must meet the design criteria in subparagraphs (A) - (L) of this paragraph.

(A) The design for all reverse osmosis and nanofiltration membrane systems must be in accordance with the findings of the engineering report. Variations from the engineering report must be explained and shall not compromise public health. Minimum engineering report requirements are found in §290.39(e)(1) and (6) of this title (relating to General Provisions).

(B) The reverse osmosis and nanofiltration membrane systems must be designed to ensure adequate cleaning of the membrane system.

(C) The reverse osmosis or nanofiltration membrane systems must be designed to operate at flux rates which assure effective filtration at all times based on at least one of the following:

(i) manufacturer's computer models for new and end-of-life membranes;

(ii) site-specific pilot study;

(iii) comparable design data from an alternative site; or

(iv) the manufacturer's allowable operating parameters, if the membrane unit's capacity is rated less than 300 gallons per minute (gpm).

(D) Pretreatment shall be provided such that the feed water quality to the membrane units shall meet the minimum allowable requirements of the membrane manufacturer. Pretreatment processes shall be sized correctly for the flow of the plant, and the components and chemicals used for pretreatment in contact with the water must conform to American National Standards Institute/NSF International (ANSI/NSF) Standard 60 for Drinking Water Treatment Chemicals or ANSI/NSF Standard 61 for Drinking Water System Components. Other pretreatment processes will be reviewed on an individual basis in accordance the innovative/alternate treatment requirements specified in subsection (g) of this section. Acceptable pretreatment techniques include:

(i) bags, cartridge filters or screens for particulate removal;

(ii) chemical addition that will not adversely affect the reverse osmosis or nanofiltration membrane;

(iii) filters for iron and manganese removal in accordance with paragraph (2)(A) of this subsection;

(iv) aeration or degasification; and

(v) ion exchange softening.

(E) The treatment plant must include post-treatment facilities for corrosivity control, re-mineralization and the removal of dissolved gases, such as carbon dioxide and hydrogen sulfide, if necessary to meet the system's water quality goals. The treatment must be sized correctly for the flow of the plant, and the components and chemicals used for treatment must conform to ANSI/NSF Standard 60 for Drinking Water Treatment Chemicals or ANSI/NSF Standard 61 for Drinking Water System Components.

(F) Pipes and pipe galleries shall meet the minimum requirements specified in subsection (d)(12) and (13) of this section.

(G) Each reverse osmosis or nanofiltration treatment facility shall be equipped to measure conductivity or total dissolved solids in the feed and the permeate water.

(H) Chemical storage and chemical feed facilities shall comply with subsection (f) of this section.

(I) Provide cross-connection protection for common piping used for cleaning and normal production modes.

(J) Provide flow meters on the pipes for feed, permeate, and concentrate water. 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.

(K) The water system must provide pressure measuring and recording devices before and after each membrane stage.

(L) The water system must provide equipment to monitor the temperature of the water. The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(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 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. Based on raw water monitoring results, the executive director may require additional levels of treatment for *Cryptosporidium* treatment as specified in §290.111 of this title (relating to Surface Water Treatment).

(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 wa-

ter 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. 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 Notification).

(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. Based on raw water monitoring results, the executive director may require additional levels of treatment for *Cryptosporidium* treatment as specified in §290.111 of this title.

(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. 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 [~~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 (MGD) 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 MGD [~~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 units [~~unit (NTU)~~] and the treatment plant meets with turbidity requirements of §290.111 of this title.

(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 MGD [~~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 gpm/sq ft [~~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 gpm/sq ft [~~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 gpm/sq ft [~~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 MGD [~~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 gpm/sq ft [~~gallons per square foot per minute~~]. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 3.0 gpm/sq ft [~~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 gpm/sq ft [~~gallons per square foot per minute~~]. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 6.5 gpm/sq ft [~~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 gpm/sq ft [~~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 MGD [~~million gallons per day~~] must be able to meet either the maximum daily demand or the minimum required 0.6 gpm [~~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 MGD [~~million gallons per day~~] or more must be able to meet either the maximum daily demand or the minimum required 0.6 gpm [~~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 gpm [~~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, as defined in §290.38 of this title (relating to Definitions), 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) 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 gpm/sq ft [~~gallons per minute per square foot~~]) and usually not more than 35 inches vertical rise per minute (21.8 gpm/sq ft [~~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) (No change.)

(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 accredited 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 accredited 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.

(17) Reverse osmosis and nanofiltration membrane systems not provided for microbiological quality control shall conform to the requirements of subsection (b)(9) of this section.

(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 and [~~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 free chlorine and chloramines will be considered on a case-by-case basis under the exception guidelines of §290.39(l) of this title [~~(relating to General Provisions)~~]. If water containing chloramines and water containing free chlorine are blended, then a case-by-case review under §290.39(l) of this title will be required.

(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 International Fire Code (IFC).

(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 IFC.

(7) Chloramine disinfection shall be performed in a manner which assures that the proper chlorine to ammonia (as nitrogen) ratio is achieved in order to maintain a monochloramine residual and limit nitrification.

(A) The order of chlorine and ammonia injection must be accomplished in a manner which allows inactivation of viruses and oxidation of cyanide.

(i) When chlorine is injected upstream of any other disinfectant, the ammonia injection point must be downstream of the chlorine injection point.

(ii) When chlorine and ammonia are added to distribution water that has a chloramine residual, ammonia should be added first.

(iii) When chlorine and ammonia are added to distribution water that has a free chlorine residual, chlorine should be added first.

(B) Mixing shall be provided to disperse chemicals.

(C) Sampling taps must be provided at locations that allow for chlorine and ammonia to be added to the water to form monochloramine as the primary chloramine species. These locations must be listed in the system's monitoring plan as described in §290.121 of this title (relating to Monitoring Plans). A sample tap must be provided before and after each chloramine chemical injection point.

(i) Before chlorine is added, the free ammonia (as nitrogen) residual must be able to be determined.

(ii) Before ammonia is added, the free chlorine residual must be able to be determined.

(iii) Sample taps must be provided at a point after mixing to be able to measure fully-formed monochloramine levels.

(D) When using chloramines, the feed and storage must be designed as described in subsection (f) of this section, regardless of water source.

(E) When using chloramines, the public water systems shall provide equipment for making at least the following determinations for purposes of complying with the requirements in §290.110 of this title:

(i) free ammonia (as nitrogen);

(ii) monochloramine;

(iii) total chlorine;

(iv) free chlorine; and

(v) nitrite and nitrate (both as nitrogen). The public water systems must either obtain equipment for measuring nitrite and nitrate or identify an accredited laboratory that can perform nitrite and nitrate analysis and can provide results to the public water systems within 48 hours of sample delivery.

(f) Water [~~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 from bulk storage facilities. 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 55 [~~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. Innovative/alternate treatment processes will be considered on an individual basis, in accordance with §290.39(l) of this title. 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 a pilot study protocol to be submitted for review and approval prior to conducting a pilot study to verify compliance with the requirements of §290.39(l) of this title and Subchapter F of this chapter. The executive director may require proof of a one-year manufacturer's performance warrantee or guarantee assuring that the plant will produce treated water which meets minimum state and federal standards for drinking water quality.

(1) Package-type treatment systems and their components shall be subject to all applicable design criteria in this section.

(2) Bag and cartridge filtration systems or modules installed or replaced after April 1, 2012, and used for microbiological treatment, can receive up to 3.0-log *Giardia* removal credit, up to 2.0-log *Cryptosporidium* removal credit for individual bag or cartridge filters, and up to 2.5-log *Cryptosporidium* removal credit for bag or cartridge filters operated in series only if the cartridges or bags meet the criteria in subparagraphs (A) - (C) of this paragraph.

(A) The filter system must treat the entire plant flow.

(B) To be eligible for this credit, systems must receive approval from the executive director based on the results of challenge testing that is conducted according to the criteria established by 40 Code of Federal Regulations (CFR) §141.719(a) and the executive director.

(i) A factor of safety equal to 1.0-log for individual bag or cartridge filters and 0.5-log for bag or cartridge filters in series must be applied to challenge testing results to determine removal credit.

(ii) Challenge testing must be performed on full-scale bag or cartridge filters, and the associated filter housing or pressure vessel, that are identical in material and construction to the filters and housings the system will use for removal of *Cryptosporidium* and *Giardia.*

(iii) Bag or cartridge filters must be challenge tested in the same configuration that the system will use, either as individual filters or as a series configuration of filters.

(iv) Systems may use results from challenge testing conducted prior to January 5, 2006, if prior testing was consistent with 40 CFR §141.719, submitted by the system's licensed professional engineer, and approved by the executive director.

(v) If a previously tested filter is modified in a manner that could change the removal efficiency of the filter product line, additional challenge testing to demonstrate the removal efficiency of the modified filter must be conducted and results submitted to the executive director for approval.

(C) Pilot studies must be conducted using filters that will meet the requirements of this section.

(3) Membrane filtration systems or modules installed or replaced after April 1, 2012, and used for microbiological treatment, can receive *Cryptosporidium* and *Giardia* removal credit for membrane filtration only if the systems or modules meet the criteria in subparagraphs (A) - (F) of this paragraph.

(A) The membrane module used by the system must undergo challenge testing to evaluate removal efficiency. Challenge testing must be conducted according to the criteria established by 40 CFR §141.719(b)(2) and the executive director.

(i) All membrane module challenge test protocols and results, the protocol for calculating the representative Log Removal Value [~~(LRV)~~] for each membrane module, the removal efficiency, calculated results of Membrane $LRV_{C\text{-}Test}$, [~~LRVC-Test,~~] and the non-destructive performance test with its Quality Control Release Value (QCRV) must be submitted to the executive director for review and approval prior to beginning a membrane filtration pilot study at a public water system.

(ii) Challenge testing must be conducted on either a full-scale membrane module identical in material and construction to the membrane modules to be used in the system's treatment facility, or a smaller-scale membrane module identical in material and similar in construction to the full-scale module if approved by the executive director.

(iii) Systems may use data from challenge testing conducted prior to January 5, 2006, if prior testing was consistent with 40 CFR §141.719, submitted by the system's licensed professional engineer, and approved by the executive director.

(iv) If a previously tested membrane is modified in a manner that could change the removal efficiency of the membrane product line or the applicability of the non-destructive performance test and associated QCRV, additional challenge testing to demonstrate the removal efficiency of the modified membrane and determine a new QCRV for the modified membrane must be conducted and results submitted to the executive director for approval.

(B) The membrane system must be designed to conduct and record the results of direct integrity testing in a manner that demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration system approved by the executive director and meets the requirements in clauses (i) and (ii) [~~(i)~~ - ~~(ii)~~] of this subparagraph.

(i) The design must provide for direct integrity testing of each membrane unit.

(ii) The design must provide direct integrity testing that has a resolution of 3 micrometers or less.

(iii) The design must provide direct integrity testing with sensitivity sufficient to verify the log removal credit approved by the executive director. Sensitivity is determined by the criteria in 40 CFR §141.719(b)(3)(iii).

(iv) The executive director may reduce the direct integrity testing requirements for membrane units.

(C) The membrane system must be designed to conduct and record continuous indirect integrity monitoring on each membrane unit. The turbidity of the water produced by each membrane unit must be measured using the Hach FilterTrak Method 10133. The executive director may approve the use of alternative technology to monitor the quality of the water produced by each membrane unit.

(D) The level of removal credit approved by the executive director shall not exceed the lower of:

(i) the removal efficiency demonstrated during challenge testing conducted under the conditions in subparagraph (A) of this paragraph, or

(ii) the maximum removal efficiency that can be verified through direct integrity testing used with the membrane filtration process under the conditions in subparagraph (B) of this paragraph.

(E) Pilot studies must be conducted using membrane modules that will meet the requirements of this section.

(F) Membrane systems must be designed so that membrane units' feed water, filtrate, backwash supply, waste and chemical cleaning piping shall have cross-connection protection to prevent chemicals from all chemical cleaning processes from contaminating other membrane units in other modes of operation. This may be accomplished by the installation of a double block and bleed valving arrangement, a removable spool system or other alternative methods approved by the executive director.

(4) Bag, cartridge or membrane filtration systems or modules installed or replaced before April 1, 2012, and used for microbiological treatment, can receive up to a 2.0-log removal credit for *Cryptosporidium* and up to a 3.0-log removal credit for *Giardia* based on site-specific [~~site specific~~] pilot study results, design, operation, and reporting requirements.

(5) Ultraviolet (UV) light reactors used for microbiological inactivation can receive *Cryptosporidium, Giardia* and virus inactivation credit if the reactors meet the criteria in subparagraphs (A) - (C) of this paragraph.

(A) UV light reactors can receive inactivation credit only if they are located after filtration.

(B) In lieu of a pilot study, the UV light reactors must undergo validation testing to determine the operating conditions under which a UV reactor delivers the required UV dose. Validation testing must be conducted according to the criteria established by 40 CFR §141.720(d)(2) and the executive director.

(i) The validation study must include the following factors: UV absorbance of the water; lamp fouling and aging; mea-

surement uncertainty of on-line sensors; UV dose distributions arising from the velocity profiles through the reactor; failure of UV lamps and other critical system components; inlet and outlet piping or channel configuration of the UV reactor; lamp and sensor locations; and other parameters determined by the executive director.

(ii) Validation testing must be conducted on a full-scale reactor that is essentially identical to the UV reactor(s) to be used by the system and using waters that are essentially identical in quality to the water to be treated by the UV reactor.

(C) The UV light reactor systems must be designed to monitor and record parameters to verify the UV reactors operation within the validated conditions approved by the executive director. The UV light reactor must be equipped with facilities to monitor and record UV intensity as measured by a UV sensor, flow rate, lamp status, and other parameters designated by the executive director.

(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 ANSI/NSF [~~American National Standards Institute/National Sanitation Foundation (ANSI/NSF)~~] Standard 60 for Drinking Water Treatment Chemicals [~~direct additives~~] and ANSI/NSF Standard 61 for Drinking Water System Components [~~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. If operating a reverse osmosis or nanofiltration membrane system, the manual must also include the system's configuration, baseline performance data, and any set point for membrane cleaning or replacement.

(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.

(n) Corrosion control treatment. Systems must install any corrosion control or source water treatment required by §290.117(f) and (g) of this title (relating to Regulation of Lead and Copper), respectively. Such treatment must be designed and installed consistent with the requirements of this subchapter. The requirements of 40 CFR §141.82(i) and §141.83(b)(7) relating to EPA involvement in treatment determination are adopted by reference.

§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 [~~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. The discharge opening shall be covered with a gravity-hinged and weighted cover, an elastomeric duckbill valve, or other approved device to prevent the entrance of insects and other nuisances. When the tank is not overflowing, the cover shall close automatically and fit tightly with no gap over 1/16 inch.

(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. Any storage facility containing chloraminated water must be designed to drain the tank efficiently if nitrification occurs.

(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 United States Environmental Protection Agency, [~~EPA,~~] NSF International [~~National Sanitation Foundation~~] (NSF), or United States Food and Drug Administration [~~(FDA)~~]. All newly installed coatings must conform to American National Standards Institute/NSF [~~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 nonpotable [~~non-potable~~] purpose. Where a used tank is proposed for use, a letter from the previous owner or owners must be submitted to the executive director [~~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 de-

vices 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/NSF International [~~American National Standards Institute/National Sanitation Foundation~~] (ANSI/NSF) Standard 61 and must be certified by an organization accredited by ANSI.

(2) All plastic pipes for use in public water systems must also bear the NSF International [~~National Sanitation Foundation~~] Seal of Approval (NSF-pw) and have an ASTM design pressure rating of at least 150 pounds per square inch (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 0.25% [~~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.

(3) The following are exempt from prohibitions on the use of lead pipes, solder, and flux:

(A) pipes, pipe fittings, plumbing fittings, or fixtures, including backflow preventers, that are used exclusively for nonpotable services such as manufacturing, industrial processing, irrigation, outdoor watering, or any other uses where the water is not anticipated to be used for human consumption; or

(B) toilets, bidets, urinals, fill valves, flush-o-meter valves, tub fillers, shower valves, service saddles, fire hydrants or water distribution main gate valves that are two inches in diameter or larger.

(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 less than 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) (No change.)

(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. The distribution system of public water systems that are also affected utilities must be designed to meet the requirements of §290.45(h) of this title (relating to Minimum Water System Capacity Requirements).

(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 [~~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 [~~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 [~~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 above a [~~an existing, non-pressure rated~~] wastewater main or lateral, the [~~one~~] segment of the waterline pipe shall be centered over and must be perpendicular to 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. When crossing an existing wastewater main or lateral and it [~~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, the wastewater main or lateral [~~it~~] shall be replaced for at least nine feet in both directions (18 feet total) with at least 150 psi pressure-rated [~~pressure rated~~] pipe embedded in cement stabilized sand (see clause (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

(I) The potable waterline shall be at least two feet above an existing, non-pressure rated wastewater main or lateral.

(II) The potable waterline shall be at least six inches above an existing, pressure-rated wastewater main or lateral.

(ii) Where a new potable waterline crosses a new, non-pressure rated wastewater main or lateral, the segment of the waterline pipe shall be centered over and shall be perpendicular to 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 (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end. The materials and method of installation shall conform to one of the following options: [~~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.~~]

(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 clause (ii) of this subparagraph 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. When a new waterline crosses under a wastewater main, the procedures in §217.53(d)(3)(B) of this title (relating to Pipe Design) must be followed. [~~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, pressure rated wastewater main or lateral, one segment of the waterline pipe shall be centered over and shall be perpendicular to 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 (v) of this subparagraph) for the total length of one pipe segment plus 12 inches beyond the joint on each end. [~~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 to 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 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. [~~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 manhole or lateral manhole or cleanout separation. The separation distance from a potable waterline to a wastewater main manhole 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(f) [~~§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 licensed 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(f) [~~§290.47(i)~~] of this title shall be tested upon installation by a licensed 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 licensed backflow prevention assembly tester.

(A) Backflow prevention assembly testers shall have completed an executive director-approved [~~executive director approved~~] course on cross-connection control and backflow prevention assembly testing, pass an examination administered by the executive director, and hold a current license 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 Texas Department of Insurance's State Fire Marshal's Office [~~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 AWWA's Recommended Practice for Backflow Prevention and Cross-Connection Control (AWWA Manual[~~,~~] M14). Public water systems shall require testers to include test gauge serial numbers on the Backflow Prevention Assembly Test and Maintenance Report (commission Form 20700), [~~"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 commission Form 20700 [~~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 milligrams per liter (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.

(j) If a structure is connected to a public water supply system and has a rainwater harvesting system, the structure must have appropriate cross-connection safeguards in accordance with subsection (h)(1) of this section.

(1) A privately owned rainwater harvesting system with a capacity of more than 500 gallons that is connected to a public water system for a back-up supply shall have a backflow prevention assembly or an air gap installed at the storage facility for the harvested rainwater to ensure physical separation between the rainwater harvesting system and the public water system.

(2) At each residence or facility where water from a rainwater harvesting system is used for potable purposes and there is a connection to a public water system, the public water system shall ensure that the rainwater harvesting system is installed and maintained by a master plumber or journeyman plumber licensed by the Texas State Board of Plumbing Examiners and who holds an endorsement issued by the Texas State Board of Plumbing Examiners as a Water Supply Protection Specialist.

(3) A person who intends to connect a rainwater harvesting system to a public water system must give written notice of that intention to the municipality or the owner or operator of the public water system in which the rainwater harvesting system is located.

(4) The public water system used as a back-up supply for the rainwater harvesting system may be connected only to the water storage tank and may not be connected to the plumbing of a structure.

§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 and do not include emergency fire flow capacities for systems required to meet requirements contained in §290.46(x) and (y) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(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 for a system that is unable to maintain a minimum pressure of 20 psi during fire fighting, line flushing, other unusual conditions, and systems that are required to provide fire flow as specified in §290.46(x) and (y) of this title.

(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. The production capacity of a reverse osmosis or nanofiltration membrane system shall be the quantity of permeate water after post-treatment that can be delivered to the distribution system. The amount available for customer use must consider:

(A) the quantity of feed water discharged to waste;

(B) the quantity of bypass water used for blending;

(C) the quantity of permeate water used for cleaning and maintenance; and

(D) any other loss of raw water or groundwater available for use due to other processes at the reverse osmosis or nanofiltration facility.

(7) If a public water system that is an affected utility fails to provide a minimum of 35 psi throughout the distribution system during emergency operations as soon as it is safe and practicable following the occurrence of a natural disaster, a revised emergency preparedness plan or justification regarding pressure drop shall be submitted for review and approval within 180 days of the date normal power is restored. Based on the review of the revised emergency preparedness plan, the executive director may require additional or alternative auxiliary emergency facilities.

(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 Standard). Although not required, compliance with NFPA 110 Standard 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 Standard. Although not required, compliance with NFPA 110 Standard 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.

(3) Any community public water system that is an affected utility shall have an emergency preparedness plan approved by the executive director and must meet the requirements for emergency operations contained in subsection (h) of this section. This includes any affected utility that provides 100 gallons of elevated storage capacity per connection.

(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 gallons per unit;

(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.

(3) A noncommunity public water system that is an affected utility shall meet the requirements of subsection (h) of this section.

(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) (No change.)

(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.

(4) A noncommunity public water system that is an affected utility shall meet the requirements of subsection (h) of this section.

(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, fire flow capacities, if required by §290.46(x) and (y) of this title 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.

(4) A wholesaler that is an affected utility must meet the requirements specified in subsection (h) of this section.

(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 and §290.46(x) and (y) of this title 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 and comply with the requirements found in §290.46(x) and (y) of this title. 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.

(iv) A public water system that is an affected utility must conduct the modeling requirements contained in clauses (i) - (iii) of this subparagraph using the requirements specified in subsection (h) of this section.

(B) Emergency power facilities must be maintained and provided with necessary appurtenances to assure immediate and dependable operation in case of normal power interruption. A public water system that is an affected utility must meet the requirements specified in subsection (h) of this section.

(i) The facilities must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 Standard 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 uninterrupted 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.

(h) Affected utilities. This subsection applies to all affected utilities and is in addition to any other requirements pertaining to emergency power requirements found in this subchapter.

(1) Affected utilities must provide one of the following options of sufficient power to meet the capacity requirements of paragraph (1) or (2) of this subsection, whichever is applicable, and in accordance with the affected utility's approved emergency preparedness plan:

(A) the maintenance of automatically starting auxiliary generators;

(B) the sharing of auxiliary generator capacity with one or more affected utilities;

(C) the negotiation of leasing and contracting agreements, including emergency mutual aid agreements with other retail public utilities, exempt utilities, or providers, or conveyors of potable or raw water service, if the agreements provide for coordination with the division of emergency management in the governor's office;

(D) the use of portable generators capable of serving multiple facilities equipped with quick-connect systems;

(E) the use of on-site electrical generation or electrical distributed generation facilities;

(F) hardening of the electric transmission and electric distribution system against damage from natural disasters during an extended power outage;

(G) for existing facilities, the maintenance of direct engine or right angle drives; or

(H) any other alternative determined by the executive director to be acceptable.

(2) Each affected utility that supplies, provides, or conveys surface water to wholesale customers shall install and maintain automatically starting auxiliary generators or distributive generation facilities for each raw water intake pump station, water treatment plant, pump station, and pressure facility necessary to provide water to its wholesale customers.

(3) Emergency generators used as part of an approved emergency preparedness plan must be maintained, tested, and operated in accordance with the manufacturer's specifications.

(4) An affected utility may adopt and is encouraged to enforce limitations on water use while the utility is providing emergency operations.

(5) As soon as safe and practicable following the occurrence of a natural disaster, an affected utility must operate in accordance with its approved emergency preparedness plan, which may include using elevated storage. An affected utility may meet the requirements of Texas Water Code, §13.1395, including having a currently approved emergency preparedness plan, in lieu of any other rules regarding elevated storage requirements, provided that, under normal operating conditions, the affected utility continues to meet the pressure requirements of §290.46(r) of this title and the production, treatment, total storage and service pump capacity requirements of this subchapter.

(6) An affected utility must maintain on-site, or make readily available during emergency operations, an amount of fuel necessary to operate any required emergency power equipment necessary to maintain emergency operations.

§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 including the required elements of a sanitary survey as defined in §290.38 [~~§290.38(71)~~] of this title (relating to Definitions). 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 an accredited laboratory. (A list of the accredited laboratories can be obtained by contacting the executive director.) The samples shall be submitted to the executive director in a manner prescribed by 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 milligrams per liter (mg/L); or

(B) a chloramine residual of 0.5 mg/L (measured as total chlorine) for those systems that distribute chloraminated water [~~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 or the Texas Hazard Communication Act, Texas Health and Safety Code, Chapter 502.

(C) 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.

(D) Reverse osmosis or nanofiltration membrane systems must have operators that have successfully completed at least one executive director-approved training course or event specific to the operations and maintenance of reverse osmosis or nanofiltration membrane treatment.

(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 Production [~~Unit~~] I course and the Surface Water Production [~~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 Production [~~Unit~~] I course and the Surface Water Production [~~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 Production [~~Unit~~] I course and the Surface Water Production [~~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 Production [~~Unit~~] I course and the Surface Water Production [~~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 and be available to the executive director upon request.

(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 and distributed:

(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 and distributed 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 distributed [~~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 distributed [~~treated~~] each week.[~~;~~]

(IV) Systems that serve 250 or more connections or serve 750 or more people and also add chemicals or provide pathogen or chemical removal shall maintain a record of the amount of water treated each day.

(V) Systems that serve fewer than 250 connections, serve fewer than 750 people, use only groundwater or purchase treated water, and also add chemicals or provide pathogen or chemical removal 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. For systems using reverse osmosis or nanofiltration, maintain records of each clean-in-place process including the date, duration, and procedure used for each event; 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 calibration records for laboratory equipment, flow meters, rate-of-flow controllers, on-line turbidimeters, and on-line disinfectant residual analyzers;

(v) the records of backflow prevention device programs;

(vi) the raw surface water monitoring results and source water monitoring plans required by §290.111 of this title (relating to Surface Water Treatment) must be retained for three years after bin classification required by §290.111 of this title;

(vii) notification to the executive director that a system will provide 5.5-log *Cryptosporidium* treatment in lieu of raw surface water monitoring; [~~and~~]

(viii) except for those specified in subparagraphs (C)(iv) and (E)(i) of this paragraph, the results of all surface water treatment monitoring that are used to demonstrate log inactivation or removal;[~~.~~]

(ix) free and total chlorine, monochloramine, ammonia, nitrite, and nitrate monitoring results if chloramines are used in the water system; and

(x) the records of treatment effectiveness monitoring for systems using reverse osmosis or nanofiltration membranes. Treatment effectiveness monitoring includes the parameters for determining when maintenance is required. Examples of parameters to be monitored include conductivity (or total dissolved solids), transmembrane pressure differential, flow, flux, and water temperature. At a minimum, systems using reverse osmosis or nanofiltration membranes must monitor the conductivity (or total dissolved solids) of the feed and permeate water once per day.

(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;

(iii) the Recycling Practices Report form and other records pertaining to site-specific recycle practices for treatment plants that recycle; and

(iv) the turbidity monitoring results and exception reports for individual filters as required by §290.111 of this title.

(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;

(iii) the results of inspections (as required by subsection (m)(2) of this section) for all pressure filters;

(iv) documentation of compliance with state approved corrective action plan and schedules required to be completed by groundwater systems that must take corrective actions;

(v) documentation of the reason for an invalidated fecal indicator source sample and documentation of a total coliform-positive sample collected at a location with conditions that could cause such positive samples in a distribution system;

(vi) notification to wholesale system(s) of a distribution coliform positive sample for consecutive systems using groundwater;

(vii) Consumer Confidence Report compliance documentation;

(viii) records of the lowest daily residual disinfectant concentration and records of the date and duration of any failure to maintain the executive director-approved minimum specified disinfectant residual for a period of more than four hours for groundwater systems providing 4-log treatment; and

(ix) records of executive director-specified compliance requirements for membrane filtration, records of parameters specified by the executive director for approved alternative treatment and records of the date and duration of any failure to meet the membrane operating, membrane integrity, or alternative treatment operating requirements for more than four hours for groundwater systems. Membrane filtration can only be used if it is approved by the executive director and if it can be properly validated.

(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;

(iv) copies of the Customer Service Inspection reports required by subsection (j) of this section;

(v) copy of any Initial Distribution System Evaluation (IDSE) plan, report, approval letters, and other compliance documentation required by §290.115 of this title (relating to Stage 2 Disinfection Byproducts (TTHM and HAA5));

(vi) state notification of any modifications to an IDSE report;

(vii) copy of any 40/30 certification required by §290.115 of this title;

(viii) documentation of corrective actions taken by groundwater systems in accordance with §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques);

(ix) any monitoring plans required by §290.121(b) of this title (relating to Monitoring Plans); and

(x) records of the executive director-approved minimum specified disinfectant residual for groundwater systems providing 4-log treatment, including wholesale, consecutive, and mixed systems, regulated under §290.116(c) of this title.

(F) A public water system shall maintain records relating to lead and copper requirements under §290.117 of this title (relating to Regulation of Lead and Copper) for no less than 12 years. Any system subject to the requirements of §290.117 of this title shall retain on its premises original records of all sampling data and analyses, reports, surveys, letters, evaluations, schedules, executive determinations, and any other information required by the executive director under §290.117 of this title. These records include, but are not limited to, the following items: tap water monitoring results including the location of each site and date of collection; certification of the volume and validity of first-draw-tap sample criteria via a copy of the laboratory analysis request form; where residents collected the sample; certification that the water system informed the resident of proper sampling procedures; the analytical results for lead and copper concentrations at each tap sample site; and designation of any substitute site not used in previous monitoring periods.

(G) 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 licensed water works operator.

(5) All public water systems that are affected utilities must maintain the following records for as long as they are applicable to the system:

(A) An emergency preparedness plan approved by the executive director and a copy of the approval letter.

(B) All required operating and maintenance records for auxiliary power equipment, including periodic testing of the auxiliary power equipment under load and any associated automatic switch over equipment.

(C) Copies of the manufacturer's specifications for all generators that are part of the approved emergency preparedness plan.

(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 American Water Works Association (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 0.25% [~~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 commission Form 20699 [~~§290.47(d) of this title~~] 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 (TSBPE).

(B) Customer service inspectors who have completed a commission-approved course, passed an examination administered by the executive director, and hold current professional license 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(f) [~~§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 General Applicability).

(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 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.

(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.

(7) Reverse osmosis or nanofiltration membrane systems shall be cleaned, or replaced, in accordance with the allowable operating conditions of the manufacturer and shall be based on one or more of the following: increased salt passage, increased or decreased pressure differential, and/or change in normalized permeate flow.

(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 nephelometric turbidity unit (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(d) [~~§290.47(g)~~] of this title).

(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 pounds per square inch (psi)), water outages, microbiological samples found to contain *Escherichia 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(c) [~~§290.47(e)~~] of this title. 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(e) [~~§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. As soon as safe and practicable following the occurrence of a natural disaster, a public water system that is an affected utility shall maintain a minimum of 35 psi throughout the distribution system during an extended power outage.

(s) Testing equipment. Accurate testing equipment or some other means of monitoring the effectiveness of any chemical treatment or pathogen inactivation or removal processes must be used by the system.

(1) Flow-measuring devices and rate-of-flow controllers that are required by §290.42(b) and (d) [~~§290.42(d)~~] of this title (relating to Water Treatment) shall be calibrated at least once every 12 months. Well meters required by §290.41(c)(3)(N) of this title (relating to Water Sources) 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) Chemical disinfectant residual analyzers shall be properly calibrated.

(i) The accuracy of manual disinfectant residual analyzers shall be verified at least once every 90 days using chlorine solutions of known concentrations.

(ii) The accuracy of continuous disinfectant residual analyzers shall be checked at least once every seven days with a chlorine solution of known concentration or by comparing the results from the on-line analyzer with the result of approved benchtop method in accordance with §290.119 of this title (relating to Analytical Procedures).

(iii) If a disinfectant residual analyzer produces a result which is not within 15% of the expected value, the cause of the discrepancy must be determined and corrected and, if necessary, the instrument must be recalibrated.

(D) Analyzers used to determine the effectiveness of chloramination in §290.110(c)(5) of this title shall be properly verified in accordance with the manufacturer's recommendations every 90 days. These analyzers include monochloramine, ammonia, nitrite, and nitrate equipment used by the public water system.

(E) [~~(D)~~] Ultraviolet (UV) light disinfection analyzers shall be properly calibrated.

(i) The accuracy of duty UV sensors shall be verified with a reference UV sensor monthly, according to the UV sensor manufacturer.

(ii) The reference UV sensor shall be calibrated by the UV sensor manufacturer on a yearly basis, or sooner if needed.

(iii) If used, the UV Transmittance (UVT) [~~Ultraviolet Transmittance (UVT)~~] analyzer shall be calibrated weekly according to the UVT analyzer manufacturer specifications.

(F) [~~(E)~~] Systems must verify the performance of direct integrity testing equipment in a manner and schedule approved by the executive director.

(G) Conductivity (or total dissolved solids) monitors and pressure instruments used for reverse osmosis and nanofiltration membrane systems shall be calibrated at least once every 12 months.

(H) Any temperature monitoring devises used for reverse osmosis and nanofiltration shall be verified and calibrated in accordance with the manufacturer's specifications.

(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.

(w) Security. All systems shall maintain internal procedures to notify the executive director by a toll-free reporting phone number immediately of the following events, if the event may negatively impact the production or delivery of safe and adequate drinking water:

(1) an unusual or unexplained unauthorized entry at property of the public water system;

(2) an act of terrorism against the public water system;

(3) an unauthorized attempt to probe for or gain access to proprietary information that supports the key activities of the public water system;

(4) a theft of property that supports the key activities of the public water system; or

(5) a natural disaster, accident, or act that results in damage to the public water system.

(x) Public safety standards. This subsection only applies to a municipality with a population of 1,000,000 or more, with a public utility within its corporate limits; a municipality with a population of more than 36,000 and less than 41,000 located in two counties, one of which is a county with a population of more than 1.8 million; a municipality, including any industrial district within the municipality or its extraterritorial jurisdiction (ETJ), with a population of more than 7,000 and less than 30,000 located in a county with a population of more than 155,000 and less than 180,000; or a municipality, including any industrial district within the municipality or its ETJ, with a population of more than 11,000 and less than 18,000 located in a county with a population of more than 125,000 and less than 230,000.

(1) In this subsection:

(A) "Regulatory authority" means, in accordance with the context in which it is found, either the commission or the governing body of a municipality.

(B) "Public utility" means any person, corporation, cooperative corporation, affected county, or any combination of these persons or entities, other than a municipal corporation, water supply or sewer service corporation, or a political subdivision of the state, except an affected county, or their lessees, trustees, and receivers, owning or operating for compensation in this state equipment or facilities for the transmission, storage, distribution, sale, or provision of potable water to the public or for the resale of potable water to the public for any use or for the collection, transportation, treatment, or disposal of sewage or other operation of a sewage disposal service for the public, other than equipment or facilities owned and operated for either purpose by a municipality or other political subdivision of this state or a water supply or sewer service corporation, but does not include any person or corporation not otherwise a public utility that furnishes the services or commodity only to itself or its employees or tenants as an incident of that employee service or tenancy when that service or commodity is not resold to or used by others.

(C) "Residential area" means:

(i) an area designated as a residential zoning district by a governing ordinance or code or an area in which the principal land use is for private residences;

(ii) a subdivision for which a plat is recorded in the real property records of the county and that contains or is bounded by public streets or parts of public streets that are abutted by residential property occupying at least 75% of the front footage along the block face; or

(iii) a subdivision a majority of the lots of which are subject to deed restrictions limiting the lots to residential use.

(D) "Industrial district" has the meaning assigned by Texas Local Government Code, §42.044, and includes an area that is designated by the governing body of a municipality as a zoned industrial area.

(2) When the regulatory authority is a municipality, it shall by ordinance adopt standards for installing fire hydrants in residential areas in the municipality. These standards must, at a minimum, follow current AWWA standards pertaining to fire hydrants and the requirements of §290.44(e)(6) of this title.

(3) When the regulatory authority is a municipality, it shall by ordinance adopt standards for maintaining sufficient water pressure for service to fire hydrants adequate to protect public safety in residential areas in the municipality. The standards specified in paragraph (4) of this subsection are the minimum acceptable standards.

(4) A public utility shall deliver water to any fire hydrant connected to the public utility's water system located in a residential area so that the flow at the fire hydrant is at least 250 gallons per minute for a minimum period of two hours while maintaining a minimum pressure of 20 psi throughout the distribution system during emergencies such as fire fighting. That flow is in addition to the public utility's maximum daily demand for purposes other than fire fighting.

(5) When the regulatory authority is a municipality, it shall adopt the standards required by this subsection within one year of the effective date of this subsection or within one year of the date this subsection first applies to the municipality, whichever occurs later.

(6) A public utility shall comply with the standards established by a municipality under both paragraphs (2) and (3) of this subsection within one year of the date the standards first apply to the public utility. If a municipality has failed to comply with the deadline required by paragraph (5) of this subsection, then a public utility shall comply with the standards specified in paragraphs (2) and (4) of this subsection within two years of the effective date of this subsection or within one year of the date this subsection first applies to the public utility, whichever occurs later.

(y) Fire hydrant flow standards [~~Hydrant Flow Standards~~].

(1) In this subsection [~~section~~]:

(A) "Municipal utility" means a retail public utility, as defined by Texas Water Code (TWC), §13.002, that is owned by a municipality.

(B) "Residential area" means an area used principally for private residences that is improved with at least 100 single-family homes and has an average density of one home per half acre.

(C) "Utility" includes a "public utility" and "water supply or sewer service corporation" as defined by TWC, §13.002.

(2) The governing body of a municipality by ordinance may adopt standards set by the executive director requiring a utility to maintain a minimum sufficient water flow and pressure to fire hydrants in a residential area located in the municipality or the municipality's ETJ. The municipality must submit a signed copy of the ordinance to the executive director within 60 days of the adoption of an ordinance by its governing body.

(3) In addition to a utility's maximum daily demand, the utility must provide, for purposes of emergency fire suppression:

(A) a minimum sufficient water flow of at least 250 gallons per minute for at least two hours; and

(B) a minimum sufficient water pressure of at least 20 psi.

(4) If a municipality adopts standards for a minimum sufficient water flow and pressure to fire hydrants, the municipality must require a utility to maintain at least the minimum sufficient water flow and pressure described by paragraph (3) of this subsection in fire hydrants in a residential area located within the municipality or the municipality's ETJ. If the municipality adopts a fire flow standard exceeding the minimum standards set in paragraph (3) of this subsection, the standard adopted by the municipality must be based on:

(A) the density of connections;

(B) service demands; and

(C) other relevant factors.

(5) If the municipality owns a municipal utility, it may not require another utility located in the municipality or the municipality's ETJ to provide water flow and pressure in a fire hydrant greater than that provided by the municipal utility as determined by the executive director.

(6) If the municipality does not own a municipal utility, it may not require a utility located in the municipality or the municipality's ETJ to provide a minimum sufficient water flow and pressure greater than the standard established by paragraph (3) of this subsection.

(7) An ordinance under paragraph (2) of this subsection may not require a utility to build, retrofit, or improve infrastructure in existence at the time the ordinance is adopted.

(8) A municipality with a population of less than 1.9 million that adopts standards under paragraph (2) of this subsection or that seeks to use a utility's water for emergency fire suppression shall enter into a written memorandum of understanding with the utility.

(A) The memorandum of understanding must provide for:

(i) the necessary testing of fire hydrants; and

(ii) other relevant issues pertaining to the use of the water and maintenance of the fire hydrants to ensure compliance with this subsection.

(B) The municipality must submit a signed copy of the memorandum of understanding to the executive director within 60 days of the execution of the memorandum of understanding between its governing body and the utility.

(9) A municipality may notify the executive director of a utility's failure to comply with a standard adopted under paragraph (3) of this subsection.

(10) On receiving the notice described by paragraph (9) of this subsection, the executive director shall require a utility in violation of a standard adopted under this subsection to comply within a reasonable time established by the executive director.

(z) Nitrification Action Plan (NAP). Any water system using chloramines must create a NAP to prevent nitrification. The system must create a written NAP that:

(1) contains the system-specific plan for monitoring free ammonia, monochloramine, total chlorine, nitrite and nitrate levels;

(2) contains system-specific action levels of the above monitored chemicals where action must be taken;

(3) contains specific corrective actions to be taken if the action levels are exceeded; and

(4) is maintained as part of the system's monitoring plan in §290.121 of this title.

§290.47. Appendices.

(a) Appendix A. Recognition as a Superior or Approved Public Water System.
Figure: 30 TAC §290.47(a) (No change.)

(b) Appendix B. Sample Retail Service Agreement.
Figure: 30 TAC §290.47(b)
[~~Figure: 30 TAC §290.47(b)~~]

(c) Appendix C. Boil Water Notification. [~~Sample Sanitary Control Easement Document for a Public Water Well.~~]
Figure: 30 TAC §290.47(c)
[~~Figure: 30 TAC §290.47(c)~~]

(d) Appendix D. Operator and/or Employment Notice. [~~Customer Service Inspection Certification.~~]
Figure: 30 TAC §290.47(d)
[~~Figure: 30 TAC §290.47(d)~~]

(e) Appendix E. Special Precautions. [~~Boil Water Notification.~~]
Figure: 30 TAC §290.47(e)
[~~Figure: 30 TAC §290.47(e)~~]

(f) Appendix F. Assessment of Hazards and Selection of Assemblies. [~~Sample Backflow Prevention Assembly Test and Maintenance Report.~~]
Figure: 30 TAC §290.47(f)
[~~Figure: 30 TAC §290.47(f)~~]

(g) Appendix G. Emergency Preparedness Plan Template. [~~Operator and/or Employment Notice.~~]
Figure: 30 TAC §290.47(g)
[~~Figure: 30 TAC §290.47(g)~~]

(h) Appendix H. Sample Language for Notification Upon Changing from Free Chlorine to Chloramines. [~~Special Precautions.~~]
Figure: 30 TAC §290.47(h)
[~~Figure: 30 TAC §290.47(h)~~]

~~[(i) Appendix I. Assessment of Hazard and Selection of Assemblies.]~~
~~[Figure: 30 TAC §290.47(i)]~~

~~[(j) Appendix J. Emergency Preparedness Plan Template.]~~
~~[Figure: 30 TAC §290.47(j)]~~

The agency certifies that legal counsel has reviewed the proposal and found it to be within the state agency's legal authority to adopt.

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Director, Environmental Law Division
Texas Commission on Environmental Quality
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For further information, please call: (512) 239-2613

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SUBCHAPTER F. DRINKING WATER STANDARDS GOVERNING DRINKING WATER QUALITY AND REPORTING REQUIREMENTS FOR PUBLIC WATER SYSTEMS

30 TAC §§290.110, 290.111, 290.116

Statutory Authority

The amendments are proposed under Texas Water Code (TWC), §5.102, which establishes the commission's general authority necessary to carry out its jurisdiction; TWC, §5.103, which establishes the commission's general authority to adopt rules; TWC, §5.105, which establishes the commission's authority to set policy by rule; Texas Health and Safety Code (THSC), §341.031, which allows the commission to adopt rules to comply with standards established by the United States Environmental Protection Agency pursuant to the federal Safe Drinking Water Act, 42 United States Code, §§300f to 300j-6; and THSC, §341.0315, which requires public water systems to comply with commission rules adopted to ensure the supply of safe drinking water.

The proposed amendments implement TWC, §§5.102, 5.103, and 5.105, and THSC, §341.031 and §341.0315.

§290.110. Disinfectant Residuals.

(a) Applicability. All public water systems shall properly disinfect water before it is distributed to any customer and shall maintain acceptable disinfectant residuals within the distribution system.

(b) Minimum and maximum acceptable disinfectant concentrations. Public water systems shall provide the minimum levels of disinfectants in accordance with the provisions of this section. Public water systems shall not exceed the maximum residual disinfectant levels (MRDLs) provided in this section.

(1) The disinfection process used by public water systems must ensure that water has been adequately disinfected before it enters the distribution system.

(A) The disinfection process used by public water systems treating surface water sources or groundwater sources that are under the direct influence of surface water must meet the requirements of §290.111(d) of this title (relating to Surface Water Treatment).

(B) The executive director may require the disinfection process used by public water systems treating groundwater sources that are not under the direct influence of surface water to meet the requirements of §290.116 of this title (relating to Groundwater Corrective Actions and Treatment Techniques).

(C) The disinfection process at other types of treatment plants shall provide the level of disinfection required by the executive director.

(2) The residual disinfectant concentration in the water entering the distribution system shall be at least 0.2 milligram per liter (mg/L) free chlorine or 0.5 mg/L chloramine (measured as total chlorine).

(3) The chlorine dioxide residual of the water entering the distribution system shall not exceed an MRDL of 0.8 mg/L.

(4) The residual disinfectant concentration in the water within the distribution system shall be at least 0.2 mg/L free chlorine or 0.5 mg/L chloramine (measured as total chlorine).

(5) The running annual average of the free chlorine or chloramine residual (measured as total chlorine) of the water within the distribution system shall not exceed an MRDL of 4.0 mg/L.

(c) Monitoring requirements. Public water systems shall monitor the performance of the disinfection facilities to ensure that appro-

priate disinfectant levels are maintained. All monitoring conducted pursuant to the requirements of this section must be conducted at sites designated in the public water system's monitoring plan.

(1) Entry point compliance monitoring for surface water and groundwater under the direct influence of surface water. Public water systems that treat surface water or groundwater under the direct influence of surface water must verify that they meet the disinfection requirements of subsection (b)(2) of this section.

(A) Public water systems that treat surface water or groundwater under the direct influence of surface water and sell treated water on a wholesale basis or serve more than 3,300 people must continuously monitor and record the disinfectant residual of the water at each entry point [~~entering the distribution system~~]. If there is a failure in the continuous monitoring equipment, grab sampling every four hours may be conducted in lieu of continuous monitoring, but for no more than five working days following the failure of the equipment.

(B) Public water systems that treat surface water or groundwater under the direct influence of surface water, serve 3,300 or fewer people and do not sell treated water on a wholesale basis must monitor and record the disinfectant residual of the water at each entry point [~~entering the distribution system~~] with either continuous monitors or grab samples.

(i) If a system uses grab samples, the samples must be collected on an ongoing basis at the frequency prescribed in the following table.
Figure: 30 TAC §290.110(c)(1)(B)(i) (No change.)

(ii) The grab samples cannot be taken at the same time and the sampling interval is subject to the executive director's review and approval.

(iii) Treatment plants that use grab samples and fail to detect an appropriate disinfectant residual must repeat the test at four-hour or shorter intervals until compliance has been reestablished.

(C) Continuous monitors must record the disinfectant residual of the water every 30 minutes.

(2) Entry point compliance monitoring for groundwater and purchased water. Public water systems that treat groundwater or that purchase and resell treated water must, upon the request of the executive director, verify that they meet the disinfection requirements of subsection (b)(2) of this section.

(A) A system that uses free chlorine must measure free chlorine.

(B) A system that has a chloramine residual must measure total chlorine.

(3) Chlorine dioxide compliance monitoring. Each treatment plant using chlorine dioxide must monitor and record the chlorine dioxide residual of the water entering the distribution system at least once each day. If the chlorine dioxide residual in the water entering the distribution system exceeds the MRDL contained in subsection (b)(3) of this section, the treatment plant must conduct additional tests.

(A) If the public water system does not have additional chlorination facilities in the distribution system, it must conduct three additional tests at the service connection nearest the treatment plant where an elevated chlorine dioxide residual was detected. The first additional test must be conducted within two hours after detecting an elevated chlorine dioxide residual at the entry point to the distribution system. The two subsequent tests must be conducted at six-hour to eight-hour intervals thereafter.

(B) If the public water system has additional chlorination facilities in the distribution system, it must conduct an additional test at the service connection nearest the treatment plant where an elevated chlorine dioxide residual was detected, an additional test at the first service connection after the point where the water is rechlorinated, and an additional test at a location in the far reaches of the distribution system. The additional test at the location nearest the treatment plant must be conducted within two hours after detecting an elevated chlorine dioxide residual at the entry point to the distribution system. The two other tests must be conducted at six-hour to eight-hour intervals thereafter.

(4) Distribution system compliance monitoring. Public water systems shall monitor the disinfectant residual at various locations throughout the distribution system.

(A) Public water systems that use groundwater or purchased water sources only and serve fewer than 250 connections and fewer than 750 people daily, must monitor the disinfectant residual at representative locations in the distribution system at least once every seven days.

(B) Public water systems that serve at least 250 connections or at least 750 people daily, and use only groundwater or purchased water sources must monitor the disinfectant residual at representative locations in the distribution system at least once per day.

(C) Public water systems using surface water sources or groundwater under the direct influence of surface water must monitor the disinfectant residual tests at least once per day at representative locations in the distribution system.

(D) All public water systems must monitor the residual disinfectant concentration each time that a bacteriological sample is collected, as specified in §290.109 of this title (relating to Microbial Contaminants).

(E) All public water systems with a chloramine residual must monitor the total chlorine residual downstream of any chlorine and ammonia injection points, in conjunction with the chloramine effectiveness sampling in paragraph (5)(C) of this subsection, in the distribution system weekly and whenever the chemical dose is changed.

(5) Chloramine-effectiveness sampling. Public water systems with a chloramine residual shall monitor to ensure that monochloramine is the prevailing chloramine species and that nitrification is controlled. Sample sites and procedures used for chloramine effectiveness sampling must be documented in the system's nitrification action plan (NAP) required by §290.46(z) of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems). Sample results determined by monitoring required under this paragraph will not be used to determine compliance with the maximum contaminant levels, MRDLs, action levels, or treatment techniques of this subchapter.

(A) Source water. Public water systems must monitor source water (including raw and treated purchased water) to establish baseline ammonia, nitrite, and nitrate levels (all as nitrogen) at least once to determine the availability of ammonia for chloramine formation and to provide a reference for downstream nitrite and nitrate levels that may indicate nitrification. If any source has more than 0.5 mg/L free ammonia (as nitrogen) in the initial sample, then raw water ammonia (as nitrogen) shall be monitored monthly for six months to determine the baseline free ammonia level.

(B) Water entering distribution system. Public water systems that have chloramines present shall perform sampling to represent the water entering the distribution system.

(i) Total chlorine, free ammonia (as nitrogen) and monochloramine shall be monitored weekly at all entry points to the distribution system or at a location before the first customer.

(ii) Nitrite and nitrate (as nitrogen) levels at the first customer shall be monitored monthly for at least six months to determine baseline nitrite and nitrate levels in the water prior to consumption. Nitrite and nitrate samples collected at the first customer will not be used for compliance with §290.106 of this title (relating to Inorganic Contaminants).

(iii) Nitrite and nitrate (as nitrogen) shall be monitored quarterly at the first customer after establishing the baseline. Nitrite and nitrate samples collected at entry points for compliance with §290.106 of this title may be used for these quarterly samples.

(C) Treatment sampling. Public water systems that inject chlorine at any location to form chloramines or to convert from chloramines to free chlorine must monitor to ensure that chemical addition is effective and the proper chlorine to ammonia (as nitrogen) ratio is achieved. Samples must be collected and analyzed weekly and whenever the chemical dosage is changed.

(i) Sampling must be performed upstream of the chlorine or ammonia chemical injection point, whichever is furthest upstream.

(ii) Sampling must be performed downstream of all the chlorine and ammonia chemical injection points.

(iii) The residual of the chemical injected upstream should be determined to properly dose the downstream chemical.

(iv) The total chlorine, ammonia (as nitrogen), and monochloramine residuals must all be monitored if the treatment occurs before the entry point.

(v) The ammonia (as nitrogen) and monochloramine residuals must all be monitored if the treatment occurs in the distribution system. The monitoring must occur at the same time as a compliance sampling required under paragraph (4)(E) of this subsection.

(D) Distribution system. Public water systems that distribute water and have a chloramine residual must ensure the efficacy of disinfection within the distribution system.

(i) Monochloramine and free ammonia (as nitrogen) must be monitored weekly at the same time as a compliance sample required under paragraph (4) of this subsection.

(ii) Nitrite and nitrate (as nitrogen) must be monitored quarterly.

(d) Analytical requirements. All monitoring required by paragraphs (1) and (2) of this subsection [~~this section~~] must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures). All monitoring for chloramine effectiveness required by paragraphs (3) - (6) of this subsection must be analyzed to the accuracy provided therein.

(1) The free chlorine or chloramine residual (measured as total chlorine) must be measured to a minimum accuracy of plus or minus 0.1 mg/L. Color comparators may be used for distribution system samples only. When used, a color comparator must have current reagents, an unfaded and clear color comparator, a sample cell that is not discolored or stained, and must be properly stored in a cool, dark location where it is not subjected to conditions that would result in staining. The color comparator must be used in the correct range. If a sample reads at the top of the range, the sample must be diluted with chlorine-free water, then a reading taken and the resulting residual calculated. [~~Samples tested using a colorimetric method must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator.~~]

(2) The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(A) the amperometric titration method using a titrator with platinum-platinum electrodes;

(B) the spectrophotometric Lissamine Green B method; or

(C) with the written permission of the executive director, the DPD-glycine method using a colorimeter or spectrophotometer.

(3) The free ammonia level must be measured to a minimum accuracy of plus or minus 0.1 mg/L.

(4) The monochloramine level must be measured to a minimum accuracy of plus or minus 0.15 mg/L using a procedure that has the ability to distinguish between monochloramine and other forms of chloramine.

(5) The nitrate (as nitrogen) level must be measured to a minimum accuracy of plus or minus 0.5 mg/L.

(6) the nitrite (as nitrogen) level must be measured to a minimum accuracy of plus or minus 0.05 mg/L.

(e) Reporting requirements. Any owner or operator of a public water system subject to the provisions of this section is required to report to the executive director the results of any test, measurement, or analysis required by this section.

(1) Systems exceeding the MRDL for chlorine dioxide in subsection (b)(3) of this section must report the exceedance to the executive director within 24 hours of the event.

(2) Public water systems that use surface water sources or groundwater sources under the direct influence of surface water must submit a Surface Water Monthly Operating Report (commission Form 0102C), a Surface Water Monthly Operating Report (commission Form 0102D) for alternative technologies, or a Surface Water Monthly Operational Report for Plants That Do Not Have a Turbidimeter on Each Filter [~~Operating Report for 2-Filter Plants~~] (commission Form 0103) each month.

(3) Public water systems that use chlorine dioxide must submit a Chlorine Dioxide Monthly Operating Report (commission Form 0690) each month.

(4) Public water systems that use purchased water or groundwater sources only must complete a Disinfection Level Quarterly Operating Report (commission Form 20067) [~~(DLQOR, commission Form 20067)~~] each quarter.

(A) Community and nontransient noncommunity public water systems must submit the Disinfection Level Quarterly Operating Report each quarter, by the tenth day of the month following the end of the quarter.

(B) Transient noncommunity public water systems must retain the Disinfection Level Quarterly Operating Reports and must provide a copy if requested by the executive director.

(5) Systems that use chloramines must retain their NAP required under §290.46(z) of this title and must provide a copy upon request by the executive director.

(6) [~~(5)~~] Monthly and quarterly reports required by this section must be submitted to the Water Supply Division, MC 155, Texas

Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(f) Compliance determinations. Compliance with the requirements of this section shall be determined using the following criteria.

(1) All samples used for compliance must be obtained at sampling sites designated in the monitoring plan.

(A) All samples collected at sites designated in the monitoring plan as microbiological and disinfectant residual monitoring sites shall be included in the compliance determination calculations.

(B) Samples collected at sites in the distribution system not designated in the monitoring plan shall not be included in the compliance determination calculations.

(2) A public water system that fails to conduct the monitoring tests required by this section commits a monitoring violation.

(3) A public water system that fails to report the results of the monitoring tests required by this section commits a reporting violation.

(4) A public water system that uses surface water sources or groundwater sources under the direct influence of surface water and fails to meet the requirements of subsection (b)(2) of this section for a period longer than four consecutive hours commits a nonacute treatment technique violation. A public water system that fails to conduct the additional testing required by subsection (c)(1)(B)(iii) of this section also commits a nonacute treatment technique violation.

(5) A public water system that uses chlorine dioxide and exceeds the level specified in subsection (b)(3) of this section violates the MRDL for chlorine dioxide.

(A) If a public water system violates the MRDL for chlorine dioxide and any of the three additional distribution samples exceeds the MRDL, the system commits an acute MRDL violation for chlorine dioxide.

(B) If a public water system violates the MRDL for chlorine dioxide and fails to collect each of the three additional distribution samples required by subsection (c)(3) of this section, the system commits an acute MRDL violation for chlorine dioxide.

(C) If a public water system violates the MRDL for chlorine dioxide but none of the three additional distribution samples violates the MRDL, the system commits a nonacute MRDL violation for chlorine dioxide.

(6) A public water system that fails to meet the requirements of subsection (b)(4) of this section, in more than 5.0% of the samples collected each month, for any two consecutive months, commits a nonacute treatment technique violation. Specifically, the system commits a nonacute violation if the value "V" in the following formula exceeds 5.0% per month for any two consecutive months:
Figure: 30 TAC §290.110(f)(6)
[~~Figure: 30 TAC §290.110(f)(6)~~]

(7) A public water system violates the MRDL for chlorine or chloramine (measured as total chlorine) if, at the end of any quarter, the running annual average of monthly averages exceeds the level specified in subsection (b)(5) of this section.

(8) Notwithstanding the MRDLs listed in subsection (b) of this section, operators shall increase residual disinfectant levels of chlorine or chloramines, measured as total chlorine, (but not chlorine dioxide) in the distribution system to a level and for a time necessary to protect public health to address specific microbiological contamination problems caused by circumstances such as distribution line breaks, storm runoff events, source water contamination, or cross-connections.

(9) If a public water system's failure to monitor makes it impossible to determine compliance with the MRDL for chlorine or chloramines (measured as total chlorine), the system commits an MRDL violation for the entire period covered by the annual average.

(10) A public water system that fails to issue a required public notice or certify that it has issued that notice commits a violation.

(g) Public notification requirements. 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 fails to meet the requirements of subsection (b)(3) of this section, shall notify the executive director within 24 hours of the event and the customers in accordance with the requirements of §290.122 of this title (relating to Public Notification).

(A) A public water system that has an acute violation of the MRDL for chlorine dioxide must notify the customers in accordance with the requirements of §290.122(a) of this title.

(B) A public water system that has a non-acute violation of the MRDL for chlorine dioxide must notify the customers in accordance with the requirements of §290.122(b) of this title.

(2) A public water system that uses surface water sources or groundwater sources under the direct influence of surface water and fails to meet the minimum disinfection requirements of subsection (b)(2) of this section shall notify the executive director by the end of the next business day and the customers in accordance with the requirements of §290.122(b) of this title.

(3) A public water system that fails to meet the requirements of subsection (b)(4) of this section in more than 5.0% of the samples collected each month for two consecutive months must notify its customers.

(A) A public water system that uses surface water or groundwater under the direct influence of surface water must notify its customers in accordance with the requirements of §290.122(b) of this title.

(B) A public water system that uses only groundwater or purchased water must notify its customers when it issues its annual consumer confidence report.

(4) A public water system that fails to meet the requirements of subsection (b)(5) of this section shall notify the executive director by the end of the next business day and the customers in accordance with the requirements of §290.122(b) of this title.

(5) A public water system which fails to conduct the monitoring required by subsection (c)(1) - (4) of this section must notify its customers of the violation in accordance with the requirements of §290.122(c) of this title.

(6) A public water system that uses chloramines shall notify their retail and wholesale customers of the use of chloramines.

(A) This notification must contain the exact wording included in Appendix H of §290.47 of this title (relating to Appendices).

(B) Prior to initially providing the chloraminated water to its existing customers, the water system must provide notification by mail or direct delivery at least 14 days before the change.

(C) Additionally, the notification must be provided to the news media, hospitals, renal disease facilities, dialysis clinics, physicians, local health departments, and entities which maintain live fish directly by letter, e-mail, or hand delivery.

(D) New customers must also be notified before they begin receiving water from the water system.

(E) Where appropriate, the notice must be multilingual.

§290.111. Surface Water Treatment.

(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.

(1) A public water system that treats surface water must comply with the requirements of this section beginning on the effective date of the rule.

(2) A public water system that treats groundwater under the direct influence of surface water must comply with the requirements of this section beginning on 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.

(3) A public water system that treats both surface water and groundwater under the direct influence of surface water must meet the compliance date in paragraph (1) of this subsection at plants that treat any surface water and must meet the compliance date in paragraph (2) of this subsection at plants that treat only groundwater under the direct influence of surface water.

(b) Raw surface water monitoring. A public water system that treats surface water or groundwater under the direct influence of surface water must conduct at least two rounds of special raw surface water monitoring at each surface water intake and at each well producing groundwater under the direct influence of surface water for the purpose of establishing minimum treatment technique requirements for *Cryptosporidium* and other pathogens. The executive director may waive the raw surface water monitoring requirements for an intake or a well if the combination of pathogen removal and disinfection processes used to treat the raw water achieves at least a 5.5-log total removal and inactivation of *Cryptosporidium parvum*.

(1) Raw water monitoring plans. A system must submit a proposed raw surface water monitoring plan when requested by the executive director. The proposed plan must identify all of the system's intakes and wells; provide the location of each raw water sampling point; include the parameters that will be monitored and the frequency and dates that samples will be collected; and specify the laboratories that will perform the analyses. Raw surface water monitoring must be conducted in accordance with a monitoring plan that has been approved by the executive director. The executive director shall not approve a raw surface water monitoring plan unless it indicates that the system will meet the requirements of 40 Code of Federal Regulations (CFR) §§141.701 - 141.707.

(2) Sampling location. A system must collect each raw water sample at a location approved by the executive director. Samples must be collected from the raw water line prior to any treatment and before the first point where a recycled stream is returned to the treatment process.

(3) Sampling parameters and frequency. A system must collect raw water samples at a frequency approved by the executive director.

(A) Unless the executive director approves an alternate sampling regimen, a system must monitor turbidity, *Escherichia coli (E. coli),* [~~*E. coli,*~~] and *Cryptosporidium* levels in the raw water at least once each month for a period of not less than 24 consecutive months if the system:

(i) serves at least 10,000 people; or

(ii) is part of combined distribution system in which one or more systems serve at least 10,000 people and the system with the well or intake regularly provides water to another public water supply.

(B) A system that is not required to monitor under subparagraph (A) of this paragraph must either monitor in accordance with the requirements of subparagraph (A) of this paragraph or monitor *E. coli* levels in their raw water at least once every two weeks for a period of not less than 12 consecutive months. A system that does not initially monitor for *Cryptosporidium* and has elevated *E. coli* levels must conduct additional raw water monitoring.

(i) A system must conduct additional monitoring if the average *E. coli* level exceeds 100 [~~50~~] colony-forming units per 100 milliliters in the raw water produced by a surface water intake located on a river or flowing stream or the raw water from a well producing groundwater under the direct influence of surface water located closest to a river or flowing stream.

(ii) A system must conduct additional monitoring if the average *E. coli* level exceeds 100 [~~10~~] colony-forming units per 100 milliliters in the raw water from a surface water intake not located on a river or flowing stream or the raw water produced by a well producing groundwater under the direct influence of surface water not located on a river or flowing stream.

(iii) A system that must conduct additional monitoring must monitor *Cryptosporidium* levels in the raw water at least twice each month for a period of not less than 12 consecutive months, or at least once each month for a period of not less than 24 consecutive months.

(C) The executive director may approve an alternate sampling frequency for intakes and wells that operate only part of the year.

(4) Sampling schedule and dates. A system must collect raw water samples in accordance with a schedule approved by the executive director.

(A) Except as provided in subparagraph (B) of this paragraph, a system must begin each round of raw source water monitoring no later than the date shown in the following table titled "Raw Source Water Monitoring Schedule."
Figure: 30 TAC §290.111(b)(4)(A) (No change.)

(B) If a system installs a new well or intake after the date the first round of raw source water monitoring must begin, the system must:

(i) submit a proposed monitoring schedule for the first round of special raw surface water monitoring no later than three months after first placing the new source in operation; and

(ii) begin the second round of special raw surface water monitoring no later than six years after initial bin classification.

(C) A system must collect a raw water sample no sooner than two days before the date approved by the executive director and no later than two days after the approved date, unless an extreme condition or situation exists that poses a danger to the sample collector.

(D) A system which is unable to collect a sample within this five-day period must collect the sample as close as possible to the

approved date and must notify the executive director in writing why the sample was not collected on the approved date.

(5) Replacement samples. If, for any reason, the laboratory is unable to report a valid analytical result for a scheduled sample, the system must submit a replacement sample on a date approved by the executive director.

(6) Analytical requirements. Raw water samples collected pursuant to this subsection must be analyzed at an United States Environmental Protection Agency (EPA) approved or a Texas Commission on Environmental Quality accredited laboratory.

(A) *Cryptosporidium* samples must be analyzed using one of the methods approved in 40 CFR §141.704(a) and by a laboratory that is approved under EPA's [~~United States Environmental Protection Agency's (EPA)~~] Laboratory Quality Assurance Evaluation Program for Analysis of *Cryptosporidium* in Water.

(B) *E. coli* samples must be analyzed using one of the methods approved in 40 CFR §136.3(a) for the enumeration of *E. coli* in source water and by a laboratory that is [~~certified or~~] accredited by the executive director.

(i) Systems must ensure that samples are maintained between 0 degrees Celsius [~~C~~] and 10 degrees Celsius [~~C~~] during storage and transportation to the laboratory.

(ii) The time between sample collection and the initiation of the analysis may not exceed 30 hours without the prior approval of the executive director.

(iii) The executive director may allow up to 48 hours between sample collection and the initiation of the analysis if the analysis is conducted by the Colilert reagent version of Standard Method 9223B.

(C) Turbidity samples must be analyzed using a method and at a laboratory approved by the executive director.

(7) Reporting requirements for raw surface water sample results. The owner or operator of a public water system must provide to the executive director with a copy of the results of any test, measurement, or analysis required by this subsection.

(A) Results must be submitted using the Raw Surface Water Sampling Report (commission Form 20358) or in another format that is approved by the executive director and contains the information required by 40 CFR §141.706(e).

(i) If the sample was not collected within the five-day window described in paragraph (4)(C) of this subsection, the result must be accompanied by the information required in paragraph (4)(D) of this subsection.

(ii) If the laboratory report indicates that a valid analytical result could not be reported, the laboratory report must be accompanied by a request to collect a replacement sample.

(B) The results must be submitted within ten days of their receipt by the public water system and no later than ten [~~10~~] days after the end of the first month following the month that the sample was collected.

(C) The results and any additional information must be mailed to the Water Supply Division, MC 155, Texas Commission on Environmental Quality, P.O. Box 13087, Austin, Texas 78711-3087.

(c) Treatment technique requirements. A system that treats surface water or groundwater under the direct influence of surface water must meet minimum treatment technique requirements before the water reaches the entry point to the distribution system.

(1) The combination of pathogen removal and disinfection processes used by a public water system must achieve at least a 4.0-log removal/inactivation of viruses.

(2) The combination of pathogen removal and disinfection processes used by a public water system must achieve at least a 3.0-log removal/inactivation of *Giardia lamblia.*

(3) A public water system that is required by subsection (b) of this section to conduct raw surface water monitoring must comply with the requirements of this paragraph.

(A) The average *Cryptosporidium* level and bin classification [~~Bin Classification~~] shall be determined in accordance with the requirements established by 40 CFR §141.710.

(i) For systems that collect a total of at least 48 *Cryptosporidium* samples, the average concentration is equal to the arithmetic mean of all sample concentrations.

(ii) For systems that collect a total of at least 24 samples, but not more than 47 *Cryptosporidium* samples, the average concentration is equal to the highest arithmetic mean of all sample concentrations in any 12 consecutive months during which *Cryptosporidium* samples were collected.

(iii) For systems that serve fewer than 10,000 people and monitor for *Cryptosporidium* for only one year (i.e., collect 24 samples in 12 months), the average concentration is equal to the arithmetic mean of all sample concentrations.

(iv) For systems with plants operating only part of the year that monitor fewer than 12 months per year under 40 CFR §141.701(e), the bin concentration is equal to the highest arithmetic mean of all sample concentrations during any year of *Cryptosporidium* monitoring.

(v) If the monthly *Cryptosporidium* sampling frequency varies, systems must first calculate a monthly average for each month of monitoring. Systems must then use these monthly average concentrations, rather than individual sample concentrations, in the applicable calculation for bin classification in paragraphs.

(B) Unless otherwise specified in this paragraph, the combination of pathogen removal and disinfection processes must achieve the removal/inactivation of *Cryptosporidium parvum* specified in the following table titled "Treatment Technique Requirements for *Cryptosporidium,"* beginning 36 months after being assigned a bin classification [~~Bin Classification~~] by the executive director.
Figure: 30 TAC §290.111(c)(3)(B) (No change.)

(i) A system that conducts the first round of special raw surface water monitoring according to the schedule contained in subsection (b)(4)(A) of this section must comply with the requirements of this paragraph no later than the date shown in the following table, titled "Compliance Date for Existing Sources."
Figure: 30 TAC §290.111(c)(3)(B)(i) (No change.)

(ii) A system that conducts the first round of special raw surface water monitoring according to the schedule contained in subsection (b)(4)(B)(i) of this section must comply with the requirements of this paragraph no later than six years after beginning the first round of monitoring on the new source.

(iii) The executive director may allow a system making capital improvements an additional two years to comply with the treatment requirement of this paragraph.

(C) A system that has been assigned to Bin 3 or Bin 4 must achieve at least 1.0-log removal/inactivation of *Cryptosporidium*

using one or a combination of the following: bag filters, cartridge filters, chlorine dioxide, membranes, ozone, or ultraviolet light (UV).

(D) Prior to the effective date of subparagraph (B) of this paragraph, the combination of disinfection and filtration processes used by a public water system to treat for *Cryptosporidium* must achieve at least a 2.0-log removal/inactivation of *Cryptosporidium parvum.*

(4) The combination of disinfection and filtration processes at plants that do not monitor each source in accordance with the requirements of subsection (b) of this section must achieve at least a 5.5-log removal /inactivation of *Cryptosporidium parvum.*

(5) The executive director may require additional levels of treatment in cases of poor source water quality.

(6) The executive director may establish minimum design, operational, and reporting requirements for watershed control programs and treatment processes used to meet the treatment technique requirements of this subsection.

(d) Microbial inactivation requirements. A system that treats surface water or groundwater under the direct influence of surface water must meet minimum disinfection requirements before the water is supplied to any consumer.

(1) Inactivation table. The disinfection process must achieve the minimum microbial inactivation levels shown in the following table.
Figure: 30 TAC §290.111(d)(1) (No change.)

(A) The disinfection process at treatment plants not described in the Microbial Inactivation Requirements table must provide the level of disinfection required by the executive director.

(B) The executive director may require additional levels of treatment in cases of poor source water quality.

(C) The executive director may reduce the inactivation requirement for plants that meet the individual filter effluent performance criteria contained in subsection (g)(1) of this section and have been assigned a Bin 1 classification under the provisions of subsection (c)(3) of this section.

(D) A system that fails to meet the inactivation requirements of this section for a period of longer than four consecutive hours commits a nonacute treatment technique violation. A system that fails to conduct the additional testing required by paragraph (2)(C) of this subsection also commits a nonacute treatment technique violation.

(E) A system that has a plant assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3) of this section and uses UV disinfection facilities to meet the treatment technique requirements for *Cryptosporidium* must meet the inactivation requirements of this subsection in at least 95% of the water treated each month.

(2) Monitoring requirements for chemical disinfectants. Public water systems must monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels are maintained. All monitoring conducted pursuant to the requirements of this subsection must be conducted at sites designated in the public water system's monitoring plan.

(A) The disinfectant residual, pH, temperature, and flow rate of the water in each disinfection zone must be measured at least once each day during a time when peak hourly raw water flow rates are occurring.

(B) Disinfection contact time will be based on tracer study data or a theoretical analysis submitted by the system owner or their designated agent and approved by the executive director and the actual flow rate that is occurring at the time that monitoring occurs.

(C) Treatment plants that fail to demonstrate an appropriate level of treatment must repeat these tests at four-hour or shorter intervals until compliance has been reestablished.

(3) Monitoring requirements for UV disinfection facilities. Public water systems must monitor the performance of the UV disinfection facilities.

(A) A system must continuously monitor and record UV intensity as measured by a UV sensor, lamp status, the flow rate through the unit, and other parameters prescribed by the executive director to ensure that the units are operating within validated conditions.

(B) A system with a plant that has been assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3) of this section must also monitor and record the amount of water treated by each UV unit each month and the amount of water produced each month when the unit was not operating within validated conditions.

(4) Analytical requirements. All monitoring required by this subsection must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(A) The pH analysis must be conducted using a pH meter with a minimum accuracy of plus or minus 0.1 pH units.

(B) The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(C) The free chlorine or chloramine residual (measured as total chlorine) must be measured to a minimum accuracy of plus or minus 0.1 milligrams per liter (mg/L). Color comparators may be used for distribution system samples only. When used, a color comparator must have current reagents, an unfaded and clear color comparator, a sample cell that is not discolored or stained, and must be properly stored in a cool, dark location where it is not subjected to conditions that would result in staining. The color comparator must be used in the correct range. If a sample reads at the top of the range, the sample must be diluted with chlorine-free water, then a reading taken and the resulting residual calculated. [~~Samples tested using a colorimetric method must be analyzed using a colorimeter; spectrophotometer; or, with the written permission of the executive director, a color comparator.~~]

(D) The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(i) Amperometric titrator with platinum-platinum electrodes; or

(ii) Lissamine Green B.

(E) The ozone residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using the Indigo Method and using a colorimeter or spectrophotometer.

(F) The UV dose must be measured by a calibrated sensor approved by the executive director.

(e) Filtration requirements for conventional filters. A system that uses granular media filters to treat surface water or groundwater under the direct influence of surface water must meet minimum filtration requirements before the water is supplied to any consumer.

(1) Treatment technique requirements for combined filter effluent. Treatment plants using conventional media filtration must meet the following turbidity requirements.

(A) The turbidity level of the combined filter effluent must never exceed 1.0 nephelometric turbidity unit (NTU).

(B) 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) Performance criteria for individual filter effluent. The filtration techniques must ensure the public water system meets the following performance criteria.

(A) The turbidity from each individual filter effluent should never exceed 1.0 NTU.

(B) At a public water system that serves 10,000 people or more, the turbidity from each individual filter effluent should not exceed 0.5 NTU at four hours after the individual filter is returned to service after backwash or shutdown.

(3) Routine turbidity monitoring requirements. A system must monitor the performance of its filtration facilities.

(A) A system that serves fewer than 500 people and continuously monitors 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) A system that serves at least 500 people and continuously monitors 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.

(C) Except as provided in subparagraph (D) of this paragraph, a system must continuously monitor the filtered water turbidity at the effluent of each individual filter and record the turbidity value every 15 minutes.

(D) A system that serves fewer than 10,000 people and monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity under the provisions of §290.42(d)(11)(E)(ii) of this title (relating to Water Treatment) must:

(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.

(4) Special investigation requirements. A system which fails to produce water with acceptable turbidity levels must investigate the cause of the problem and take appropriate corrective action. The executive director can waive these special monitoring requirements for systems that have a corrective action schedule approved by the executive director.

(A) A public water system that fails to meet the turbidity criteria specified in paragraph (2) of this subsection must conduct additional monitoring.

(i) Each time a filter exceeds an applicable filtered water turbidity level specified in paragraph (2) of this subsection 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.

(ii) Each time a filter exceeds the filtered turbidity level specified in paragraph (2)(A) of this subsection 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.

(iii) 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 (CPE). If the system serves at least 10,000 people, the CPE must be conducted within 90 days of the first exceedance in the second month. If the system serves fewer than 10,000 people, the CPE must be conducted within 120 days of the first exceedance in the second month.

(B) A system that serves fewer than 10,000 people, monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity, and fails to meet the turbidity criteria in paragraph (1)(A) of this subsection 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.

(i) 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.

(ii) 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.

(iii) 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 CPE [~~comprehensive performance evaluation~~] within 120 days of the first exceedance in the second month.

(5) Analytical requirements for turbidity. All monitoring required by this subsection 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).

(A) Turbidity must be measured with turbidimeters that use one of the following methods:

(i) EPA Method 180.1 and Standard Method 2130B;

(ii) Great Lakes Instruments Method 2; or

(iii) Hach FilterTrak Method 10133.

(B) A system monitoring the performance of individual filters with on-line turbidimeters and recorders may monitor combined filter effluent turbidity levels by either continuously monitoring turbidity levels with an on-line turbidimeter or measuring the turbidity level in grab samples with a bench-top turbidimeter.

(C) Continuous turbidity monitoring must be conducted using a continuous, on-line turbidimeter and a device that records the turbidity level reading at least once every 15 minutes.

(i) Turbidity data may be recorded electronically by a supervisory control and data acquisition system (SCADA) 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.

(ii) If there is a failure in the continuous turbidity monitoring equipment at a system serving 10,000 people or more, 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.

(iii) If the continuous turbidity monitoring equipment at a system serving fewer than 10,000 people malfunctions, 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.

(D) A system that monitors 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.

(f) Filtration requirements for other filters. A system that uses cartridge filters, membrane filters, or other unconventional filtration systems to treat surface water or groundwater under the direct influence of surface water must meet minimum filtration requirements before the water is supplied to any consumer.

(1) Treatment technique requirements. A system that uses unconventional filtration technologies such as membrane filters or cartridge filters must meet treatment technique requirements prescribed by the executive director.

(A) The filtration facilities must meet combined filter effluent and individual filter effluent turbidity limits established by the executive director.

(B) The filtration facilities must be operated and maintained in accordance with requirements that the executive director determines are needed to demonstrate the amount of *Giardia* and *Cryptosporidium* removal achieved.

(2) Monitoring requirements. A system must monitor the performance of its filtration facilities.

(A) A system that serves fewer than 500 people and continuously monitors the turbidity level of each individual cartridge or membrane unit must measure and record the turbidity level of the combined effluent at least once each day that the plant is in operation.

(B) A system that serves at least 500 people and continuously monitors the turbidity level of each individual cartridge or membrane unit must measure and record the turbidity level of the combined effluent at least every four hours that the system serves water to the public.

(C) A system using membranes must use a method approved by the executive director to continuously monitor the quality of the water produced by each membrane unit and record the monitoring results at least once every five minutes. The executive director may approve monitoring parameters other than turbidity and decrease the frequency to once every 15 minutes if the approved operating parameters will allow consecutive readings to be obtained between backwash or backflush cycles.

(D) A system using membranes must conduct direct integrity testing on each membrane unit using a procedure approved by the executive director.

(i) Direct integrity tests must be conducted in a manner that will detect a membrane defect of 3 microns or smaller and demonstrates a removal efficiency equal to or greater than the removal credit awarded to the membrane filtration process by the executive director.

(ii) Direct integrity test method must calculate the log removal value for a 3-micron size particle and establish an upper control limit which assures that the unit is capable of meeting the removal credit approved by the executive director.

(iii) A system that has been assigned a Bin 1 classification under the provisions of subsection (c)(3)(B) of this section must conduct direct integrity tests at least once every seven days. The executive director [~~directed~~] may reduce the testing requirements for other membrane units.

(iv) A system that has been assigned a Bin 2, 3, or 4 classification under the provisions of subsection (c)(3)(B) of this section must conduct direct integrity tests at least once each day that the membrane unit is used for filtration. The executive director may approve less frequent testing, based on demonstrated process reliability, the use of multiple barriers effective for *Cryptosporidium* removal or inactivation, or reliable process safeguards.

(v) A system must immediately conduct a direct integrity test on any membrane unit that produces filtered water with turbidity level above 0.15 NTU on two consecutive readings. The executive director must establish alternate site-specific control limits for systems that use other approved technology in lieu of turbidimeters to continuously monitor the performance of membrane units.

(vi) A system must immediately remove any membrane unit that fails a direct integrity test from service until the membrane modules in that unit are inspected and, if necessary, repaired. A membrane unit that has been removed from service may not be returned to service until it has passed a direct integrity test.

(E) A system that uses cartridge filters must continuously monitor the performance of the filtration process in a manner approved by the executive director.

(3) Analytical requirements. All monitoring required by this subsection 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.

(A) Turbidity of the combined effluent must be measured with turbidimeters that meet the requirements of subsection (e)(5)(A) of this section.

(B) The turbidity of the water produced by each membrane unit must be measured using the Hach FilterTrak Method 10133. The executive director may approve the use of alternative technology to monitor the quality of the water produced by each membrane unit.

(C) A system continuously monitoring the performance of individual cartridges or membrane units may monitor combined effluent turbidity levels by either continuously monitoring turbidity levels with an on-line turbidimeter, or by measuring the turbidity level in grab samples with a bench-top turbidimeter.

(D) Data collected from on-line instruments may be recorded electronically by a SCADA system or on a strip chart recorder. The recorder must be designed so that the operator can accurately determine the value of readings at the monitoring interval approved by the executive director.

(i) If there is a failure in the continuous monitoring equipment at a system serving 10,000 people or more, 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.

(ii) If there is a failure in the continuous monitoring equipment at a system serving fewer than 10,000 people, 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.

(E) A system that uses cartridge filters and does not continuously monitor the turbidity of each filter unit must monitor the performance of individual filters at least once each day using a bench-top turbidimeter.

(g) Other treatment credits for systems in Bins 2 through 4. The executive director may grant additional pathogen removal and inactivation credit to systems that meet enhanced design, operational, maintenance, and reporting requirements.

(1) Individual filter effluent. The executive director may approve an additional 1.0-log removal credit for *Giardia* and *Cryptosporidium* to a treatment plant that uses conventional granular media filters.

(A) The executive director will approve the additional credit for a plant if:

(i) the system continuously monitored the filtered water turbidity at the effluent of each individual filter and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell;

(ii) the turbidity level at each individual filter effluent is less than or equal to 0.15 NTU in at least 95% of the measurements recorded during the month; and

(iii) no individual filter produced water with turbidity level above 0.3 NTU in two consecutive 15-minute readings.

(B) The executive director may also approve the additional credit for a plant that does not meet the requirements of subparagraph (A) of this paragraph if:

(i) the executive director determines that the failure to meet the requirements of subparagraph (A) of this paragraph could not have been prevented through optimizing plant operations, design, or maintenance; and

(ii) the system has experienced no more than two such failures within the most recent 12 months.

(2) Combined filter effluent. The executive director may approve an additional 0.5-log removal credit for *Cryptosporidium* to a treatment plant that uses conventional granular media filters if:

(A) the system continuously monitored the filtered water turbidity at the effluent of each individual filter and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell;

(B) the turbidity level at the combined filter effluent is less than or equal to 0.15 NTU in at least 95% of the measurements recorded during the month; and

(C) the plant does not receive additional treatment credit under paragraph (1) of this subsection.

(3) Second stage filtration. The executive director will approve an additional 0.5-log removal credit for *Giardia* and *Cryptosporidium* to a treatment plant that uses a second, separate stage of conventional granular media filters if:

(A) the filters in both stages meet minimum design criteria approved by the executive director;

(B) all of the water produced by the plant passes through both stages of filtration;

(C) the system continuously monitored the filtered water turbidity at the effluent of each individual filter in the first stage of filtration and recorded the turbidity value every 15 minutes that the filter was sending water to the clearwell; and

(D) no individual filter in the first stage of filtration produced water with turbidity level above 1.0 NTU in two consecutive 15-minute readings.

(4) Other pathogen control strategies. The executive director may approve an additional removal or inactivation credit for other pre-filtration, filtration, or post-filtration strategies that can demonstrate effective, consistent levels of enhanced pathogen control.

(A) The alternative strategy must achieve a quantifiable reduction in the risk of waterborne disease in all of the treated water produced by the plant.

(B) The alternative strategy must conform to any applicable requirement of 40 CFR §§141.715 - 141.720.

(C) The executive director may establish minimum site-specific design, operational, maintenance, and reporting requirements for any alternative strategy used to meet minimum treatment technique requirements of subsection (c) of this section.

(D) The executive director may not approve additional removal credit under the provisions of this paragraph to any strategy that includes a treatment process has been assigned additional removal or inactivation credit under any other provision of this subsection.

(h) Reporting requirements. Public water systems must properly complete and submit periodic reports to demonstrate compliance with this section.

(1) A system that has a turbidity level exceeding 1.0 NTU in the combined filter effluent must consult with the executive director within 24 hours.

(2) A system [~~that continuously monitors the performance of individual filters must submit a Surface Water Monthly Operating Report (commission Form 0102C) each month for each plant~~] that treats surface water sources or groundwater sources under the direct influence of surface water must submit a Surface Water Monthly Operating Report each month for each plant.

(A) A system that uses alternative treatment technologies or has been assigned a Bin 2, Bin 3, or Bin 4 classification under subsection (c)(3)(B) of this section must submit a Surface Water Monthly Operating Report (commission Form 0102D) for alternative technologies.

(B) A system that continuously monitors the performance of individual filters, but is not required to submit commission Form 0102D, must submit a Surface Water Monthly Operating Report (commission Form 0102C).

(C) A system that is allowed by the executive director to submit combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must submit a Surface Water Monthly Operational Report for Plants That Do Not Have a Turbidimeter on Each Filter (commission Form 0103) each month for each plant that treats surface water or groundwater under the direct influence of surface water.

[~~(3) A system that monitors combined filter effluent turbidity in lieu of individual filter effluent turbidity under §290.42(d)(11)(E)(ii) of this title must submit a Surface Water Monthly~~

~~Operating Report for 2-Filter Plants (commission Form 0103) each month for each plant that treats surface water or groundwater under the direct influence of surface water.]~~

(3) [~~(4)~~] A system that must complete the additional monitoring required by subsection (e)(4)(A)(i) or (B)(i) of this section must submit a Filter Profile Report for Individual Filters (commission Form 10276) with its Surface Water Monthly Operating Report.

(4) [~~(5)~~] A system that must complete the additional monitoring required by subsection (e)(4)(A)(ii) or (B)(ii) of this section must submit a Filter Assessment Report for Individual Filters (commission Form 10277) with its Surface Water Monthly Operating Report.

(5) [~~(6)~~] A system that must complete the additional monitoring required by subsection (e)(4)(A)(iii) or (B)(iii) of this section must submit a Comprehensive Performance Evaluation Request Form (commission Form 10278) with its Surface Water Monthly Operating Report.

~~[(7) A system that uses membranes must submit a Membrane Monthly Operating Report (commission Form 20356) for each plant that treats surface water or groundwater under the direct influence of surface water. The report must accompany the plant's Surface Water Monthly Operating Report.]~~

~~[(8) A system that uses UV disinfection to meet the minimum treatment technique requirements for surface water or groundwater under the direct influence of surface water must submit a UV Monthly Operating Report (commission Form 20357) with its Surface Water Monthly Operating Report. The report must accompany the plant's Surface Water Monthly Operating Report.]~~

(6) [~~(9)~~] A system must submit any additional reports required by the executive director to verify the level of pathogen removal or inactivation achieved by the system's treatment plants.

(7) [~~(10)~~] A system must submit its *Cryptosporidium* bin classification.

(8) [~~(11)~~] A system must submit reports required by subsection (b)(7) of this section.

(9) [~~(12)~~] Periodic reports required by this section must be submitted to the Water Supply Division, Texas Commission on Environmental Quality, MC 155, P.O. Box 13087, Austin, Texas 78711-3087 by the tenth day of the month following the end of the reporting period.

(i) Compliance determination. Compliance with the requirements of this section must be determined using the criteria of this subsection.

(1) A public water system that fails to complete source water monitoring or conduct the routine monitoring tests and any applicable special investigations required by this section commits a monitoring violation.

(2) A public water system that fails to submit a report required by subsection (h) of this section commits a reporting violation.

(3) A public water system using conventional filters that has a turbidity level exceeding 5.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(4) A public water system using membrane filters that has a turbidity level exceeding 1.0 NTU in the combined filter effluent commits an acute treatment technique violation.

(5) Except as provided in paragraphs (3) and (4) of this subsection, a public water system that violates the requirements of subsections (c), (d)(1), (e)(1), and (f)(1) of this section commits a nonacute treatment technique violation.

(6) A system that fails to request a bin classification [~~Bin Classification~~] within six months of completing a round of source water monitoring commits a treatment technique violation.

(7) A system that fails to correct the performance-limiting factors identified in a comprehensive performance evaluation conducted under the requirements of subsection (e)(4)(A)(iii) or (B)(iii) of this section commits a violation.

(8) A system that fails to properly issue a public notice required by subsection (j) of this section commits a violation.

(j) Public notification. 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 commits an acute treatment technique violation must notify the executive director and the water system customers of the acute violation within 24 hours 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 has a turbidity level exceeding 1.0 NTU in the combined filter effluent must consult with the executive director within 24 hours of the violation.

(A) Based on the results of the consultation, the executive director will determine whether the water system must notify its customers in accordance with the requirements of §290.122(a) or (b) of this title.

(B) A water system that fails to consult with the executive director as required by this paragraph must notify its customers in accordance with the requirements of §290.122(a) of this title.

(3) Except as provided in paragraphs (1) and (2) of this subsection, a public water system that fails to meet the treatment technique requirements of subsections (c), (d)(1), (e)(1), or (f)(1) of this section must 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 that 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.

§290.116. Groundwater Corrective Actions and Treatment Techniques.

(a) Applicability. All groundwater public water systems, including such systems that use surface water or groundwater under the direct influence of surface water (mixed systems), must comply with one or more of the treatment techniques and corrective actions of this section if a raw groundwater source sample was positive for fecal indicators, if a significant deficiency was identified, or if the system is not required to conduct raw groundwater source monitoring because it provides at least 4-log treatment of viruses at each groundwater source.

(1) A groundwater system must provide written notification to the executive director that it is not required to meet the raw groundwater source monitoring requirements under §290.109(c)(4) of this title (relating to Microbial Contaminants) because it provides at least 4-log treatment of viruses for the specified groundwater source and must begin compliance monitoring in accordance with subsection (c) of this section. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission. If the executive director determines and documents in writing that 4-log treatment of viruses is no longer neces-

sary for a specified groundwater source or if the system discontinues 4-log treatment of viruses before the first connection for any groundwater source, the system must document this in writing and conduct raw groundwater source sampling as required under §290.109(c)(4) of this title.

(2) A groundwater system that places a groundwater source in service after November 30, 2009, that is not required to meet the raw source monitoring requirements under §290.109(c)(4) of this title because the system provides at least 4-log treatment of viruses for a specified groundwater source must begin compliance monitoring within 30 days of placing the source in service in accordance with subsection (c) of this section. The system must provide written notification to the executive director that it provides at least 4-log treatment of viruses before the first connection for the specified groundwater source. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission. The system must conduct triggered source monitoring under §290.109(c)(4) of this title until the executive director provides written approval of the system's request to provide the 4-log treatment. If the system discontinues 4-log treatment of viruses before the first connection for a groundwater source, the system must conduct raw groundwater source sampling as required under §290.109(c)(4) of this title.

(b) Groundwater corrective action plan. All public water systems using groundwater must submit a corrective action plan and implement corrective action if a raw groundwater source sample was positive for fecal indicators or if a significant deficiency was identified.

(1) If a groundwater source sample was found to be fecal indicator positive or if a significant deficiency was identified, the system must consult with the executive director regarding appropriate corrective action and have an approved corrective action plan in place within 30 days of receiving written notification from a laboratory of the fecal indicator positive source sample collected under §290.109(c)(4) of this title or within 30 days of receiving written notification from the executive director of the identification of a significant deficiency.

(2) Within 120 days of receiving written notification from a laboratory of the fecal indicator positive source sample or receiving written notification from the executive director of a significant deficiency, the system must have completed corrective action or be in compliance with an approved corrective action plan and schedule.

(3) Any changes to the approved corrective action plan or schedule must be approved by the executive director.

(4) The executive director may require interim measures for the protection of public health pending approval of the corrective action plan. The system must comply with these interim measures as well as with any schedules specified by the executive director.

(5) Systems that are required to complete corrective action must implement one or more of the procedures in this paragraph and the details of the implementation must be specified in the approved corrective action plan.

(A) The system may disinfect the groundwater source where the fecal indicator positive source sample was collected following the American Water Works Association (AWWA) standards for well disinfection and start monthly fecal indicator sampling at that source within 30 days after well disinfection. The executive director may discontinue the monthly source sampling requirement if corrective action is sufficient.

(B) The system may eliminate the groundwater source that was found to be fecal indicator positive and provide an alternate groundwater source if necessary. Eliminated groundwater sources must be disconnected from the distribution system until the contamination is corrected and the executive director approves it for use.

(C) The system may identify and eliminate the source of fecal contamination followed by well disinfection according to AWWA well disinfection standards and begin monthly fecal indicator sampling within 30 days after well disinfection. The executive director may allow the system to discontinue the monthly source sampling requirement after making a determination that corrective action is sufficient.

(D) The system may provide treatment that reliably achieves at least 4-log treatment of viruses using inactivation, removal or an executive director-approved combination of inactivation and removal before the first connection of the groundwater source.

(E) Correct all significant deficiencies.

(F) Assessment source monitoring for a period of 12 months or a time period specified by the executive director from the raw groundwater source in accordance with §290.109(c)(4)(E) of this title.

(c) Microbial inactivation requirements. A system that treats groundwater in response to a fecal indicator positive source sample, significant deficiency, or in lieu of the raw groundwater source monitoring shall meet minimum disinfection requirements demonstrating at least 4-log treatment of viruses before the water is distributed to the first connection of the specified groundwater source.

(1) Monitoring requirements for chemical disinfectants. Groundwater systems shall monitor the performance of the disinfection facilities to ensure that appropriate disinfectant levels are maintained every day the specified source serves the public. All monitoring conducted pursuant to the requirements of this section must be conducted at sites designated in the system's monitoring plan in accordance with §290.121 of this title (relating to Monitoring Plans).

(A) Groundwater systems serving a population greater than 3,300 must continuously monitor the residual disinfectant concentration in accordance with the analytical methods specified in 40 Code of Federal Regulations (CFR) §141.74(a)(2) at a location approved by the executive director and must record the lowest residual disinfectant concentration every day the groundwater source serves the public.

(i) The groundwater system must maintain the executive director-approved minimum specified disinfectant residual every day the groundwater system serves water from the specified groundwater source to the public. If there is a failure in the continuous monitoring equipment, the groundwater system must conduct grab sampling every four hours until the continuous monitoring equipment is returned to service.

(ii) The system must resume continuous residual disinfectant monitoring within 14 days.

(B) Groundwater systems serving a population of 3,300 or fewer must monitor the disinfectant residual in accordance with the analytical methods specified in 40 CFR §141.74(a)(2) in each disinfection zone at least once each day that water from the specified groundwater source is served to the public during either a time when peak hourly raw water flow rates are occurring or at another time specified by the executive director. The system must record and maintain the disinfectant residual every day the system serves water from the groundwater source to the public. The system must collect a daily grab sample during the hour of peak flow or at another time specified by the executive director. If any daily grab sample measurement falls below the executive director-approved minimum specified disinfectant residual, the groundwater system must collect follow-up samples every four hours until the residual disinfectant concentration is restored to the ex-

ecutive director-approved level. Alternatively, a groundwater system that serves 3,300 or fewer people may monitor the residual disinfectant concentration continuously and meet the requirements of subparagraph (A) of this paragraph.

(C) Disinfection contact time will be based on tracer study data or a theoretical analysis submitted by the system owner or their designated agent and approved by the executive director.

(D) Groundwater treatment plants that fail to demonstrate an appropriate level of treatment must repeat these tests at four-hour or shorter intervals until compliance has been reestablished.

(2) Monitoring and operating requirements for commission-approved alternative treatment, including ultraviolet light (UV) disinfection facilities and other methods that can obtain 4-log inactivation of viruses and can be properly validated. Public water systems shall monitor the UV intensity as measured by a UV sensor, lamp status, the flow rate through the unit, and other parameters prescribed by the executive director as specified in §290.42(g)(5) of this title (relating to Water Treatment) to ensure that the units are operating within validated conditions.

(3) Analytical requirements. All monitoring required by this section must be conducted at a facility approved by the executive director and using methods that conform to the requirements of §290.119 of this title (relating to Analytical Procedures).

(A) The pH analysis must be conducted using a pH meter with a minimum accuracy of plus or minus 0.1 pH units.

(B) The temperature of the water must be measured using a thermometer or thermocouple with a minimum accuracy of plus or minus 0.5 degrees Celsius.

(C) The free chlorine or chloramine residual (measured as total chlorine) must be measured to a minimum accuracy of plus or minus 0.1 milligrams per liter (mg/L) [~~mg/L~~]. Color comparators may be used for distribution system samples only. When used, a color comparator must have current reagents, an unfaded and clear color comparator, a sample cell that is not discolored or stained, and must be properly stored in a cool, dark location where it is not subjected to conditions that would result in staining. The color comparator must be used in the correct range. If a sample reads at the top of the range, the sample must be diluted with chlorine-free water, then a reading taken and the resulting residual calculated. [~~Samples tested using a colorimetric method must be analyzed using a colorimeter, spectrophotometer, or, with the written permission of the executive director, a color comparator.~~]

(D) The chlorine dioxide residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using one of the following methods:

(i) Amperometric titrator with platinum-platinum electrodes; or

(ii) Lissamine Green B.

(E) The ozone residual must be measured to a minimum accuracy of plus or minus 0.05 mg/L using an indigo method that uses a colorimeter or spectrophotometer.

(4) Recordkeeping requirements for microbial inactivation treatment. Groundwater systems, including wholesale, consecutive, and mixed systems, regulated under this subsection must comply with §290.46 of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems).

(d) Reporting requirements. Groundwater systems conducting 4-log treatment in lieu of the raw groundwater source monitoring or required to conduct corrective action in response to a fecal indicator positive source sample, or a significant deficiency, must report to the executive director in accordance with this subsection.

(1) A groundwater system required to conduct compliance monitoring for chemical disinfectants must complete a Groundwater Treatment Monthly Operating Report (commission Form 20362) for groundwater disinfection facilities monthly. Groundwater systems must maintain the reports on site and make them available to the executive director upon request.

(2) A groundwater system must provide written notification to the executive director that it is not required to meet the raw groundwater source monitoring requirements under §290.109(c)(4) of this title because it provides at least 4-log treatment of viruses for a specified groundwater source and must begin compliance monitoring in accordance with subsection (c) of this section. The notification must include engineering, operational, and other information required by the executive director to evaluate the submission.

(3) A groundwater system required to complete corrective action under subsection (b) of this section must notify the executive director within 30 days of completing the corrective action.

(4) If a groundwater system is subject to the triggered source monitoring requirements of §290.109(c)(4)(A) of this title and does not conduct source monitoring, the system must provide written documentation that it was providing 4-log treatment of viruses for the specified groundwater source or that it met the criteria set out in §290.109(c)(4)(D) of this title within 30 days of the positive distribution coliform sample.

(5) A groundwater system conducting compliance monitoring under subsection (a) of this section must notify the executive director any time the system fails to meet any executive director-specified requirements (including, but not limited to, minimum residual disinfectant concentration, and alternative treatment operating criteria) if the operation in accordance with the criteria or requirements is not restored within four hours. The system must notify the executive director as soon as possible, but no later than the end of the next business day.

(e) Compliance determination. In accordance with this subsection, the executive director shall determine compliance for groundwater systems required to conduct corrective action within 120 days, or pursuant to a groundwater corrective action plan.

(1) A groundwater system is in violation of the treatment technique requirement if it does not complete corrective action in accordance with the executive director-approved corrective action plan or any interim measures required by the executive director.

(2) A groundwater system is in violation of the treatment technique requirement if it is not in compliance with the executive director-approved corrective action plan and schedule.

(3) A groundwater system subject to the requirements of subsection (c) of this section that fails to maintain at least 4-log treatment of viruses is in violation of the treatment technique requirement if the failure is not corrected within four hours. The groundwater system must notify the executive director as soon as possible but no later than the next business day if there is a failure in maintaining the 4-log treatment for more than four hours.

(4) A groundwater system that fails to conduct the disinfectant monitoring required under subsection (c) of this section commits a monitoring violation.

(5) A groundwater system that fails to report the results of the disinfectant monitoring required under subsection (c) of this section commits a reporting violation.

(6) A groundwater system that fails to issue a required public notice or certify that the public notice has been performed commits a public notice violation.

(f) Public notification. A groundwater system that commits a treatment technique, monitoring, or reporting violation or situation as identified in this section must notify its customers of the violation in accordance with the requirements of §290.122 of this title (relating to Public Notification).

(1) Special notice to the public of significant deficiencies or source water fecal contamination for community systems. In addition to the applicable public notice requirements of §290.122(a) of this title, a community groundwater system that receives notice from the executive director of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated under §290.109(d)(2) of this title must inform the public served by the water system of the fecal indicator-positive source sample or of any significant deficiency that has not been corrected in its Consumer Confidence Report as specified in §290.272(g)(7) and (8) of this title (relating to Content of the Report).

(2) Special notice to the public of significant deficiencies or source water fecal contamination for noncommunity systems. In addition to the applicable public notice requirements of §290.122(a) of this title, a noncommunity groundwater system that receives notice from the executive director of a significant deficiency or notification of a fecal indicator-positive groundwater source sample that is not invalidated under §290.109(d)(2) of this title must inform the public served by the water system of any significant deficiency that has not been corrected within 12 months of being notified by the executive director, or earlier if directed by the executive director. The system must continue to inform the public annually until the significant deficiency is corrected. The information must include:

(A) posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection; and

(B) any other method reasonably calculated to notify other persons served by the system, if they would not normally be notified by the methods set out in subparagraph (A) of this paragraph. Such persons may include those who may not see a posted notice because the notice is not in a location they routinely frequent. Other methods may include publication in a local newspaper, newsletter, or e-mail; or, delivery of multiple copies in central locations (e.g., community centers).

(C) If directed by the executive director, a noncommunity groundwater system with significant deficiencies that have been corrected must inform its customers of the significant deficiencies, how deficiencies were corrected, and the dates of correction.

The agency certifies that legal counsel has reviewed the proposal and found it to be within the state agency's legal authority to adopt.

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TRD-201500165
Robert Martinez
Director, Environmental Law Division
Texas Commission on Environmental Quality
Earliest possible date of adoption: March 8, 2015
For further information, please call: (512) 239-2613

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CHAPTER 331. UNDERGROUND INJECTION CONTROL

SUBCHAPTER A. GENERAL PROVISIONS

30 TAC §331.19

The Texas Commission on Environmental Quality (TCEQ, agency, or commission) proposes to amend §331.19.

Background and Summary of the Factual Basis for the Proposed Rule

As existing water supplies decline and demand for fresh water increases in central and southwest Texas, efforts are underway to identify and develop potential new sources of water. Two strategies being pursued are desalination of brackish groundwater and aquifer storage and recovery (ASR). In support of these options, this rulemaking implements Senate Bill (SB) 1532, 83rd Texas Legislature, 2013. The intent of SB 1532 was to provide a statutory and regulatory basis to promote research that could make desalination of brackish groundwater and ASR more viable in the Edwards Aquifer.

Prior to the passage of SB 1532, Texas Water Code (TWC), §27.051(i) and §331.19 prohibited certain injection wells that transect or terminate in the Edwards Aquifer. SB 1532 amends TWC, Chapter 27, Subchapter D, by adding TWC, §27.0516. Within specific geographic boundaries, TWC, §27.0516 allows the commission to authorize by rule or general permit certain injection wells that transect or terminate in the Edwards Aquifer while providing a statutory and regulatory basis that is protective of the freshwater aquifer and supportive of desalination and ASR.

The applicability of the provisions in TWC, §27.0516 is limited to the portion of the Edwards Aquifer that is within the geographic area circumscribed by the external boundaries of the Barton Springs-Edwards Aquifer Conservation District (BSEACD) but is not in that district's territory or the territory of the Edwards Aquifer Authority. The official jurisdictional boundaries of the BSEACD were originally established by order of the commission and subsequently modified by orders of both the commission and the BSEACD. As part of this rulemaking, the commission has developed a map, which is located in §331.19(c), for inclusion in the proposed rule to give a general depiction of the affected geographic areas.

The commission's Underground Injection Control (UIC) program has one existing general permit that authorizes disposal of nonhazardous desalination concentrate and other nonhazardous drinking water treatment residuals in a Class I well. This statewide general permit expedites the processing of authorizations for wells used for these purposes. The existing UIC general permit did not contemplate the addition of provisions such as those in SB 1532 that apply to only specific small geographic areas within a certain aquifer. It would not be feasible to amend the existing general permit to add the SB 1532 provisions. Because the number of applications is not expected to be significant under the general permits authorized in SB 1532, new general permits that include the special conditions required in SB 1532 will be implemented when there is a need for them.

Section Discussion

§331.19, Injection Into or Through the Edwards Aquifer

The commission proposes to amend subsection (a) by inserting "except as authorized in subsection (c) of this section" at the

Figure: 30 TAC Chapter 290--Preamble

	At or After the **Entry Point(s)**	In the **Distribution System**	Downstream of Any Chlorine or Ammonia **Injection Points**
Free Ammonia	Weekly.	At least weekly.[a]	Weekly and before and after adjusting the chlorine or ammonia feed rate.
Mono-chloramine	Weekly.	At least weekly.[a]	Weekly and before and after adjusting the chlorine or ammonia feed rate.
Total Chlorine	Weekly.	Daily/weekly.[b]	Weekly and before and after adjusting the chlorine or ammonia feed rate.
Nitrite and Nitrate	As needed to set baseline, then quarterly.	At least quarterly, and in response to action level triggers.	Routine sampling not required.

[a.] *When collecting a routine sample such as a bacteriological or disinfectant residual sample, the free ammonia and monochloramine should be measured at the same time.*

[b.] *Total chlorine must be collected weekly or daily, based on the system size, at locations representing the entire distribution system in accordance with §290.110.*

Figure: 30 TAC §290.47(b)

Appendix B: Sample Retail 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 system construction or configuration on the retail connection owner's side of the meter. The purpose of this service agreement is to notify each customer of the restrictions which are in place to provide this protection. The public water system enforces these restrictions to ensure the public health and welfare. Each retail customer must sign this agreement before the NAME OF WATER SYSTEM will begin service. In addition, when service to an existing retail 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 0.25% 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:_____

Figure: 30 TAC §290.47(c)

Appendix C: Boil Water Notification

Due to conditions which have occurred recently in the water system, the Texas Commission on Environmental Quality has required the water 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 **<Water System Official(s)>** at **<Official's Telephone Number(s)>**.

Instructions:

1. List more than one water system official and phone number.

2. Do not list the commission as the primary contact.

3. If a customer wishes to call the Texas Commission on Environmental Quality, please have them call (512) 239-4691.

Figure: 30 TAC §290.47(d)

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.

Appendix D: Operator and/or Employment Notice

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

Figure: 30 TAC §290.47(e)

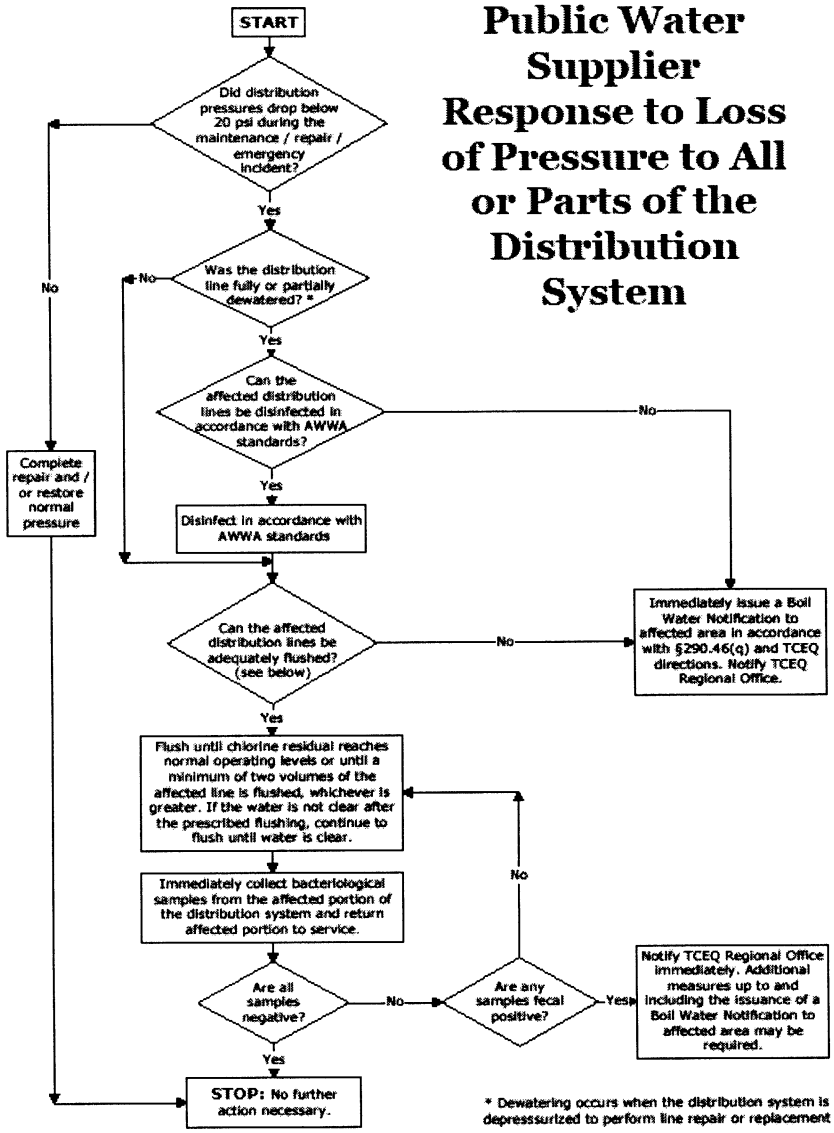

Figure: 30 TAC §290.47(f)

Appendix F: 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	RPBA or 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
Rainwater harvesting system	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	Assessment of Hazard	Required Assembly
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 bibs	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, back siphonage 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 RPBAs is required.

Figure: 30 TAC §290.47(g)

Appendix G: Emergency Preparedness Plan Template

This appendix contains information to assist an affected utility in preparing an emergency preparedness plan. A comprehensive guide and shell form, TCEQ Form No. 20536, for preparing a plan is available from the executive director upon request. A cover letter containing the name of the affected utility; the affected utility representative's name, title, and contact telephone number; and, if applicable, the public water system's identification number (PWS ID) and district number must be included with the plan submittal.

Information provided by an affected utility relating to its emergency preparedness plan is confidential and is not subject to disclosure under Texas Government Code, Chapter 552.

Rules. All of 30 TAC Chapter 291, Subchapter L applies to affected utilities that are not public water systems. The following commission rules apply to affected utilities that are public water systems:

Definitions: §290.38

General Provisions: §290.39(c)(4)(A) - (E) and (o)(1) - (5)

Water Distribution: §290.44(d)

Minimum Water System Capacity Requirements: §290.45(a)(7), (b)(3), (c)(3), (d)(4), (e)(4), (g)(5)(A)(iv), (g)(5)(B), and (h).

Minimum Acceptable Operating Practices for Public Drinking Water Systems: §290.46(f)(5) and (r).

Plan Options. A submitted emergency preparedness plan must include one of the following:

(1) Auxiliary generators equipped with automatic starting generators and switch over equipment. This equipment must have the ability to detect the failure of normal power from the electric grid; automatically start the generator; isolate necessary water equipment from the normal power grid; and switch the running generator's power to power the necessary water equipment to maintain the required minimum pressure.

(2) Two or more affected utilities may propose the sharing of auxiliary generator power. Necessary electrical and/or water connections equipped with automatic switch over and opening valves must be presented in the plan to demonstrate how one or more affected utilities will be able to maintain the required minimum pressure. Describe which equipment will share the auxiliary generator power and which equipment, if any, would receive power from only a single affected utility's auxiliary power equipment.

(3) Copies of negotiated leasing and contract agreements for emergency power equipment and any necessary fuel. This includes mutual aid agreements with other retail public utilities, exempt utilities, or providers or conveyors of potable or raw water service if the agreements provide for coordination with the division of emergency management in the governor's office. Consideration must be given to the location of where the other water supplier(s) are located as they may also be affected by the same natural disaster. In addition, when entering into a contract for leasing of

emergency power equipment and necessary fuel, the contractual commitments of the supplier to other water suppliers and businesses within an area subject to the same natural disaster event must be taken into consideration.

(4) Use of portable generators capable of serving multiple facilities. The portable generator(s) and the necessary water equipment must be pre-equipped with quick-connect, mating electrical connectors to facilitate the rapid implementation of the emergency preparedness plan. The plan must address whether there is an adequate number of portable generators to operate all of the necessary water equipment in order to maintain the required minimum pressure in multiple pressure plans or at multiple systems, if affected by the same natural disaster event.

(5) In lieu of generators, alternative on-site electrical generation, or distributed electrical generation facilities, may be used. This may include the use of wind, solar or other power as a means of providing sufficient emergency power to operate the necessary water equipment to maintain the required minimum pressure.

(6) Hardening of the electric transmission and distribution system serving the affected utility. One alternative is to relocate electric transmission lines for the system from overhead to underground and protect them from flooding. Another alternative is to replace overhead transmission lines, poles, and related appurtenances with ones that can withstand historical hurricane-force wind velocities, and trim or remove any trees next to and above the overhead transmission lines. Either alternative must include documentation on the ability of applicable power plant(s) and station(s) to withstand hurricane-force winds.

(7) Engines equipped with direct or right angle drives can be used as auxiliary power sources. Each pump or other equipment must be equipped with appropriate mechanical fittings to facilitate the use of engines. The plan must address the operation of chemical feed pumps using a generator(s).

(8) Any other alternative determined by the executive director to be acceptable.

Plan Contents. An emergency preparedness plan must provide for any applicable production, treatment, transfer and service pumps at an adequate flow rate and at a minimum pressure of 35 pounds per square inch in the far reaches of an affected distribution system, including multiple pressure planes. If applicable, provide the following information:

□ Contact information, including names, emergency telephone and pager numbers, and e-mail addresses.

□ List all ground, surface, and purchased water sources, with locations and individual capacities.

□ List all interconnections with other water providers; whether normally open or closed; size; whether wholesale, purchase, or both; available capacity; and any other pertinent information. Include the names of each interconnection and their contact information, including names, titles, telephone and pager numbers, and e-mail addresses.

□ List the capacity and power requirements of all treatment equipment.

□ For each chemical, list the type of storage, volume, and volume required per day during emergency operations.

□ Provide a copy of all water distribution and transmission piping maps.

□ Provide the maximum and average daily demands. If the emergency preparedness plan is for a proposed affected utility, the minimum specified capacities in §290.45 of this subchapter shall be used for the maximum daily demand.

□ List all primary electrical power sources.

□ List all equipment necessary to provide water to customers at the required minimum pressure and adequate flow rate, and the power requirements for each piece of equipment.

□ List the size, location and fuel requirement in gallons per hour at the load necessary to maintain emergency operations for all on-site manual and automatic auxiliary power equipment, and provide information as to how the affected utility determined the necessary fuel quantity.

□ Provide documentation as to how the affected utility will ensure that it maintains an adequate supply of fuel during emergency operations.

□ List the size, location, fuel requirement in gallons per hour at the load necessary to maintain emergency operations, and the name of the system sharing the equipment for all shared auxiliary power equipment. Include the other system's contact persons with their emergency telephone and pager numbers and e-mail addresses.

□ Provide a copy of any leasing and contracting agreements, including mutual aid agreements with other retail public utilities, exempt utilities, or providers or conveyors of potable or raw water service, if the agreements provide for coordination with the division of emergency management in the governor's office. If leasing, include the vendor's name, location, and contact information.

□ List all portable generators' power, phase, type of quick-connect, fuel type, and fuel demand in gallons per hour.

□ Provide specifications, a description, and detailed capacity information for all on-site electrical generation or distributive generation equipment. Include all fuel demands for this equipment.

□ List all direct or right angle drive emergency power equipment with the name, type of engine, fuel type, and fuel demand in gallons per hour.

□ Provide details for any other proposed alternative.

□ For each fuel tank, provide the location, volume, name of fuel suppliers, contact names, titles, telephone and pager numbers, and e-mail addresses.

□ List all local and state emergency responders and their emergency contact telephone and pager numbers. Include medical facilities.

□ List all priority water users, such as hospitals and nursing homes, and their emergency contact names, titles, telephone and pager numbers, and e-mail addresses.

□ List any bulk water haulers that could be used, including contact names, telephone and pager numbers, and e-mail addresses.

□ Provide the system's designated media spokesperson with a list of local media contact names, titles, type of media, telephone and pager numbers, and e-mail addresses.

□ Provide the water restrictions that the system will implement during an emergency response.

□ Provide a proposed time frame for full implementation of the emergency preparedness plan.

Figure: 30 TAC §290.47(h)

Appendix H: Sample Language for Notification Upon Changing from Free Chlorine to Chloramines

A public water system (PWS) must notify its customers, in writing, at least 14 days before starting to use chloramines. This notification must contain the Sample Language for Notification Upon Changing from Free Chlorine to Chloramines included below. The notification should be provided to the news media, renal disease facilities, dialysis clinics, hospitals, physicians, local health departments, pet stores, zoos, and any other facilities that may be impacted by the change.

Sample Language for Notification Upon Changing from Free Chlorine to Chloramines

"On <**Date**>, the <**Water System Name**> will be changing the disinfectant that we use from chlorine to chloramines. This change is intended to benefit our customers by reducing the levels of disinfection byproducts in the system, while still providing protection from waterborne disease.

However, the change to chloramines can cause problems to persons dependent on dialysis machines. A condition known as hemolytic anemia can occur if the disinfectant is not completely removed from the water that is used for the dialysate. Consequently, the pretreatment scheme used for the dialysis units must include some means, such as a charcoal filter, for removing the chloramine prior to this date. Medical facilities should also determine if additional precautions are required for other medical equipment. In addition, chloraminated water may be toxic to fish. If you have a fish tank, please make sure that the chemicals or filters that you are using are designed for use in water that has been treated with chloramines. You may also need to change the type of filter that you use for fish tanks."

Optional: "When the chloraminated water first flushes out the chlorinated water there may be a slight taste and odor, and possibly discoloration for a short period of time. This will not compromise the safety of the water."

Important notes:

1. The PWS may not begin using chloramines prior to the date shown in the notice.

2. The Texas Commission on Environmental Quality does not require the PWS to include the name or contact telephone number of a PWS employee that the customers can contact if they have questions; however, several PWSs have included this information as a courtesy to its customers.

Figure: 30 TAC §290.110(f)(6)

$$V = \frac{b \times 100}{a}$$

Where:

a = number of instances where the residual disinfectant concentration is measured during the month; and

b = number of instances during the month where the residual disinfectant concentration is measured but is detected at less than 0.2 milligrams per liter (mg/L) free chlorine or less than 0.5 mg/L chloramine (measured as total chlorine).

Texas Commission on Environmental Quality

ORDER ADOPTING AMENDED RULES

Docket No. 2014-0615-RUL

Rule Project No. 2013-046-290-OW

On July 1, 2015, the Texas Commission on Environmental Quality (Commission) adopted amended rules in 30 Texas Administrative Code Chapter 290, concerning Public Drinking Water. The proposed rules were published for comment in the February 6, 2015, issue of the *Texas Register* (40 TexReg 518).

IT IS THEREFORE ORDERED BY THE COMMISSION that the amended rules are hereby adopted. The Commission further authorizes staff to make any non-substantive revisions to the rules necessary to comply with *Texas Register* requirements. The adopted rules and the preamble to the adopted rules are incorporated by reference in this Order as if set forth at length verbatim in this Order.

This Order constitutes the Order of the Commission required by Tex. Gov't Code Ann., Chapter 2001 (West 2008).

If any portion of this Order is for any reason held to be invalid by a court of competent jurisdiction, the invalidity of any portion shall not affect the validity of the remaining portions.

Date Issued:

TEXAS COMMISSION ON
ENVIRONMENTAL QUALITY

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Bryan W. Shaw, Ph.D., P.E., Chairman

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