TWC : WATER

National Engineering
Managers Meeting

Charlotte, North Carolina
April 4 - 7, 1990

Delta Environmental Consultants, Inc.

facilities; **wastewater discharges**; and **injection wells**. Two issues not from Chapter 305, Subchapter E, are discussed here, however—notice of hearing on air quality permit applications and notice of hearing on contested enforcement cases. In the future, the Commission plans to add more types of applications to the new chapter.

In a related move, TNRCC proposed in the June 25 *Texas Register* the repeal of Chapter 305, Subchapter E, concerning consolidated permits, in its entirety.

INFO: Contact Richard O'Connell at (512) 239-5528, or see 21 *TexReg* 5539 for the proposed rule chapter, and 21 *TexReg* 5842 for the proposed repeal.

Aquifer Storage Regulations Adopted

A package of new aquifer storage and permit exemption rules has been approved by TNRCC, according to the June 14 *Texas Register*.

The rules were proposed in order to implement 1995's HB 1989, which directed TNRCC to investigate the feasibility of storing appropriated water in various aquifers around the state by encouraging the issuance of temporary or term permits.

Through this rule package, TNRCC is limiting the applicability of new permits for aquifer storage and retrieval projects that entail the underground storage of appropriated surface water to certain areas around the state.

The Commission notes that these rules will not apply to any existing permit, permit amendment, or to any permit application filed prior to June 5, 1995 (the bill's effective date).

INFO: Contact James Kowis at (512) 239-4900, or see 21 *TexReg* 5441 and 5443.

TNRCC Adopts Tire Recycling Program Changes

More than 50 changes are included in a rule package concerning the Waste Tire Recycling Program adopted in the June 21 *Texas Register*.

Some provisions are repealed, revisions of existing rules are made, and new sections are adopted as part of the package. The changes deal primarily with payments to waste tire energy recovery facilities (such as cement kilns and utility boilers) for tires used as fuel, grants for retrofitting of these facilities to accept tires as fuel, and grants for construction of tire recycling facilities.

The Waste Tire Recycling Fund was created by the Texas Legislature in 1991, with the intent of cleaning up existing illegal waste tire dumps and ensuring that no new illegal dumps were created. The Fund aimed to reach this goal by collecting new waste tires free of charge at the point of generation. Program changes mandated by the 74th Legislature, 1995, made it necessary to radically revise the rules governing the Program.

Under the rules adopted here, out-of-state waste tire processors can no longer be reimbursed by the Fund. In addition, the Useful Product Reimbursement Program is eliminated. Several definitions are modified through proposed amendments, and fee schedule changes are made.

INFO: Contact Jennifer Sidnell at (512) 239-6824, or see 21 *TexReg* 5711.

Motorist's Choice Program Gets Green Light

TNRCC adopted a rule package in the June 11 *Texas Register* that implements the Texas Motorist's Choice emissions inspection program and revises the state implementation plan (SIP) for ozone nonattainment areas accordingly.

At the same time, TNRCC adopted the repeal of current rule sections concerning inspection requirements and equipment evaluation procedures for vehicle exhaust gas analyzers and other emissions inspection measures.

This action is in response to the National Highway System Designation Act (NHSDA) of 1995 and in response to the Governor's Executive Order directing TNRCC to design a new plan for vehicle emissions testing. One of the NHSDA's provisions requires EPA to grant interim approval of a state inspection/maintenance (I/M) program and to allow for full credit for facilities that conduct test-and-repair in the SIP if that plan is submitted to EPA by March 27, 1996.

These rules outline the primary program requirements for the Motorist's Choice program, including the schedule of program start-up dates.

TNRCC REGULATORY GUIDANCE

Water Utilities Division
RG-206
May 1997 (Revised)

512/239-6020
FAX 512/239-6050

SUBJECT: Customer Service Inspections

1. When Should These Inspections Take Place?

An inspection MUST occur:

- For new construction.
- For material improvement, correction, or addition to private plumbing. (A "material improvement, correction, or addition" would include plumbing work that requires a permit or that involves a major modification to private plumbing.)
- When the water supplier believes that a cross connection or unacceptable plumbing exists. The public water supplier should provide written justification to the customer for requiring an inspection by specifically identifying the threat that is believed to exist.

An inspection is NOT required on:

- Existing connections (unless one of the above applies)
- Temporary/Construction connections
- Transfer of service

2. What Do These Inspections Identify?

- Cross Connections: A cross connection is a connection between a drinking water supply and a possible source of contamination or pollution. These can include:
  - Direct connections
  - Connections allowing the return of water used for industrial processes
  - Plumbing fixtures that are not in compliance with a state-approved plumbing code

- Lead Plumbing or Materials:
  - Pipe or pipe fitting which contains more than 8.0% lead should NOT be installed on or after July 1, 1988.
  - Solder or flux which contains more than 0.2% lead should NOT be installed on or after July 1, 1988. Lead joints may be used only for repairs to cast iron pipe.

3. Does a Public Water Supplier Have to Require a Customer Service Inspection For a Mobile Home Entering a Mobile Home Park or a Mobile Home Placed on an Individual Lot?

No, unless the water supplier believes that a cross connection or unacceptable plumbing exists. The Manufactured Housing Construction and Safety Standards, enforced by the Federal Department of Housing and Urban Development, requires manufactured homes to comply with proper plumbing standards. This code, effective June 15, 1976, prohibits lead and cross connections within the home.

4. How Can Water Suppliers Protect Backflow at a Mobile Home Park or RV Park?

The public water supplier may protect by either *containment* or *isolation*, although containment at the master meter may be the most practical method of protection. (See Question #14 also.)

19. Can the Public Water Supplier Refuse to Accept a Certification from Someone of the Customer's Choosing?

- Investor-Owned Utility - No.
- Water Supply Corporation - Yes, if the corporations passes bylaws addressing who can perform inspections.
- District/City - Yes, if the district or city passes rules or ordinances addressing who can perform inspections.

20. Do the TNRCC Chapter 290 Rules and Regulations Require Backflow Prevention Devices on All Connections? No.

21. To Whom Can the Customer Appeal the Public Water Supplier's Ruling or Enforcement Actions?

If the water supplier adopts regulations that exceed the TNRCC's minimum requirements, the customer appeals to the governing body of the water system, or, if the system is an investor-owned utility, the customer appeals to the Utility Rates and Services Section of the TNRCC at 512/239-6960.

22. Where Can I Get a Copy of One of the Plumbing Codes?

They may be purchased from:

Southern Standard Plumbing Code	Uniform Plumbing Code	National Standard Plumbing Code
Southern Building Code Congress International 9420 Research Blvd. Echelon III, Suite 150 Austin, Texas 78759 800-347-2224	Plumbing, Heating, and Cooling Contractors 2201 North Lamar Austin, Texas 78701 800-831-9313	National Association of Plumbing, Heating, and Cooling Contractors P.O. Box 6808 Falls Church, Virginia 22040 800-533-7694

23. What Is the Process for Reporting Improper Plumbing Practices or Inspection by a Licensed Plumber?

Contact the Texas State Board of Plumbing Examiners at 800-845-6584.

24. Should a Backflow Device Be Installed as Additional Protection If No Known Hazard Exists? No.

25. When Are Backflow Devices, Such as Hose Bibb Vacuum Breakers, Required?

State-approved plumbing codes as well as most local plumbing ordinances require hose bibb vacuum breakers on exterior faucets of new dwellings. They are recommended for existing dwellings, unless a cross connection is discovered. If a cross connection is found, an air gap separation or a backflow prevention device, such as a hose bibb vacuum breaker, is required. The type of device required will be determined by the degree of hazard posed by the cross connection.

Rec'd July '97

Effective: March 3, 1997

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
Permanent Rule Change

Rule Log Number 96132-290-WT

CHAPTER 290 - WATER HYGIENE

Subchapter D

1. Purpose. This change transmittal provides the page(s) that reflect changes and additions to the Texas Natural Resource Conservation Commission (commission) Volume of Permanent Rules.

2. Explanation of Change. The commission adopted amendments to §§290.42, 290.44, 290.46, and 290.47 relating to the rules and regulations for public water supply systems. Section 290.47 is adopted with changes to the proposed text as published in the September 13, 1996, issue of the *Texas Register* (21 TexReg 8805). Amendments to §§290.42, 290.44 and 290.46 are adopted without changes and will not be republished.

3. Effect of Change. The purpose of the adopted rules is to clarify when a boil water notice to customers is required and to specify other responses to a drop in pressure in water distribution lines required of public water suppliers. This has been accomplished by revisions to §290.46(s) and by the addition of an appendix that diagrams decisions and corrective action that a public water supply system must take in response to a drop in water distribution system pressure. The adopted rules also correct typographical errors.

HISTORY PAGE

CHAPTER 290 - WATER HYGIENE

Repeal of: §§290.47-290.50
Amendments to: §§290.38, 290.39, 290.41-290.46
Adoption of new: §290.47 and §290.121
Date Adopted: September 20, 1995
Date Filed with the Secretary of State: October 9, 1995
Date Adoption was Published: October 20, 1995
Date Effective: November 3, 1995

Amendment to: §290.51
Date Adopted: January 22, 1997
Date Filed with the Secretary of State: January 24, 1997
Date Effective: February 14, 1997

Amendments to: §§290.42, 290.44, 290.46, 290.47
Date Adopted: February 5, 1997
Date Filed with the Secretary of State: February 10, 1997
Date Effective: March 3, 1997

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CHAPTER 290 - WATER HYGIENE

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§290.51. Fees for Services to Drinking Water Systems

SUBCHAPTER F : DRINKING WATER STANDARDS GOVERNING DRINKING WATER QUALITY AND REPORTING REQUIREMENTS FOR PUBLIC WATER SUPPLY SYSTEMS

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§290.103. Standards of Chemical Quality.
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§290.105. Maximum Contaminant Levels (MCLs) for Microbiological Contaminants.
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§290.108. Inorganic Chemical Monitoring and Analytical Requirements.
§290.109. Organic Chemical (Other Than Trihalomethanes) Monitoring, Analytical Requirements and Treatment Techniques.
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SUBCHAPTER A : CERTIFICATION OF PERSON TO INSTALL, EXCHANGE, SERVICE, OR REPAIR RESIDENTIAL WATER TREATMENT FACILITIES
§§290.20 - 290.6

§290.20. General Provisions.

Texas Civil Statutes, Article 6243-101 as amended by Senate Bill 147 of the 65th Legislature, 1977, provides for the certification of persons as being qualified for the installation, exchange, servicing, and repair of residential water treatment facilities as defined by subsection (g), §2. Standards of qualifications are to be set to insure the public health and to protect the public from unqualified persons engaging in activities relating to water treatment.

§290.21. Definitions.

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

Certificate-A document issued by the department signifying that an eligible person has met the requirements set forth in these rules and regulations. The certificate shall have the original signature or a printed signature of the commissioner and the deputy commissioner for environmental and consumer health protection of the Texas Department of Health.

Commissioner of Health-The commissioner of health, Texas Department of Health, or his duly authorized representative.

Department-The Texas Department of Health.

Director of health resources-The commissioner of health, Texas Department of Health, or his duly-authorized representative.

Eligible person-One who has known qualifications to install, exchange, service, and repair residential treatment facilities by meeting standards of education, training, and experience set by the department.

§290.22. Types of Certificates.

(a) The types of certificates to be issued by the department shall be as follows:

(1) class 1-residential water treatment facility operator;

(2) class 2-residential water treatment facility operator;

(3) class 3-residential water treatment facility operator;

(b) Certificate description.

(1) Class 1. This certificate is valid for two years and is renewable. Persons issued this certificate must work under the supervision of a person holding a higher class certificate, the local

plumbing inspector, or a health official having jurisdiction where the work is performed. Class 1 work is restricted to the performance of the following activities:

(A) exchange and regeneration of portable tanks;

(B) regeneration of nonportable tanks;

(C) other tasks which may be assigned by the supervisor and for which direct supervision is provided.

(2) Class 2. This certificate is valid for three years and is renewable. Persons issued this certificate will have demonstrated a practical working knowledge of the mechanics and servicing principles of water conditioners, and are deemed able to perform water treatment installations, exchanges, services, or repairs of equipment as set forth by state law. Holders of this class certificate are considered to be aware of the public health requirements connected with their activities. Work on reverse osmosis and deionization equipment is specifically excluded unless performed under the supervision of a person holding a higher class certificate.

(3) Class 3. This certificate is valid for five years and is renewable. Persons issued this certificate meet minimum standards of qualifications established for the installation, exchange, servicing, and repair of residential water treatment facilities.

§290.23. Qualification Requirements.

(a) Requirements.

(1) Experience, education, and training requirements are as follows:

Certificate	*Minimum Working Experience*	*Education*	*Approved Training*	*Validity Period*
Class I	none	less than high school	none	2 years
Class 2	if 3 years	less than high school	basic course	3 years
	if 2 years	high school or GED	basic course	3 years
	if 1 year	1 year college	basic course	3 years
Class 3	if 3 years	high school or GED	basic and intermediate courses	5 years
	if 2 years	2 years college	basic and intermediate courses	5 years
	if 1 year	college degree	basic and intermediate courses	5 years

(2) Substitution of acceptable experience for educational and training requirements will be considered by the department for entry levels of classification. In addition to experience and education, each applicant must pass an examination designed and administered by the department in order to receive a certificate.

(b) Approved training. Credit hours of training toward certification are earned for satisfactory completion of department approved courses. Such courses must be relevant to public health and water hygiene. The number of hours of training necessary to qualify for the various class levels of certification will be determined by the department.

(c) Examinations.

(1) All examinations will be administered by the department and will cover fundamental knowledge on the requirements for a residential water treatment facility; residential water supply; interpretation of bacteriological and chemical analysis; sanitary protection of residential water supply; distribution system sanitation; procedures involved in installation, exchange, repair, and service of treatment facilities; and similar health-related matters. Applicants for certificates will be tested on standards of qualifications set by the department in order to insure the public health and to protect the public from unqualified persons engaging in activities relating to water treatment as provided for in the law.

(2) An eligible person may apply for examinations in any one of three different levels, ranging from Class 1 through Class 3, with the third level being the highest or most advanced. Class 1 has been established as an entry level and is intended to simplify entry of new personnel into the certification program or for those persons needing certificates at the basic level only. Class 2 level has been established to test installers, repairmen and servicemen primarily who do not work on reverse osmosis and deionization equipment without assistance. Class 3 levels are usually for persons in responsible charge of operation, supervision, or management.

(3) The Class 3 examinations are of difficult nature, involving design as well as water chemistry, bacteriology, and physics. The applicant will need to be prepared to perform fairly difficult computations in the science of water control.

(4) The passing score for the examination for each class of certificate shall be 70 percent.

(5) Any applicant who fails to pass an examination may repeat the same examination after a period of 180 days following the date of the previous examination.

(6) Following the failure of an examination, an applicant's application shall be held by the department for a maximum of nine months, pending the applicant's repeating the examination. If the examination is not repeated within these nine months, the applicant shall submit another application with the appropriate fee. This shall not apply to Class 3 unless deemed otherwise by the department.

§290.24. Applying for Certificates.

(a) Applications. An application should be made on a standard application form furnished by the department. As much information as possible should be given, using supplementary sheets if necessary to give all the details required to show need, education, experience, and training so grade level qualifications of applicant can be determined. The application should be signed, dated, and sent to the Texas Department of Health, Division of Water Hygiene, 1100 West 49th Street, Austin, Texas 78756.

(b) Renewal of certificates.

(1) Certificates issued by the department may be renewed by obtaining the following amounts of approved training credit while the certification is valid:

Certificate	Training credit class
1	One basic course in water conditioning
2	One intermediate course in water conditioning
3	Two courses in water conditioning

(2) Courses taken prior to the issuance of a certificate may not be counted toward the renewal of that certificate; however, all courses taken may be used in upgrading certificates.

§290.25. Revocation of Certificates.

(a) The certificate of an operator shall be revoked if:

(1) The certificate was issued in error;

(2) The operator obtained the certificate through fraud, deceit, or through the submission of incorrect data on his/her qualifications; or

(3) The operator practiced fraud and deceit, or failed to use reasonable care, judgment, or application of his/her knowledge in the performance of his/her duties.

(b) When the department has reason to believe that charges against a certified operator may be valid, the department shall notify the operator by personal service or certified mail at his last known address:

(1) of the charges made against him/her;

(2) that it intends to conduct an examination of the charges; and

(3) that the operator has an opportunity to refute and prove the charges invalid.

(c) After the department's examination of the charges and the operator's rebuttal, if the department still has reason to believe there is cause for revocation, the department shall initiate a formal hearing in accordance with §§1.21-1.32 of this title (relating to Formal Hearing Procedures).

§290.26. Fees.

An amendment to the Plumbing License Law, Texas Civil Statutes, Article 6243-101, by the 69th Legislature, May 1985, requires the payment of an annual $10.00 fee before a certificate of competency can be issued or renewed. Fees for certification shall be established as follows:

(1) Application Fees.

(A) Class 1 certificate-$20;

(B) Class 2 certificate-$30;

(C) Class 3 certificate-$50.

(2) Renewal Fees.

(A) Class 1 certificate-$20;

(B) Class 2 certificate-$30;

(C) Class 3 certificate-$50.

(3) Certificates that have not been renewed within 30 days of the expiration date with the appropriate fee will be considered invalid. A new certificate shall be obtained by submitting a new application with the appropriate fee and receiving a passing score on the examination.

(4) Fees shall be paid by personal check, cashier's check, or money order. Cash cannot be accepted for payment of fees.

(5) An applicant or holder of a certificate shall pay all required fees before taking the examination or receiving a certificate of competency.

(6) All fees shall be made payable to TDH-OCP (Texas Department of Health-Operator Certification Program) and are not refundable.

(7) If an applicant does not submit the appropriate payment with the new or renewal application, the certificate shall not be issued.

SUBCHAPTER B : CERTIFICATION OF WATERWORKS PERSONNEL §§290.27-290.36

§290.27. General.

(a) It is the purpose of these rules and regulations to set forth a uniform procedure for the administrative issuance of certificates of competency to waterworks personnel seeking compliance with state statutes regulating their operations.

(b) Certificates of competency are established for persons in direct responsible charge, that is, who have active daily on-site responsibility for a water production system, a water treatment plant, a water distribution system, or a major portion of such a system. Certification of supervisors is encouraged, as is that of subordinates, who are directly involved in water supply technical operations.

(c) Certification is available to operators of all systems which furnish drinking water to the public, whether or not a certified operator for a particular water system is required by law.

(d) The Texas certification program is designed to stimulate training among its thousands of waterworks operators who are widely spread throughout the entire state. Such training helps to develop knowledge and technical skills which promotes career growth in the water utility industry and protects the public health by increasing assurance that safe drinking water is being provided to the consumer. Water personnel should become certified at the highest grade commensurate with his or her qualifications.

(e) Certification may be made a part of an employee position requirement to provide adequate staffing of utility systems, and it might result in a means for a person to advance into a better and more responsible position; however, certification is not intended to be a rating system for upgrading employees or for establishing salary levels. It is a process whereby a person can be recognized for his skills and knowledge in the water utility industry.

(f) The statutory authorization for these rules is the Health and Safety Code, Chapter 341, "Minimum Standards of Sanitation and Health Protection Measures."

§290.28. Definitions.

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

Certificate - The certificate of competency issued by the commission which states that the operator has qualified for certification at the grade specified. The certificate shall have the original or printed signature of the executive director and chair of the commission. The commission may issue the following certificates:

(A) Grade A Water,
(B) Grade B Surface Water,
(C) Grade B Groundwater,
(D) Grade B Distribution,
(E) Grade C Surface Water,
(F) Grade C Groundwater,

(G) Grade C Distribution; and

(H) Grade D Water.

Commission - the Texas Natural Resource Conservation Commission.

Daily on-site responsibility - An individual who actually performs work, makes decisions, or gives direction to others concerning the operation of a water plant, water well, or water distribution system; and such work, decision, or direction is a part of the daily responsibilities of such individual as opposed to periodic, occasional, or regular responsibilities on a less frequent basis.

Designated courses - The minimum 20-hour courses or their equivalent required to obtain a certificate, as specified in these rules and regulations. The designated courses shall include one or more of the following: basic water works operation, groundwater production, surface water production, water distribution, water laboratory, safety, pump and motor maintenance and management. Courses offered by the Water and Wastewater Training Division, Texas A&M University Engineering Extension Service or similar approved courses shall be considered by the commission to be designated courses.

Executive Director - the executive director of the Texas Natural Resource Conservation Commission.

Experience - Actual work experience, full or part-time, in water supply operation, maintenance, distribution, laboratory analysis or other approved practices considered essential for production of final product from the water supply system.

(A) Certificates of Competency shall not be issued to managerial or administrative officials such as mayors, city managers, councilpersons or utility board members unless they conduct daily, on-site operational activities for a public water system. Certificates also will not be issued to support personnel such as secretaries, billing clerks, customer service representatives, meter readers, radio dispatchers, nor to employees of state and/or federal agencies having regulatory authority over public water systems.

(B) To be fully acceptable, work experience presented to meet requirements for a surface water production certificate must be in surface water operations; work experience presented to meet requirements for a groundwater production certificate must be in groundwater operations; and work experience presented to meet requirements for a distribution certificate must be in distribution operations.

(C) At least one-half of the minimum required experience must be in the same field as the certificate applied for. For example, at least one year of actual surface water treatment/production experience must be obtained to qualify for a Grade C surface water certificate and 2 1/2 years of actual surface water treatment production experience must be obtained before applying for a Grade B surface water certificate.

Training credit - The hours of credit allowed by the commission for attendance at training which has been approved in accordance with the provisions in these rules and regulations.

Water supply system - The works and auxiliaries for production, treatment, storage, and distribution of the water from the sources of supply to the free-flowing outlet of the ultimate consumer.

Waterworks operator--Any person trained in the purification or distribution of a public water supply who has a practical working knowledge of the chemistry and bacteriology essential to the practical mechanics of water purification and who is capable of conducting and maintaining the purification processes in an efficient manner.

(A) Surface water operator--An operator with daily on-site responsibility for producing and/or treating any surface water used as a water source for a public water supply.

(B) Groundwater operator--An operator with daily on-site responsibility for producing and/or treating any groundwater used as a water source for a public water supply.

(C) Distribution system operator--An operator with daily on-site responsibility for delivering a sufficient volume of drinking water at the required pressure while maintaining water quality.

§290.29. Administration.

(a) The commission shall be responsible for the following:

(1) receiving and evaluating applications and pertinent documents to determine whether qualification requirements are met by the applicant and notifying applicant as to action taken;

(2) preparing and administering examinations;

(3) supervising and grading examinations or arranging for the supervision and grading of examinations and notifying applicant as to result of examination (pass or fail);

(4) issuing new and renewal certificates;

(5) maintaining records of qualifications of operators having valid certificates;

(6) maintaining a register of operators having valid certificates;

(7) maintaining a register of water supply systems having certified personnel;

(8) approving training for certification credit;

(9) maintaining transactions of committee meetings;

(10) collection of fees.

§290.30. Qualifications.

(a) Certification by examination. All individuals shall meet the following requirements based upon formal education, specialized training courses, actual operating experience, and passing of written examinations. All applicants shall be required to pass the current examinations covering the fields of waterworks operation.

(b) Grade A water certificate. Education, experience, and training requirements are as follows:

(1) high school graduation, or the equivalent, eight years of experience, 160 hours of training credit. (See paragraph (4) of this subsection);

(2) college degree (bachelor's) with a major in an engineering discipline eligible for registration as a professional engineer, or in chemistry, biology, or bacteriology, and five years of experience, and 160 hours of training credit. (See paragraph (4) of this subsection);

(3) college degree (master's) with a major in any engineering discipline eligible for registration as a professional engineer, or in chemistry, biology, or bacteriology, and four years of experience, and 160 hours of training credit. (See paragraph (4) of this subsection);

(4) the 160 hours of training credit indicated in paragraphs (1)-(3) of this subsection shall include each of the following designated courses, or the equivalent:

(A) groundwater production;

(B) surface water production;

(C) water distribution;

(D) water laboratory;

(E) safety; and

(F) management;

(5) For the years of experience required for Grade A certificates, one year of college (32 semester hours) or an additional 40 hours of approved training credits may be substituted for one year of the experience requirement. In no case shall the actual experience be less than six years for high school graduates, five years for college graduates with bachelor's degrees, or four years for college graduates with master's degrees.

(c) Grade B surface water certificate. Education, experience, and training requirements are as follows:

(1) high school graduation, or the equivalent; and five years of experience, and 100 hours of training credit. (See paragraph (3) of this subsection);

(2) college degree (bachelor's) with a major in any engineering discipline eligible for registration as a professional engineer, or in chemistry, biology, or bacteriology; and one year of experience, and 100 hours of training credit. (See paragraph (3) of this subsection);

(3) the 100 hours of training credit indicated in paragraphs (1) and (2) of this subsection shall include each of the following designated courses, or the equivalent:

(A) surface water production;

(B) water distribution;

(C) safety; and

(D) water laboratory.

(d) Grade B groundwater certificate. Education, experience, and training requirements are as follows:

(1) high school graduation, or the equivalent; and five years of experience, and 100 hours of training credit. (See paragraph (3) of this subsection);

(2) college degree (bachelor's) with a major in any engineering discipline eligile for registration as a professional engineer, or in chemistry, biology, or bacteriology; and one year of experience, and 100 hours of training credit. (See paragraph (3) of this subsection);

(3) the 100 hours of training credit indicated in paragraphs (1) and (2) of this subsection shall include each of the following designated courses, or the equivalent:

(A) groundwater production;

(B) water distribution;

(C) water laboratory; and

(D) safety;

(4) For the years of experience required for Grade B groundwater certificates, one year of college (32 semester hours) or an additional 40 hours of approved training credits may be substituted for one year of the experience requirement. In no case shall the actual experience be less than three years for a high school graduate or one year for a college graduate.

(e) Grade B distribution certificate. Education, experience and training requirements are as follows:

(1) high school graduation, or the equivalent; and five years of experience, and 100 hours of training credit. (See paragraph (3) of this subsection);

(2) college degree (bachelor's) with a major in any engineering discipline eligible for registration as a professional engineer, or in chemistry, biology, or bacteriology; and one year of experience, and 100 hours of training credit. (See paragraph (3) of this subsection);

(3) the 100 hours of training credit indicated in paragraphs (1) and (2) of this subsection shall include each of the following designated courses, or the equivalent:

(A) water distribution,

(B) safety,

(C) pump and motor maintenance; and

(D) water laboratory.

(4) Substitution for experience. For the years of experience required for grade b distribution certificates, one year of college (32 semester hours) or an additional 40 hours of approved training credits may be substituted for one year of the experience requirement. In no case shall the actual experience be less than three years for a high school graduate or one year for a college graduate.

(f) Grade C surface water certificate. Education, experience, and training requirements are as follows:

(1) high school graduation, or the equivalent; and two years of experience, and 60 hours of training credit. (See paragraphs (2) and (3) of this subsection);

(2) 40 hours of training credit which shall consist of the following designated courses, or their equivalent:

(A) basic waterworks operation; and

(B) surface water production;

(3) the remaining 20 hours shall be in one of the following courses:

(A) water laboratory;

(B) water utility safety;

(C) water distribution;

(D) chlorinator maintenance;

(E) pump and motor maintenance; or

(F) water utility calculations.

(4) Substitution for experience. For the years of experience for Grade C surface water certificates, one year of college (32 semester hours) or an additional 40 hours of approved training credits may be substituted for one year of the experience requirement. In no case shall the actual experience be less than one year.

(g) Grade C groundwater certificate. Education, experience, and training requirements are as follows:

(1) high school graduation, or the equivalent; and two years of experience and 60 hours of training credit. (See paragraphs (2) and (3) of this subsection);

(2) 40 hours of training credit which shall consist of the following designated courses, or their equivalent:

(A) basic waterworks operation; and

(B) groundwater production.

(3) the remaining 20 hours which must be in one of the following courses:

(A) water laboratory;

(B) water distribution;

(C) chlorinator maintenance;

(D) pump and motor maintenance;

(E) water utility safety; or

(F) water utilities calculations;

(4) For the years of experience for Grade C groundwater certificates, one year of college (32 semester hours) or an additional 40 hours of approved training credits which may be substituted for one year of the experience requirement. In no case shall the actual experience be less than one year.

(h) Grade C distribution certificate. Education, experience, and training requirements are as follows:

(1) high school graduation, or the equivalent; and two years' experience and 60 hours of training credit. (See paragraphs (2) and (3) of this subsection);

(2) 40 hours of the training which shall consist of the following designated courses, or their equivalent:

(A) basic waterworks operations; and

(B) water distribution;

(3) the remaining 20 hours must be in one of the following courses:

(A) pump and motor maintenance;

(B) chlorinator maintenance;

(C) water laboratory;

(D) water utility safety;

(E) water utilities calculations; or

(F) valve and hydrant maintenance.

(4) For the years of experience for Grade C distribution certificates, one year of college (32 semester hours) or an additional 40 hours of approved training credits may be substituted for one year of the experience requirement. In no case shall the actual experience be less than one year.

(i) Grade D water certificate. A Grade D water certificate is not renewable if the operator is employed at a system of 250 connections or more; surface water systems must have an operator with at

least Grade C surface water certification. Education, experience, and training requirements are as follows:

(1) high school graduation, or the equivalent; and no experience, and 20 hours of training credit. (See paragraph (3) of this subsection);

(2) less than high school, and no experience, and 40 hours of training credit. (See paragraph (3) of this subsection);

(3) 20 hours of training credit indicated in paragraphs (1) and (2) of this subsection must be a course in basic waterworks operation, or its equivalent.

§290.31. Applications.

(a) Application for certification shall be made on a standard form provided by the commission and signed by the applicant. All statements and qualifications given by the applicant are subject to verification by the commission. Misrepresentation or falsification of information by the applicant shall be grounds for rejection of an application.

(b) Each application shall be accompanied by the appropriate fee. If application is made for two or more grades, the fee shall be for the sum of each certificate applied for on the application form. A certificate will be issued for the highest level passed. Approved applications and fees are valid for twelve months from the date of application. If an examination has not been taken within twelve months from the date of application, a new application must be submitted with another fee.

(c) Grade A, B, and C applicants shall list two references, preferably a current and a previous supervisor, whom the commission may contact to verify the applicant's work experience.

(d) The applicant shall furnish evidence of any training credit or proof of education when requested by the commission.

(e) Any examination taken by the applicant prior to the commission's approving the corresponding application shall be held by the commission for a maximum of six months pending approval of the application for one or more grades of certificates. If the application is not approved within six months for one or more grades of certificate, the applicant shall submit a new application with the appropriate fee and retake the examination.

(f) Any applicant for a Grade A certificate shall meet qualification requirements and submit the appropriate fee before taking the examination. An approved application will be held for a maximum of nine months, then discarded if an examination has not been taken.

§290.32. Examinations.

(a) The passing score for the examination for each grade of certificate shall be 70%.

(b) Any applicant who fails to pass an examination may repeat the same examination after a period of 90 days following the date of the previous examination. Following the failure of an initial examination, the application shall be held for a maximum of 12 months pending the repeat of the

examination. During this period, the examination may be retaken twice more without payment of an additional fee. If the examination is not repeated within 12 months, the applicant shall submit another application with the appropriate fee.

(c) Examinations shall be supervised by the commission, by any member of the committee, or by any person designated by the commission. Examinations shall be given at places and times determined by the commission, by any member of the advisory certification committee, or by persons designated by the commission.

(d) Examinations shall be graded by the commission or by any member of the advisory certification committee, at the request of the commission.

§290.33. Certificates.

(a) Issuance of certificates.

(1) Upon satisfactory fulfillment of the requirements provided in these rules and regulations, a suitable certificate shall be issued by the commission.

(2) Dual surface and groundwater certificates will not be issued unless the operator has duties in both groundwater and surface water. However, a distribution certificate may be held in addition to a ground or surface water certificate.

(3) The certificate shall be prominently displayed in the utility plant or office of the certified operator.

(4) Distribution certificates of competency were developed for operators having solely distribution system responsibilities. Operators working in distribution systems may be certified as distribution system operators and are not required to be certified as ground or surface water treatment plant operators. A certified distribution system operator may perform only those duties relating to the operation and maintenance of distribution systems.

(5) An operator holding a valid groundwater or surface water certificate may perform all duties relating to distribution systems, and need not hold a distribution certificate.

(6) Operators holding a valid Grade B or C surface water certificate on August 12, 1991 may exchange the certificate for the same grade of groundwater certificate without examination and without meeting the groundwater experience requirement provided: the required designated courses have been completed; the appropriate application and fee have been submitted; the operator can demonstrate a need for the groundwater certificate; and the exchange is made within two years following the effective date of these rules.

(7) Operators holding a valid Grade B or C groundwater certificate on August 12, 1991 may exchange the certificate for the same grade of surface water certificate without examination and without meeting the surface water experience requirement provided: the required designated courses have been completed; the appropriate application and fee have been submitted; the operator can demonstrate a need for the surface water certificate; and the exchange is made within two years following the effective date of these rules.

(8) Upon application and payment of the appropriate fee, an operator who maintains a valid certificate for 30 years shall retain his certification in perpetuity.

(9) Grade A certificates previously issued in perpetuity will remain perpetual certificates.

(b) Period of validity of certificates.

(1) The period of validity shall be as follows:

(A) Grade A: eight years;

(B) Grade B: five years;

(C) Grade C: three years;

(D) Grade D: two years.

(2) The certified operator shall inform the commission of any change in address or employment during the period of validity of the certificate.

(c) Renewal of certificates.

(1) Certificates may be renewed, unless revoked or replaced by a higher grade of certificate.

(2) The following requirements shall be met for renewal of each certificate along with payment of the appropriate fee:

(A) certificates may be renewed by substitution of hours if the required training credits and the appropriate fee are submitted within 30 days following the expiration date of the certificate. Training required for renewal is as follows: grade a - 80 hours; grade b - 50 hours; grade c - 30 hours; grade - 20 hours.

(B) certificates may be renewed by retaking and passing the written examination within 30 days following the expiration date of the certificate, in which case renewal shall be effective on the date of examination.

(C) when the certificate of an operator expires while he or she is in military service, it may be renewed without examination upon proof of military service and of the previously held certificate.

(3) Operators may be recertified by passing the appropriate examination up to one year following a certificate's expiration date without meeting current training requirements. Operators who wish to recertify after one year following a certificate's expiration date must meet the current training requirements.

(4) The basic water course may not be used to meet renewal requirements for Grade A or Grade B certificates after one year following the effective date of these rules.

(5) Training credit hours may be used only once for renewal purposes and must be earned before the issuance date and expiration date of the certificate.

(6) When the certificate of an operator expires while he or she is in military service, it may be renewed without examination upon proof of military service and of the previously held certificate.

(d) Application renewal procedure.

(1) Before the expiration date of the certificate, the commission shall mail to the certified operator a renewal application showing the expiration date, the requirements for renewal, and the fee to be paid. The commission shall mail the renewal application to the operator at the most recent address provided by the operator to the commission.

(2) The operator shall return the renewal application with the appropriate fee to the commission, and shall submit any required record or evidence of completion of training credit.

(3) Upon the applicant's satisfactory fulfillment of the requirements for renewal provided in these rules and regulations, a suitable renewal certificate shall be issued by the commission.

(e) Suspension or revocation of certificates.

(1) The certificate of an operator shall be suspended or revoked if:

(A) the certificate was issued erroneously;

(B) the operator obtained the certificate through fraud, deceit, or through the submission of incorrect data on his/her qualifications; or

(C) the operator practiced fraud and deceit, or failed to use reasonable care, judgment, or application of his or her knowledge in the performance of his or her duties.

(2) When the commission has reason to believe that charges against a certified operator may be valid, the commission shall notify the operator by personal service or certified mail at his last known address:

(A) of the charges made against him/her;

(B) that it intends to conduct an examination of the charges;

(C) that the operator has an opportunity to refute and prove the charges invalid.

(3) After the commission's examination of the charges and the operator's rebuttal, if the commission still has reason to believe there is cause for suspension or revocation, the commission shall initiate a formal hearing in accordance with the commisisons's formal hearing procedures.

(4) Upon revocation of an operator's certificate, a new certificate shall not be obtained for at least one year and until his/her application is approved by the certification committee and all other requirements of the rules have been met.

(5) Upon suspension of an operator's certificate for one year, reinstatement may be considered upon approval by the advisory certification committee.

(6) An operator may be placed on "probation" if, in the judgment of the commission, he/she commits an offense not serious enough to warrant suspension of revocation of the certificate. Such "probationary" status shall serve as a warning to the operator and additional or repeat offenses shall warrant suspension or revocation proceedings. The period of probation shall be at the discretion of the commission, and may vary depending upon the circumstances and nature of the offense. Notification and rebuttal procedures for probation shall be the same as for suspension and revocation except that the commission shall not be required to hold a formal hearing in accordance with paragraph (3) of this subsection.

§290.34. Training Approval.

(a) Training used to meet the requirements for obtaining or renewing water certificates shall be in water related topics, as determined by the commission.

(b) Training credit for attendance at meetings of Districts and approved chapters of the Texas Water Utilities Association shall be allowed only when the meeting includes a training session related to waterworks or wastewater operations. Training credit shall be allowed in accordance with the following provisions:

(1) District monthly meetings: two hours of credit per meeting attended and verified.

(2) District all day meetings: one hour of credit per hour of verified attendance.

(3) Training credit shall be based upon the attendance report submitted by the Texas Water Utilities Association.

(4) Persons earning training hours at district meetings may use these hours toward obtaining renewal certificates and new certificates where allowed under these rules.

(c) Training credit for attendance at training sessions of annual or regional water utilities schools, sponsored by the Texas Water Utilities Association and/or districts, recognized by the commission, shall be allowed in accordance with the following provisions:

(1) annual or regional school: 1 hour of credit per hour in attendance at training sessions.

(2) training credit shall be based upon attendance recorded by the commission or by other means determined by the commission.

(d) Training credit for certification will be granted for those courses which have been reviewed and approved by the commission prior to the receipt of the training.

(e) Upon application, an individual may be granted four hours of training credit for presenting one hour of training at the annual school or regional schools of the Texas Water Utilities Associations and 10 hours of training credit for articles published in journals such as the American Water Works Association, Texas Water Utilities Association Journal, and others relating to the water utilities industry.

§290.35. Reciprocity.

The commission may issue certificates, without examination, to applicants who hold valid certification issued under laws of any other state, territory, or possession of the United States of America or any country provided:

(1) the out-of-state requirements are equal to the provisions of the Texas regulations;

(2) the applicant passed a written examination in obtaining the out-of-state certificate;

(3) the corresponding state reciprocates with operators holding Texas certificates;

(4) the applicant lives in Texas or is employed in the waterworks field in Texas; and

(5) the appropriate fee has been paid.

§290.36. Fees.

(a) The Health and Safety Code, §341.034(b), requires the payment of a fee of $10 per year before a certificate of competency can be issued or renewed. Fees for certification shall be established as follows.

(1) Application fees:

(A) Grade D certificate--$20;

(B) Grade C certificate--$30;

(C) Grade B certificate--$50;

(D) Grade A certificate--$80.

(2) Renewal fees:

(A) Grade D certificate--$20;

(B) Grade C certificate--$30;

(C) Grade B certificate--$50;

(D) Grade A certificate--$80.

(b) Certificates that have not been renewed within 30 days of the expiration date with the appropriate fee will be considered invalid. A new certificate shall be obtained by submitting a new application with the appropriate fee and receiving a passing score on the examination if application is made within 12 months following the expiration date of the certificate.

(c) Fees shall be paid by personal check, cashier's check, or money order. Cash cannot be accepted for payment of fees.

(d) An applicant or holder of a certificate shall pay all required fees before taking the examination or receiving a certificate of competency.

(e) All fees shall be made payable to the Texas Natural Resource Conservation Commission and are not refundable.

(f) If an applicant does not submit the appropriate payment with the new or renewal application, the certificate shall not be issued.

SUBCHAPTER C : PERMIT APPLICATION
§290.37

§290.37. Processing Permit Applications for Water Hygiene Operations.

(a) Time periods. Applications from individuals for permits of approval for waterworks operators, bottled water plant operators, residential water treatment facility operators, solid waste technicians and sanitarians shall be processed in accordance with the following time periods.

(1) The first period is a time from the date of receipt by the Division of Water Hygiene of the fee remittance list, with the application attached, to the date the department issues a written notice approving a completed application or stating the reasons why the application is incomplete. A completed application is defined as an application with fee receipt, education, experience and training requirements listed, necessary supporting documents attached and the completed examination. The 45-day time period begins on the date the fee remittance list is received by the Division of Water Hygiene from the fiscal division. The time periods for each initial application and each renewal application are 45 days for: waterworks operator certificate of competency; bottled water plant operator certificate of competency; residential water treatment operator certificate of competency; solid waste technician letter of competency; and sanitarian registration.

(2) The second period is a time from date of receipt of the last item necessary to complete the application to the date of issuance of written notice approving or denying approval of the application. The time periods for each initial and renewal application are 30 days for: waterworks operator certificates of competency; bottled water plant operator certificates of competency; residential water treatment facility operator certificates of competency; solid waste technician letters of competency; and sanitarian registration.

(3) A written notice will be issued informing the applicant the application is complete or incomplete. If the application is found to be incomplete, the specific additional information required will be listed on the notice. From the date of receipt of the last item necessary to complete the application to the date of issuing written approval or disapproval, an additional 30-day period will be required. The time expended for the applicant to complete the listed deficiencies is exclusive of this 30-day period.

(4) The time period will be reviewed annually and is subject to change.

(b) Reimbursement of fees.

(1) In the event the application is not processed in the time periods as stated, the applicant has a right to request of the program administrator full reimbursement of all filing fees paid in that particular application process. If the administrator does not agree that the established periods have been violated or finds that good cause existed for exceeding the established periods, the request will be denied.

(2) Good cause for exceeding the period established is considered to exist if:

(A) the number of applications to be processed exceeds by 15% or more the number processed in the same calendar quarter of the preceding year;

(B) another public or private entity used in the application process caused the delay; or

(C) other conditions existed giving good cause for exceeding the established periods.

(c) Appeal. If the request for full reimbursement authorized by this section is denied, the applicant may appeal directly to the commissioner of health for resolution of the dispute. The procedure for the appeal is that the applicant shall send a written statement to the commissioner describing the request for reimbursement and the reasons for it. The program also may send a written statement to the commissioner describing the program's reasons for denying reimbursement. The commissioner shall make a timely decision concerning the appeal and notify the applicant and program in writing of the decision.

(d) Contested case hearings. Time periods involved in contested case hearings will be the periods described in §1.34 of this title (relating to Time Periods for Conducting Contested Case Hearings).

SUBCHAPTER D : RULES AND REGULATIONS FOR PUBLIC WATER SYSTEMS

§§290.38 - 290.47

§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 title is not contained in the following list, its definition shall be as shown in Title 40 Code of Federal Regulations §141.2. Other technical terms used shall have the meanings or definitions listed in the latest edition of "Glossary, Water and Wastewater Control Engineering," prepared by a joint editorial board representing the American Public Health Association, American Society of Civil Engineers, American Water Works Association, and the Water Pollution Control Federation.

ABPA - The American Backflow Prevention Association, P.O. Box 1563, Akron, Ohio 44309-1563.

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

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

ASSE - The American Society of Sanitary Engineering, P.O. Box 40362, Bay Village, Ohio 44140.

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

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.

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

Commission - The Texas Natural Resource Conservation Commission.

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.

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.

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 hazard or impair the usefulness of the water.

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.

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.

Drinking water standards - The commission rules covering drinking water standards in §290.101 - 290.121 of this title (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Supply Systems).

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.

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.

Executive director - The executive director of the Texas Natural Resource Conservation Commission.

Health hazard - Any conditions, devices or practices in the water supply system and/or its operation which create, or may create, a danger to the public health and well-being of the water consumer. An example of a health hazard is a structural defect in the water supply system, whether of location, design, or construction, which may regularly or occasionally prevent satisfactory purification of the water supply or cause it to be contaminated from extraneous sources.

High health hazard - A cross-connection, potential cross-connection, or other situation involving any substance that could cause death, illness, spread of disease, or has a high probability of causing such effects if introduced into the potable drinking water supply.

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.

Interconnection - A physical connection between two public water supply systems.

Intruder-resistant fence - A fence six feet or more 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 and have 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.

Maximum daily demand - In the absence of verified historical data, maximum daily demand means 2.4 times the average daily demand of the system.

mg/l - Milligrams per liter, a measure of concentration, equivalent to and replacing parts per million (ppm) in the case of dilute solutions.

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

NSF - The National Sanitation Foundation and refers to the listings developed by the Foundation, P.O. Box 1468, Ann Arbor, Michigan 48106.

Noncommunity water system - Any public water system which is not a community system.

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.

psi - Pounds per square inch.

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.

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.

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

(a) Southern Standard Plumbing Code.

(b) Uniform Plumbing Code.

(c) National Standard Plumbing Code.

Public health engineering practices - Requirements in these sections or guidelines promulgated by the Commission.

Public water system - A system for the provision to the public of piped water for human consumption, which includes all uses described under the definition for drinking water. Such a system must have a potential for 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 more 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.

Registered Professional Engineer - An engineer who maintains a current license through the Texas State Board of Registration for Professional Engineers in accordance with its requirements for professional practice.

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.

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

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.

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.

Uniform Fire Code - The standards of the International Conference of Building Officials. 5360 Workman Mill Rd., Wittier, California, 90601-2298.

Water Supply Protection Specialist - Any person who holds a license endorsement issued by the Texas State Board of Plumbing Examiners to engage in the inspection, in connection with health and safety laws and ordinances, of the plumbing work or installation of a public water system distribution facility or of customer owned plumbing connected to that system's water distribution lines.

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§290.39. General Provisions.

(a) Authority for requirements. The Texas Health and Safety Code, Chapter 341, Subchapter C prescribes the duties of the Texas Natural Resource Conservation Commission relating to the regulation and control of public drinking water systems in the State. These statutes require that the commission review completed plans and specifications for all contemplated public water systems, and that the commission be notified of any subsequent material changes, improvements, additions, or alterations in existing systems. In order to properly discharge these duties, the Texas Natural Resource Conservation Commission is authorized to develop rules governing the design of system facilities, as well as minimum acceptable operating practices necessary to protect the public health.

(b) Reason for these sections and minimum criteria. These sections have been adopted to insure 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 operating practices must be specified to insure that facilities are properly operated to produce and distribute a safe, potable water.

(c) Authorization for examination of plans.

(1) Plans, specifications, and related documents will not be considered unless they have been prepared under the direction of a registered professional engineer. All engineering documents must have engineering seals, signatures and dates affixed in accordance with the rules of the Texas State Board of Registration for 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 Water Utilities Division furnishes consultation services as a reviewing body only, and its registered engineers may neither act as design engineers nor furnish detailed estimates.

(B) The Commission's Water Utilities Division 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 these sections 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 Commission's Water Utilities Division in writing upon completion of all work.

(d) 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 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 wellsite 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 commission, at its discretion, may give limited approval. In such 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 the owner and shall also specify those conditions under which the bond will be forfeited.

(4) Copies of each fully executed sanitary control easement shall be provided to the Commission prior to placing the well into service. Each original easement document must be recorded in the deed records at the county courthouse. See §290.47 (c) of this title (relating to Appendices) for a suggested form.

(e) Beginning and completion of work.

(1) The Commission's Water Utilities Division, shall be notified in writing by the design engineer or the owner when construction is started.

(2) Upon completion of the water works project, the engineer or owner will notify the Commission's Water Utilities Division, 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.

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

(g) Changes in existing systems or supplies. Changes or additions to existing systems which result in an increase in production, treatment, or storage capacity shall require written notification to the executive director. Changes or additions in existing distribution systems shall require written notification to the executive director when the change or addition is greater than 10% of the existing distribution capacity or 250 connections, whichever is smaller. The executive director shall determine whether engineering plans and specifications will be required after initial notification of the extent of the modifications. The owner shall submit plans and specifications as determined by the executive director in accordance with subsection (c) of this section. The Commission will not require planning material on distribution line extensions from a political entity (county, municipality, district or water authority) when the entity has its own internal engineering review staff or is required, by local ordinance, to submit the material to another political entity for review and approval. The review staff must be separate and apart from the engineering staff or firm charged with the design of the distribution extension under review. The planning material must be reviewed and certified to be in compliance with §290.44 of this title (relating to Water Distribution) by a registered professional engineer in the employ of the review entity. The effect of the distribution system improvements on compliance with §290.45 of this title (relating to Minimum Water System Capacity Requirements) must be evaluated. Should the proposed distribution system improvements result in an exceedance of the capacity requirements, written notice of the extent of the proposed improvements must be submitted to the executive director.

(h) Planning material acceptance. Planning material for improvements to an existing system which does not meet the requirements of all sections of these regulations 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.

(i) Exceptions. Requests for exceptions to one or more of these sections 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 should precede the submission of engineering plans and specifications for a proposed project.

(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.

(j) Notification of system startup or reactivation. The owner or responsible official must provide written notification to the commission of the startup of a new public water supply system or reactivation of an existing public water supply system. This notification must be made immediately upon meeting the definition of a public water system as defined in §290.38 of this title (relating to Definitions).

Adopted 09/20/95 Effective 11/03/95

§290.40. Prohibitions.

(a) Construction and operation prohibition. No person or entity may construct or operate a public drinking water system in violation of these sections or the drinking water standards.

(b) Distribution prohibition. No person or entity may distribute drinking water to the public in violation of these sections or the drinking water standards.

§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.

(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 pipe lines and pumping capacities to treatment plants or distribution systems shall be adequate for such water delivery. Minimum capacities required are specified in §290.45 of this title (relating to Minimum Water System Capacity Requirements).

(c) Ground water sources and development.

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

(A) No well site which is within 50 feet of a tile or concrete sanitary sewer, sewerage appurtenance, septic tank, storm sewer, or cemetery; or which is within 150 feet of a septic tank perforated drainfield, areas irrigated by low dosage, low angle spray on-site sewage facilities, absorption bed, evapotranspiration bed, improperly constructed water well or underground petroleum and chemical storage tank or liquid transmission pipeline will be acceptable for use as a public drinking water supply. Sanitary or storm sewers constructed of ductile iron or PVC pipe meeting AWWA standards, having a minimum working pressure of 150 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 10 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 one quarter mile of a proposed wellsite shall be reported to the Commission along with existing or potential pollution hazards. These reports are required for community and nontransient, noncommunity ground water sources. Examples of existing or potential pollution hazards which may affect ground water quality include, but are not limited to: landfill and dump sites, animal feedlots, military facilities, industrial facilities, wood-treatment facilities, liquid petroleum and petrochemical production, storage, and transmission facilities, Class 1, 2, 3, and 4 injection wells, and pesticide storage and mixing facilities. This information must be submitted prior to construction or as required by the executive director.

(F) A sanitary control easement covering that portion of the land within 150 feet of the well location shall be secured from all such property owners and recorded in the deed records at the county courthouse. The easement 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. For the purpose of this 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 the easement must be constructed to public water well standards. Copies of the recorded easements shall be included with plans and specifications submitted for review.

(2) The premises, materials, tools and drilling equipment shall be maintained so as to minimize contamination of the underground water 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 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) Special attention must be given to the construction, disinfection, protection, and testing of a well to be used as a public water supply source.

(A) Before placing the well into service, the Commission's Water Utilities Division shall be furnished 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 copy of the Sanitary Control Easement; and an original or legible copy of a United States Geological Survey 7.5-minute topographic quadrangle showing the accurate well location. All the documents listed in this paragraph must be approved by the executive director before final approval is granted for the use of the well.

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

(C) The space between the casing and drill hole shall be sealed by using enough cement under pressure to completely fill and seal the annular space between the casing and the drill hole. The well casing shall be cemented in this manner from the top of the shallowest formation to be developed to the earth's surface. The driller will utilize the following pressure cementation methods in accordance with the AWWA Standard for Water Wells (A100-90), Appendix B: Section B.3 (Positive displacement - exterior method); Section B.4 (Interior method - without a plug); Section B.5 (Positive placement - interior method - drillable plug); or Section B.6 (Placement through float shoe attached to the bottom of the casing). Cementation methods other than those listed above must be approved by the executive director prior to the construction of the well. A cement bonding log, as well as any other documentation deemed necessary, may be required by the executive director to assure complete sealing of the annular space.

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

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

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

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

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

(G) A complete physical and chemical analysis of the water produced from a new well shall be made after 36 hours of continuous pumping at the design withdrawal rate. Shorter pump test periods can be accepted for large capacity wells producing from areas of known groundwater production and quality so as to prevent wasting of water. Samples must be submitted to the Texas Department of Health approved 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 Texas Department of Health 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 Commission's Water Utilities Division 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. The pump room floor 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.

(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 waste water 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, faced downward, elevated and located so as to minimize the drawing of contaminants into the well.

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

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

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

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

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

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

(4) Pitless well 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. Each unit must terminate at least 18 inches above the concrete sealing block and at least 2 feet above the highest known water mark or 100 year flood elevation, whichever is higher.

(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) Completed pitless well unit installations must be provided with above ground level raw water sampling cocks, concrete sealing blocks and flow measuring devices.

(E) The well casing and pitless unit must be properly sealed and cemented in accordance with paragraph (3)(C) 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 Commission's Water Utilities Division for review and approval.

(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 subsections (c)(3)(M) - (P) of this section.

(e) Surface water sources and development.

(1) To determine the degree of pollution from all sources within the watershed, an evaluation shall be made of the proposed surface water impoundment or flowing supply in the area of diversion and its tributary streams.

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

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

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

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

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

(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 1000 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 commission's Water Utilities Division 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.

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

(A) Water treatment plants shall not be located within 500 feet of a sewage treatment plant or lands irrigated with sewage effluent. A minimum distance of 150 feet must be maintained between any septic tank drainfield line and any underground treatment or storage unit. Any sanitary sewers located within 50 feet of any underground treatment or storage units shall be constructed of ductile iron or PVC pipe with a minimum pressure rating of 150 psi and have watertight joints.

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

(C) The 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.

(D) An all weather road shall be provided to the treatment plant and to the raw water pump station.

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§290.42. Water Treatment.

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

(b) Ground waters.

(1) Disinfection facilities shall be provided for all ground water 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 ground water if the water does not meet the drinking water standards. The facilities provided shall be in conformance with established and proven methods.

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

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

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

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

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

(c) Springs and other water sources.

(1) Water obtained from springs, infiltration galleries, wells in fissured areas, wells in carbonate rock formations, or wells that do not penetrate an impermeable strata and/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 must achieve at least 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.

(A) Filters provided for turbidity and microbiological quality control shall conform to the requirements of subsection (d)(10) 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 on qualitative and quantitative microbiological and chemical analyses.

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

(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 must achieve at least 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.

(2) 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 clear wells. 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.

(3) All drainage conduits shall be constructed so as to be thoroughly tight against leakage. Return of the decanted water and/or sludge to the raw water shall be adequately controlled so that there will be a minimum of interference with the treatment process. Any discharge of wastewater shall be in accordance with the appropriate statutes and regulations.

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

(5) Flow measuring devices shall be provided to measure the raw water supplied to the plant and to measure the treated water discharged from the plant. These 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 be located so as to help in the handling of bulk chemicals by operators and the transfer of chemicals to day tanks and chemical feeders. Also, the movement of chemicals from storage to feed machines shall be done in a manner that facilitates good housekeeping.

(A) Bulk storage facilities at the plant shall be adequate to store at least one month's supply of chemicals. However, local resupply ability may dictate the requirements for plant inventories.

(B) All chemical bulk and day tanks shall be clearly labeled to indicate the tank's contents.

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

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

(E) When liquid chemicals are to be used, special precautions must be taken and the following concerns must be addressed both during the plan review and approval process for new facilities and during the operation of existing plants:

(i) issues involving bulk storage tank design such as the materials of construction, capacity, overflow, and containment;

(ii) issues involving transfer pump design including the bulk storage tank design, day tank capacity, type, materials of construction, and controls;

(iii) issues involving the day tanks such as the materials of construction, overflow, containment, capacity, and controls;

(iv) issues involving metering pump design such as the materials of construction, calibration, controls, capacity, and anti-siphon protection; and

(v) issues involving piping and valves including their compatibility with solutions.

(7) Treatment plants shall be provided with efficient devices for measuring and applying chemicals to the water being treated.

(A) Each chemical feeder 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) All chemical feed equipment shall be capable of easily adjusting to variations in the flow of water being treated.

(C) Dry chemical feeders shall be in a separate room and be provided with facilities for dust control.

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

(E) Where practical, the transport of chemical solutions between the feeder and the application point should be accomplished through open channels. If enclosed feed lines must be used, they shall be designed and installed so as to prevent clogging and facilitate cleaning.

(F) Coagulants shall be applied to the water in the mixing basins or chambers so as to permit their complete mixing with the water. Coagulants shall be applied continuously during treatment plant operation.

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

(H) Chemical application points shall be provided to achieve adequate taste and odor control, corrosion control and disinfection.

(I) Chemicals shall be applied in a manner which will ensure optimal finished water quality.

(8) Flash mixing and flocculation equipment shall be provided. This equipment must be capable of adequate flexibility or adjustment to provide optimum flocculation under varying raw water characteristics and rates of raw water treatment.

(A) Where special types of equipment for rapid mechanical mixing, softening, or sedimentation are proposed, the manufacturer must meet the design criteria in paragraph (9) of this subsection.

(B) Facilities for coagulation and sedimentation must be provided to clarify the water so that the settled water turbidity is low enough to produce a finished water which meets the turbidity limits established by the Commission's drinking water standards.

(i) Settled water turbidity of less than five turbidity units is generally required to produce a filtered water turbidity which meets the requirements of the drinking water standards.

(ii) All turbidity measurements must be made in accordance with the method specified in the drinking water standards.

(C) Plants with a design capacity greater than 3.0 million gallons per day must provide at least two sets of flash mixing and flocculation equipment which are designed to operate in parallel.

(D) Coagulated water or water from flocculators shall be transported 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 four feet per second in the transfer of water between units.

(9) Basins for straight-flow sedimentation of coagulated waters shall provide a theoretical detention time of at least six hours for clarification plants and 4.5 hours for softening plants. The settling chamber of a solids contact clarification unit shall provide a theoretical detention time of at least two hours. Where shorter detention times are desired; engineering data, pilot plant test data, full scale installation data and other information as required by the commission shall be submitted to the executive director for review and approval of the alternate process.

(A) Facilities for sludge removal shall be provided by mechanical means or by the provision of hopper-bottomed basins with valves capable of complete draining of the units. Clarifiers shall be provided with facilities for determining the depth of sludge in the unit.

(B) Basins shall be designed to prevent the short-circuiting of flow or the destruction of floc.

(C) Sedimentation basins may be square, rectangular, round or other shapes approved by the executive director. The length of rectangular settling basins shall preferably be at least twice their width with a side wall water depth of 10 feet to 12 feet in nonsoftening water treatment. Square and round sedimentation basins may also be used for clarification and softening plants; however, the detention time must comply with the requirements of this paragraph.

(D) Sedimentation basins shall be provided with facilities for draining 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.

(E) Plants with a design capacity greater than 3.0 million gallons per day must provide at least two sedimentation basins or clarification units which are designed to operate in parallel.

(10) Gravity or pressure type filters shall be provided. However, the use of pressure filters shall be limited to installations with a treatment capacity of less than 0.50 million gallons per day.

(A) The depth of filter sand, anthracite or other filtering materials shall be 24 inches or greater. This filtering material shall be free from clay, dirt, organic matter and other impurities. Its

effective size shall range from 0.35 to 0.45 mm for fine sand, 0.45 to 0.55 mm for medium sand and 0.55 to 0.65 mm for coarse sand. Its uniformity coefficient shall not exceed 1.7. The grain size distribution shall also be as prescribed by AWWA standards. Material for dual or mixed media filters shall conform to AWWA standards.

(B) Under the filtering material, at least 12 inches of 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.

(C) The filter shall be provided with facilities to regulate the filtration rate and monitor the performance of the filter.

(i) The design of gravity rapid sand filters shall be based on a maximum design filtration rate of two gallons per square foot per minute. At the beginning of filter runs for declining rate filters, a maximum filtration rate of three gallons per square foot per minute is allowed. The filter discharge piping shall be designed with an orifice or other permanently installed flow limiting device to ensure that the maximum filter rate cannot be exceeded.

(ii) Where high-rate dual or multiple media gravity filters are used, a maximum design filtration rate no greater than five gallons per square foot per minute must be used. At the beginning of filter runs for declining rate filters, a maximum filtration rate of 6.5 gallons per square foot per minute is allowed. The filter discharge piping shall be designed with an orifice or other permanently installed limiting device to ensure that the maximum filter rate cannot be exceeded.

(iii) The design of pressure filters shall be based on a maximum filtration rate of two gallons per square foot per minute. When used, the pressure filters shall be installed such that duplicate capacity is available to furnish the design capacity with one filter out of service.

(iv) 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 control valves with indicators.

(v) Each filter unit 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 to monitor filter condition.

(vi) 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.

(vii) Filters shall be equipped with sampling taps so that the effluent turbidity of each filter can be individually monitored.

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

(i) Only fully treated water shall be used to backwash the filters. This water may be supplied by elevated wash water tanks 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 rate-of-flow controllers.

(iii) The rate of flow of backwash water shall not be less than 20 inches vertical rise per minute (12.5 gpm/sq. ft.) and usually not more than 30 inches vertical rise per minute (18.7 gpm/sq. ft.). This shall expand the filtering bed 30 to 50 percent. The freeboard in inches shall exceed the wash rate in inches of vertical rise per minute.

(iv) When used, surface filter wash systems shall be installed with an atmospheric vacuum breaker or a reduced pressure principle backflow preventer 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.

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

(11) Pipe galleries shall be incorporated into the plant design with 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.

(12) 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. Where colors are used they shall follow the color code prescribed below. 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. The color code is as follows:

LETTERS	COLOR OF PIPE
Potable Water	Light Blue
Compressed Air	Light Green
Instrument Air	Light Green with Dark Green Bands
Chlorine (gas, liquid, or vent)	Yellow
Chlorine (solution)	Yellow with Red Bands
Liquid Alum	Yellow with Orange Bands
Alum (solution)	Yellow with Green Bands
Ammonia	Yellow with Brown Bands
Settled Water	Green
Filter Effluent	Light Blue

Backwash	Light Blue
Drain	Dark Grey
Raw Water	Tan

(13) An adequately equipped laboratory must be available locally where daily microbiological and chemical tests can be made on water supplied by all plants serving 25,000 persons or more. For plants serving populations of less than 25,000, the facilities for making microbiological tests may be omitted and the required microbiological samples submitted to one of the Texas Department of Health's approved laboratories. All surface water treatment plants shall be provided with equipment for making at least the following determinations: pH, temperature, disinfectant residual, alkalinity, turbidity, "Jar" tests and other tests deemed necessary to monitor specific water quality problems or to evaluate specific water treatment processes. All surface water treatment plants shall provide sampling taps for raw, settled, filtered water and clearwell discharge.

(e) Disinfection.

(1) All waters obtained from surface sources must be disinfected prior to storage at a dosage sufficient to produce an adequate residual in the water leaving the plant.

(2) All ground water 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 commission.

(3) All water stored in treated water storage tanks must contain a disinfectant residual. Disinfection facilities must be provided for all such locations where an adequate disinfectant residual is not maintained from prior treatment.

(4) 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 larger plants and at all plants where the rate of flow varies more than 50% above or below the average flow. Manual control shall be permissible only when the rate of flow is relatively constant or an attendant is always on hand to promptly make adjustments.

(C) All disinfecting equipment on surface water treatment plants shall include at least one standby unit of each capacity for ensuring uninterrupted operation.

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

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

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

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

(5) 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 when chlorine gas is used.

(6) 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 vandals.

(7) 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 open 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. Systems may install negative pressure ventilation in lieu of the above as long as the facilities also have gas containment and treatment as prescribed by the current Uniform Fire Code (UFC).

(8) Hypochlorination solution containers and pumps must be housed and locked 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.

(9) Safety equipment and training programs for all chemicals used in water treatment shall meet applicable standards established by the Occupational Safety and Health Administration (OSHA) or the Texas Hazard Communications Act, Health and Safety Code, Chapter 502.

(10) 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. Systems may install negative pressure ventilation in lieu of the above as long as the facilities also have gas containment and treatment as prescribed by the current Uniform Fire Code (UFC).

(11) Emergency evacuation procedures must be established where one ton or larger chlorine or anhydrous ammonia cylinders are located within 1/4 mile of residential or other high density developments.

(f) Other treatment processes. The adjustment of fluoride ion content, special treatment for iron and manganese reduction, special methods for taste and odor control, demineralization, and other proposals covering other treatment processes will be considered on an individual basis, pursuant to §290.39(g) of this title (relating to General Provisions). Package-type treatment systems and their components shall be subject to all applicable design criteria in this section. Where innovative/alternate treatment systems are proposed, the registered professional engineer must provide pilot test data, data collected at similar full-scale operations, and proof of a one year manufacturers performance warrantee/guarantee assuring that the plant will produce an effluent of 0.5 NTU or less in at least 95% of the measurements taken each month. Pilot test data must be representative of the actual operating conditions which can be expected over the course of the year.

(g) Sanitary facilities for water works installations. Toilet and handwashing 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.

(h) Permits for waste discharges. Permits for discharging wastes from water treatment processes shall be obtained from the commission.

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

(j) 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 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.

Adopted February 5, 1997 Effective March 3, 1997

§290.43. Water Storage.

(a) Capacity. The minimum clear well, 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 clear wells, 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, clear wells 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 clear well 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 psi pressure rated pipe with pressure-tested, watertight joints as used in water main construction, the minimum separation distance is 10 feet.

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

(c) Design and construction of clear wells, 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, manways, drains, sample connections, access ladders, overflows, liquid level indicators and other appurtenances as specified in these rules. Bolted tanks shall be designed, fabricated, erected and tested in strict accordance with current AWWA Standard D103. The roof of all tanks shall be designed and erected so that no water ponds at any point on the roof and, in addition, no area of the roof shall have a slope of less than 0.75 inch per foot.

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

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

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

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

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

(8) All clear wells, 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 Public Health Service (USPHS), the United States Environmental Protection Agency (EPA), National Sanitation Foundation (NSF), or the United States Food and Drug Administration (FDA). All newly installed coatings must conform to ANSI/NSF Standard 61 and must be certified by an organization accredited by ANSI.

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

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

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

(1) Metal thickness for pressure tanks shall be sufficient to withstand the highest expected working pressures with a four to one factor of safety. Tanks of 1,000 gallons capacity or larger must meet the standards of the American Society of Mechanical Engineers (ASME) Section VIII, Division 1 Codes and Construction Regulations and must have an access port for periodic inspections. An ASME name plate must be permanently attached to those tanks. Tanks installed before July 1, 1988, are exempt from the ASME coding requirement, but all new installations must meet this regulation. Exempt tanks can be relocated within a system but cannot be relocated to another system.

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

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

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

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

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

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

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

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

(e) Facility fencing. All potable water storage tanks and pressure maintenance facilities must be 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.

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Effective 11/03/95

§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 registered professional engineers.

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

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

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

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

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

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

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

(A) For installation or repair of any public water supply, and

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

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

(c) Minimum water line sizes. These are minimum requirements for domestic flows only and do not consider fire flows. These requirements should be exceeded when the registered 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

water line under two inches in diameter will be allowed to be installed in a public water system distribution system. These minimum line sizes do not apply to individual customer service lines.

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

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

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

(2) When service is to be provided to more than one pressure plane or when distribution system conditions and demands are such that low pressures develop, the method of providing increased pressure shall be by means of booster pumps taking suction from storage tanks. If an exception to this requirement is desired, the designing engineer must furnish for the executive director's review all planning material for booster pumps taking suction from other than a storage tank. The planning material must contain a full description of the supply to the point of suction, maximum demands on this part of the system, location of pressure recorders, safety controls and other pertinent information. Where booster pumps are installed to take suction directly from the distribution system, a minimum residual pressure of 20 pounds per square inch (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 service connection for the accumulation of water usage data. Systems where no direct charge is made for the water shall be exempted 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 with a view to ultimately connecting them to provide circulation.

(e) Location of water lines.

(1) The following rules apply to installations of potable water distribution lines and wastewater collection lines, wastewater force mains 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.

(2) 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.

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

(4) 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.

(5) 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 line/force main and the registered professional engineer is able to determine that the existing line is not leaking, the new potable waterline shall be located at least two feet above the existing line, measured vertically, and at least four feet away, measured horizontally, from the existing line. Every effort shall be exerted not to disturb the bedding and backfill of the existing wastewater line.

(ii) Where a new potable waterline parallels an existing pressure rated wastewater line and it cannot be determined by the registered professional engineer if the existing line is leaking, the existing wastewater line shall be replaced with a 150 psi pressure rated pipe. The new potable

waterline shall be located at least two feet above the new wastewater line, measured vertically, and at least four feet away, measured horizontally, from the replaced wastewater line.

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

(B) New Waterline Installation - Crossing Lines

(i) Where a new potable waterline crosses an existing, non-pressure rated wastewater line, 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 centerline of the wastewater line. The potable waterline shall be at least two feet above the wastewater line. Whenever possible, the crossing shall be centered between the joints of the wastewater line. If the existing wastewater line is disturbed or shows signs of leaking, it shall be replaced for at least 9 feet in both directions (18 feet total) with 150 psi pressure rated pipe.

(ii) Where a new potable waterline crosses an existing, pressure rated wastewater line, 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 centerline of the wastewater line. The potable waterline shall be at least six inches above the wastewater line. Whenever possible, the crossing shall be centered between the joints of the wastewater line. If the existing wastewater line shows signs of leaking, it shall be replaced for at least 9 feet in both directions (18 feet total) with 150 psi pressure rated pipe.

(iii) Where a new potable waterline crosses a new, non-pressure rated wastewater line and the standard pipe segment length of the wastewater line is at least 18 feet, 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 centerline of the wastewater line. The potable waterline shall be at least two feet above the wastewater line. Whenever possible, the crossing shall be centered between the joints of the wastewater line. The wastewater pipe shall have a minimum pipe stiffness of 115 psi at five percent deflection. The wastewater line shall be embedded in cement stabilized sand (see §290.44(e)(5)(B)(vi) of this title) for the total length of one pipe segment plus 12 inches beyond the joint on each end.

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

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

(II) All sections of wastewater line 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 five percent deflection. The encasing pipe shall be centered on the waterline and shall be at least two nominal pipe diameters larger than the wastewater line. The space around the carrier pipe shall be supported at 5 foot (or less) intervals with spacers or be filled to the springline with washed sand. Each end of the casing shall be sealed with water tight non-shrink cement grout or a manufactured water tight 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 line, the waterline will be encased as described for wastewater lines in section (II) above or constructed of ductile iron or steel pipe with mechanical or welded joints as appropriate. An absolute minimum separation distance of 1 foot between the water line and the wastewater line shall be provided. Both the waterline and wastewater line, must pass a pressure and leakage test as specified in AWWA C600 standards.

(v) Where a new potable waterline crosses a new, pressure rated wastewater line, 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 centerline of the wastewater line. The potable waterline shall be at least six inches above the wastewater line. Whenever possible, the crossing should be centered between the joints of the wastewater line. The wastewater pipe shall have a minimum pressure rating of 150 psi. The wastewater line shall be embedded in cement stabilized sand 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 percent 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 sewer pipe. The use of brown coloring in cement stabilized sand for wastewater line bedding is recommended for the identification of wastewater force mains during future construction.

(6) Waterline and Manhole Separation. The separation distance from a potable waterline to a manhole 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 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 feet intervals with spacers or be filled to the spring line with washed sand. The encasement pipe shall be centered on the crossing and both ends sealed with cement grout or manufactured seal.

(7) Location of Fire hydrants. Fire hydrants shall not be installed within nine feet vertically or horizontally of any sanitary sewer line regardless of construction.

(8) Location of Supply/Suction Lines. Suction mains to pumping equipment shall not cross wastewater lines carrying domestic or industrial wastes. Raw water supply lines shall not be installed within five feet of any tile or concrete wastewater line.

(9) 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 water lines.

(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 water lines 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 Executive Director's permission, 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 which shall be repeated if contamination persists. A minimum of one sample for each 1,000 feet of completed water line 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 made to any establishment where an actual or potential contamination or system hazard exists without an air gap separation between the drinking water supply and the source of potential contamination. The containment air gap is sometimes impractical and, instead, reliance must be placed on individual "internal" air gaps or mechanical backflow prevention devices. Under these conditions, additional protection shall be required at the meter in the form of a backflow prevention device (in accordance with AWWA Standards C510 and

C511, and AWWA Manual M14) on those establishments handling substances deleterious or hazardous to the public health. The water purveyor need not require backflow protection at the water service entrance if an adequate cross-connection control program is in effect that includes an annual inspection and testing by a certified backflow prevention device tester. 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 made 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) Effective January 1, 1996, all backflow prevention assemblies shall be tested upon installation by a recognized backflow prevention assembly tester and certified to be operating within specifications. Backflow prevention assemblies which are installed to provide protection against high health hazards must also be tested and certified to be operating within specifications at least annually by a recognized backflow prevention device tester.

(A) Recognized testers shall have completed a Commission approved course on cross connection control and backflow prevention and pass an examination administered by the TNRCC or its designated agent. The accredited tester classification shall be broken down into two categories:

(i) The "General Tester" is qualified to test and repair backflow prevention assemblies on any domestic, commercial, industrial or irrigation service. (Exception-Firelines - See "Fireline Tester" in §290.44(h)(A)(ii)).

(ii) The "Fireline Tester" is qualified to test and repair backflow prevention assemblies on firelines only. The State Fire Marshall's office requires that a person performing maintenance on firelines must be employed by an Approved Fireline Contractor.

(B) Individuals that can show proof of completion of a course and passage of an exam based on the ABPA or ASSE National exam, prior to the effective date of these regulations, may be recognized as accredited for the term of their current certification (not to exceed 3 years).

(C) Gauges used in the testing of backflow prevention assemblies shall be tested for accuracy annually in accordance with the University of Southern California's Foundation of Cross Connection Control and Hydraulic Research and/or the American Water Works Association Manual of Cross Connection Control (Manual M-14). Public water systems shall require testers to include test gauge serial numbers on "Test and Maintenance" report forms and ensure testers have gauges tested for accuracy.

(D) 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 record keeping purposes. Should the tester choose to use a report format which differs

from that found in Appendix F of this title, it must minimally contain all information required by the report form.

(E) Test and maintenance reports shall be retained for a minimum of three years. The public water supplier must provide these records to commission staff for inspection upon request.

(5) The use of a backflow prevention device 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.

(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, the United States Public Health Service or the National Sanitation Foundation. Effective January 1, 1993, any newly installed surfaces shall conform to ANSI/NSF Standard 61 and must be certified by an organization accredited by ANSI.

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

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

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

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

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

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

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

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

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

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

Adopted February 5, 1997 Effective March 3, 1997

§290.45. Minimum Water System Capacity Requirements.

(a) General Provisions. The following requirements are to be used in evaluating both the total capacities for public water systems and the capacities at individual pump stations and pressure planes. The capacities listed below are minimum requirements only. Additional supply, storage, service pumping, and pressure maintenance facilities will be required by the commission if a normal operating pressure of 35 psi cannot be maintained throughout the system, or if the system's maximum daily demand exceeds its total production and treatment capacity. Additional capacities will also be required if the system is unable to maintain a minimum pressure of 20 psi during fire fighting, line flushing and other unusual conditions. In all sections governing quantity requirements, total storage capacity does not include pressure tank capacity.

(b) Community Water Systems.

(1) Ground water supply requirements are as follows:

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

(i) a well capacity of 1.5 gallons per minute 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 have the following:

(i) a well capacity of 0.6 gallon per minute 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 gallons per minute 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 gallon per minute per connection must be provided.

(ii) A total storage capacity of 200 gallons per connection must be provided.

(iii) Each pump station or pressure plane shall have two or more pumps having a total capacity of 2.0 gallons per minute per connection. For systems which provide an elevated storage capacity of 200 gallons per connection, two service pumps with a minimum combined capacity of 0.6 gallons per minute 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 must be provided.

(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 gallons per minute per connection must be provided. Where an interconnection is provided with another acceptable water system capable of supplying at least 0.35 gallons per minute for each connection in the combined system under emergency conditions, an additional well will not be required as long as the 0.6 gallons per minute 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 must be provided.

(iii) Each pump station or pressure plane shall have two or more pumps that have a total capacity of 2.0 gallons per minute per connection or that have a total capacity of at least 1,000 gallons per minute 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 gallons per minute 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 must be provided. 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 §290.45(g)(2) of this chapter are met.

(v) Emergency power is required 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 gallons per minute 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 gallons per minute for each connection in the combined system. Emergency power facilities in systems serving 1000 connections or greater must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards. Although not required, compliance with NFPA 110 standards is highly recommended for systems serving less than 1000 connections. Logs of all emergency power use and maintenance must be maintained and kept on file for a period of not less than 3 years. These records must be made available, upon request, for commission review.

(E) Mobile home parks with a density of 8 or more units per acre and apartment complexes which supply fewer than 100 connections without ground storage must have the following:

(i) a well capacity of 1.0 gallon per minute 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 or more connections, or fewer than 100 connections and utilize ground storage must meet the following requirements:

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

(ii) A total storage of 200 gallons per connection must be provided.

(iii) A service pump capacity of 2.0 gallons per minute per connection must be provided. Systems with 250 or more connections must have two or more service pumps with a combined capacity of at least 2.0 gallons per minute per connection.

(iv) A pressure tank capacity of 20 gallons per connection must be provided.

(2) All surface water supplies must provide the following:

(A) a raw water pump capacity of 0.6 gallon per minute per connection with the largest pump out of service.

(B) a treatment plant capacity of 0.6 gallon per minute per connection under normal rated design flow.

(C) transfer pumps (where applicable) with a capacity of 0.6 gallon per minute 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 per cent 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 gallons per minute per connection or that have a total capacity of at least 1,000 gallons per minute 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 gallons per minute 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 must be provided. 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 §290.45(g)(2) of this chapter are met.

(H) Emergency power is required 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 gallons per minute 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 gallons per minute for each connection in the combined system. Emergency power facilities in systems serving 1000 connections or greater must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards. Although not required, compliance with NFPA 110 standards is highly recommended for systems serving less than 1000 connections. Logs of all emergency power use and maintenance must be maintained and kept on file for a period of not less than 3 years. These records must be made available, upon request, for commission review.

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

(1) Ground water supply requirements are as follows:

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

(i) a well capacity of 1.0 gallon per minute per unit; and

(ii) a pressure tank capacity of 10 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 have the following:

(i) a well capacity of 0.6 gallons per minute 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 gallon per minute per unit; and

(iv) a pressure tank capacity of 10 gallons per unit.

(2) All surface water supplies, regardless of size, must have the following:

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

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

(C) a transfer pump capacity (where applicable) of 0.6 gallons per minute 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 gallon per minute per unit; and

(F) a pressure tank capacity of 10 gallons per unit with a minimum requirement of 220 gallons.

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

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

Table A

Type of Establishment	Gallons/Person
Restaurants	18
Schools without cafeterias, gymnasiums or showers	18
Schools with cafeterias, but no gymnasiums or showers	24
Schools with cafeterias, gymnasiums and showers	30
Youth camps without flush toilets, showers or dining halls	6
Youth camps with flush toilets but no showers or dining halls	24
Youth camps with flush toilets, showers and dining halls	42
Office Buildings	18
Hospitals (based on number of beds)	720
Institutions other than hospitals	240
Factories (exclusive of industrial processes)	24
Parks	6
Swimming pools	12
Country Clubs	120
Airports (per passenger)	6
Self-service laundries	60
Service stations/Stores	12

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

(2) Ground water supply requirements are as follows:

(A) If fewer than 300 persons per day are served, the system must have the following:

(i) a well capacity which can supply 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 Commission.

(B) If 300 or more persons per day are served, the system must have the following:

(i) a well capacity which can supply the maximum daily demand;

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

(iii) a service pump capacity of at least three times the maximum daily demand; and

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

(3) Each surface water supply, regardless of size, shall meet the following requirements:

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

(B) a treatment plant capacity which can meet 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 percent 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 Commission.

(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 systems supplying both retail and wholesale connections, the Commission's production, treatment and service pumping capacity requirements for the system's wholesale connections are in addition to the Commission's requirements for the system's retail connections.

(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 percent of the minimum required service pump capacity in the event of the loss of normal power supply. When the wholesaler provides water through an air gap into the purchaser's storage facilities it will be the purchaser's responsibility to meet all minimum water system capacity requirements including emergency power.

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

(1) The water purchase contract shall be available to the commission 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 plus the actual production capacity of the system shall be at least 0.6 gallons per minute 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 gallons per minute per connection or provide at least 1,000 gallons per minute and be able to meet peak hourly demands, whichever is less.

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

(g) Exceptions. Requests for exceptions to one or more of these Minimum Water System Capacity Requirements 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 as specified in §290.39(i) of this title (relating to General Provisions).

(1) Exceptions to the minimum capacity requirements for public water systems may be granted upon application to and approval by the Executive Director. The application for an exception to the minimum capacity requirements must include:

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

(B) Provision of 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) The Executive Director may also require data acquired during the last drought period in the region.

(D) The peak demand days over the study period must utilize data on the number of active connections to determine the actual demand per connection experienced.

(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 required to evaluate the exception request.

(2) Although elevated storage is the preferred method of pressure maintenance for systems of over 2500 connections, it is recognized that local conditions may dictate the use of alternate methods utilizing hydropneumatic tanks and on-site emergency power equipment. Exceptions to the elevated storage requirements may be obtained based on application to and approval of the executive director. Special conditions apply to systems qualifying for an elevated storage exception.

(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 registered 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 registered 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 commission for review.

(iii) For existing systems, the system's registered professional engineer must provide continuous 24 hour pressure chart recordings of distribution pressures maintained during past power failures, if available. The period reviewed should not be less than three years.

(B) Emergency power facilities must be maintained and provided with necessary appurtenances to assure immediate and dependable operation in case of normal power interruption.

(i) The facilities must be serviced and maintained in accordance with level 2 maintenance requirements contained in the current NFPA 110 standards and the manufacturers recommendations.

(ii) The switching gear must be capable of bringing the emergency power generating equipment on line during a power interruption such that the pressure in the distribution network does not fall below 20 psi at any time.

(iii) The minimum on-site fuel storage capacity shall be determined by the fuel demand of the emergency power facilities and the frequency of fuel delivery. An amount of fuel equal to that required to operate the facilities under-load for a period of at least 8 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 commission. 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.

(3) Any exception granted pursuant to these requirements shall be subject to review at the time of each routine sanitary survey of the system. Failure to demonstrate satisfactory survey findings may result in revocation of the exception.

Adopted 09/20/95 Effective 11/03/95

§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 these sections and maintained and operated in accordance with the following minimum acceptable operating practices. Owners and operators shall allow entry to members of the commission and employees and agents of the commission onto any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to public water systems in the state. Members, employees, or agents acting under this authority shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials.

(b) Microbiological. Submission of samples for microbiological analysis shall be as required by §290.101 - 290.121 of this title (relating to Drinking Water Standards Governing Drinking Water Quality and Reporting Requirements for Public Water Supply Systems). Microbiological samples may be required by the commission for monitoring purposes in addition to the routine samples required by the drinking water standards. These samples shall be submitted to the Texas Department of Health Bureau of Laboratories or one of its approved laboratories. (A list of the approved laboratories can be obtained by contacting the Texas Department of Health Bureau of Laboratories).

(c) Chemical. Samples for chemical analysis shall be submitted as directed by personnel from the Commission's Water Utilities Division or it district offices.

(d) Monthly operation reports. A monthly report of water works operation must be compiled. The report shall show the amounts of various chemicals, daily distribution system pumpages, dates of dead-end main flushes, cleanings of storage tanks, results of microbiological and chemical tests performed, and other pertinent data. Systems using surface water sources must also report raw and treated water analyses and daily turbidity analyses. A copy must be kept on file for review and made available during inspections.

(1) A copy of the monthly report must be submitted to the Texas Natural Resource Conservation Commission, Water Utilities Division, P.O. Box 13087, MC 155, Capitol Station, Austin, Texas 78711-3087 by the 15th day of the following month. The copy submitted to the commission must contain all the information required by the drinking water standards and the results of any special monitoring tests which have been required.

(2) Systems serving fewer than 100 connections which utilize ground water sources only are not required to compile monthly reports.

(e) Operation by certified personnel. All systems, except transient noncommunity systems which utilize ground or purchased water, must be under the direct supervision of a certified water works operator. The operator shall ensure that the water system complies with the requirements of this section.

(1) No district, municipality, firm, corporation, or individual, except transient noncommunity systems noted in §290.46(e), shall furnish to the public any drinking water, unless the production, processing, treatment, and distribution is at all times under the direct daily supervision of a competent water works operator holding a valid certificate of competency issued under the direction of the commission. A Grade "D" certificate is valid for systems with 250 or fewer connections. Systems serving in excess of 250 connections must employ an operator with a Grade "C" or higher certificate. Systems serving in excess of 1000 connections must employ at least two Grade "C" certified operators. For all systems which treat surface water, at least one of the required operators must hold at least a grade "B" or higher surface water certificate or hold a grade "C" surface water certificate and have completed a commission recognized 20-hour Water Laboratory Course.

(2) Each surface water treatment plant must have at least a Grade "C" surface water operator on duty when the plant is in operation or 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 in which the plant is unattended.

(3) Systems which have sources which are classified as groundwater under the influence of surface water must be under the supervision of either an operator who has at least a Grade C Groundwater certificate and has completed additional training or an operator who has at least a Grade C surface water certificate.

(A) Those systems which utilize cartridge filters must be under the supervision of at least a Grade C Groundwater operator who has completed a commission recognized 8-hour training course on monitoring and reporting requirements.

(B) Those systems which utilize coagulant addition and direct filtration must be under the supervision of at least a Grade C Groundwater operator who has completed a commission recognized 20-hour Surface Water Production course and a commission recognized 8-hour training course on monitoring and reporting requirements.

(C) Those systems which utilize complete surface water treatment must comply with the requirements of 30 TAC §290.46(e)(2).

(4) Certified operators must provide the commission with written, dated and signed notice of the public water systems which they operate or are employed by when applying for, renewing, or upgrading their certification. This notice must be amended in writing within 10 days of any change in responsibility.

(f) Disinfectant residual and monitoring. Facilities shall be provided to maintain an adequate disinfectant residual throughout the distribution system and equipment shall be available for monitoring the concentration of the disinfectant.

(1) Mechanical disinfection facilities capable of maintaining an acceptable disinfectant residual shall be provided for all public water supplies. At all times, the disinfection equipment shall be operated to maintain the following minimum disinfectant residuals in the far reaches of the distribution system:

(A) a free chlorine residual of 0.2 mg/l; or

(B) a chloramine residual of 0.5 mg/l (measured as total chlorine) for those systems that feed ammonia.

(2) The disinfectant residual in the distribution system must be tested periodically using a test kit which employs a diethyl-p-phenylenediamine (DPD) indicator. The record of these test results shall be maintained for at least three years.

(A) Public water systems must conduct daily disinfectant residual tests at representative locations in the distribution system unless they utilize ground water or purchased water sources only and serve fewer than 250 connections or 750 persons daily.

(B) Systems which utilize ground water or purchased water sources only and serve fewer than 250 connections or 750 persons daily must test the disinfectant residual at representative locations in the distribution system at least once every seven days.

(C) Systems which utilize surface water or ground water under the influence of surface water must monitor the disinfectant residual of the water entering the distribution system in accordance with the requirements of the drinking water standards.

(D) Representative disinfectant residual monitoring locations shall include, but are not limited to, those identified in the bacteriological sample siting plan and those in the far reaches of the distribution system. Only residual tests taken at bacteriological sampling sites can be used for compliance monitoring.

(g) Disinfection of new or repaired facilities. Disinfection by or under the direction of water system personnel must be performed when repairs are made to existing facilities and before new facilities are placed into service. Disinfection must be performed in accordance with AWWA requirements and water samples must be submitted to a laboratory approved by the Texas Department of Health. 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 one-half hour.

(h) Calcium hypochlorite. A supply of calcium hypochlorite disinfectant shall be kept on hand for use when making repairs, setting meters and disinfecting new mains prior to placing them in service.

(i) Plumbing ordinance. Public water systems must adopt an adequate plumbing ordinance, regulations, or service agreement with provisions for proper enforcement to insure that neither cross-connections nor other unacceptable plumbing practices are permitted. See §290.47 (b) of this title (relating to Appendices). Should sanitary control of the distribution system not reside with the purveyor, the entity retaining sanitary control shall be responsible for establishing and enforcing adequate regulations in this regard. The use of pipes and pipe fittings that contain more than 8.0 percent lead or solders and flux that contain more than 0.2 percent 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. Effective January 1, 1996, a customer service inspection certification shall be completed prior to providing continuous water service to new construction, on any existing service when the water purveyor has reason to believe that cross-connections or other unacceptable plumbing practices exist, or after any material improvement, correction, or addition to the private plumbing facilities. See §290.47(d) of this title (relating to Appendices).

(1) Individuals with the following credentials shall be recognized as capable of conducting a customer service inspection certification.

(A) Plumbing Inspectors and Water Supply Protection Specialists licensed by the Texas State Board of Plumbing Examiners.

(B) Certified Waterworks Operators and members of other water related professional groups who have completed a training course, passed an examination administered by the commission or its designated agent, and hold an endorsement granted by the commission or its designated agent.

(C) Licensed Plumbers, at the discretion of the water purveyor, may perform customer service inspections on single-family residential services.

(2) As unacceptable plumbing practices are discovered, they shall be promptly eliminated to prevent possible contamination of the water supplied by the public water system. The existence of a serious threat to the integrity of the public water supply shall be considered sufficient grounds for immediate

termination of water service. Service can be restored only when the source of potential contamination no longer exists, or until sufficient additional safeguards have been taken.

(3) Copies of properly completed inspection certifications must be kept on file by the water purveyor and made available, upon request, for commission review. These certifications shall be retained for a minimum of ten years. If the suggested certification form (see Appendix D) is not used, the Inspection Certifications must minimally include the name and registration number of the inspector, the type of registration (Plumbing Inspectors, Water Supply Protection Specialists, Certified Operator, etc.), and be dated and signed. It must also certify that:

(A) No direct connection between the public drinking water supply and a potential source of contamination exists. Potential sources of contamination are isolated from the public water system by an air-gap or an appropriate backflow prevention assembly in accordance with state plumbing regulation. Additionally, all pressure relief valves and thermal expansion devices are in compliance with state plumbing codes.

(B) No cross-connection between the public drinking water supply and a private water source exists. Where an actual air gap is not maintained between the public water supply and a private water supply, an approved reduced pressure-zone backflow prevention assembly is properly installed and a service agreement exists for annual inspection and testing by a recognized backflow prevention assembly tester. See §290.44(h)(4) of this title (relating to recognized backflow prevention assembly testers).

(C) No connection exists which would allow the return of water used for condensing, cooling or industrial processes back to the public water supply.

(D) No pipe or pipe fitting which contains more than 8.0% percent lead exists in private plumbing facilities installed on or after July 1, 1988.

(E) No solder or flux which contains more than 0.2% percent lead exists in private plumbing facilities installed on or after July 1, 1988.

(F) No plumbing fixture is installed which is not in compliance with a state-approved plumbing code.

(4) These customer service inspection requirements are not considered acceptable substitutes for and shall not apply to the sanitary control requirements stated in §290.115(5) of this title.

(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 or more frequently if water quality complaints are received from water customers.

(m) Housekeeping and maintenance. A program shall be initiated to facilitate cleanliness and to improve the general appearance of all plant facilities.

(n) Distribution system map. The map of the distribution system shall be continuously updated so that valves and mains may be easily located during emergencies.

(o) Well logs. Copies of 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.

(p) Maintenance requirements for pressure filters and for ground storage, elevated storage, and pressure tanks. Each pressure filter and each of the system's ground, elevated and pressure tanks shall be inspected annually by water system personnel or a contracted inspection service. The results of these inspections shall be recorded and maintained for at least five years. The results must be available for review by Commission staff during inspections.

(1) 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 that the tank remains in a watertight condition.

(2) Pressure tank inspection 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 that the tank remains in a watertight condition. Pressure tanks provided with an inspection port must have the interior surface inspected every five years.

(3) 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.

(q) 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 as often as necessary to maintain acceptable filtered water turbidity levels.

(r) Data on water system ownership and management. The commission 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 commission. When applicable, notification shall be in accordance with Chapter 291 of this title (relating to Water Rates and Services). Those systems not subject to Chapter 291 of this title shall notify the commission 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 above and the system's public drinking water supply identification number, and any other information necessary to properly identify the transaction shall be provided to the commission 120 days before the date of the transaction.

(2) On an annual basis, each certified operator who supervises more than one water system shall provide the executive director written notices containing their certificate number, address and telephone

number, and the name and identification number of each public water system which they supervise. Each operating company shall provide this information for itself and for each of its operators. See §290.47 of this title (relating to Appendices).

(s) Special Precautions. In the event of low distribution pressures (below 20 psi), water outages, repeated unacceptable microbiological samples or failure to maintain adequate chlorine residuals, special precautions must be instituted by the water system owner or responsible official. A flowchart has been provided to guide water system owners and operators in taking appropriate action in the above situations. This flowchart can be found in §290.47(h) of this title (relating to Appendices). If the flowchart indicates that a boil water notification is required, the system must notify its customers within 24 hours using the prescribed notification format as specified in §290.47 (e) of this title (relating to Appendices). A copy of this notice shall be provided to the executive director. Bilingual notification may be appropriate based upon local demographics. Boil water notices 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. Once the above conditions are met, the customers must be notified in a manner similar to the original notice. Other protective measures may be required at the discretion of the executive director.

(t) Water leakage. All water storage facilities, distribution system lines and related appurtenances shall be maintained in a watertight condition.

(u) 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.

(v) Testing equipment. Testing equipment or some other means of monitoring the effectiveness of any chemical treatment processes used by the system must be provided.

(w) 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.

(x) Abandoned wells. Abandoned public water supply wells owned by the system must be plugged with cement according to the Water Well Drillers Rules Chapter 338 of this title. Wells that are not in use and are non-deteriorated (as defined in 30 TAC 338) 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 commission's Water Utilities Division for review and approval. Deteriorated wells must be either plugged with cement or repaired to a non-deteriorated condition.

(y) Electrical wiring. All water system electrical wiring must be installed in a securely mounted conduit in compliance with a local or national electrical code.

§290.47. Appendices.

(a) Appendix A. Recognition as a Superior or Approved Public Water System.

Requirements. Public water supply systems which achieve and maintain recognition must exceed the minimum acceptable standards of the commission in these sections.

(1) To attain recognition as a "Superior Public Water System", the following additional requirements must be met:

(A) Physical facilities shall comply with the requirements in these sections.

(B) There shall be a minimum of two certified operators with additional operators required for larger systems.

(C) The system's microbiological record for the previous 24 months period shall indicate no violations (frequency, number or MCL) of the drinking water standards.

(D) The quality of the water shall comply with all primary water quality parameters listed in the drinking water standards.

(E) The chemical quality of the water shall comply with all secondary constituent levels listed in the drinking water standards.

(F) The system's operation shall comply with applicable state statutes and minimum acceptable operating practices set forth in §290.46 of this title (relating to Minimum Acceptable Operating Practices for Public Drinking Water Supplies).

(G) The system's capacities shall meet or exceed minimum water system capacity requirements set forth in §290.45 of this title (relating to Minimum Water System Capacity Requirements).

(H) The system shall have at least two wells, two raw water pumps or a combination of these with enough capacity to provide average daily consumption with the largest well or pump out of service. This requirement shall also apply to treatment plant pumps necessary for operation in accordance with §290.42 of this title (relating to Water Treatment).

(I) The water system shall be well maintained and the facilities shall present a pleasing appearance to the public.

(2) To attain recognition as an "Approved Public Water System," all additional requirements listed under subsection (a)(1) of this section with exception of secondary constituents, subsection (a)(1)(E) of this section must be met. Public water systems which provide water quality that exceeds the secondary chemical standards may be excluded from this recognition program at the discretion of the Executive Director.

Signs. Systems which have met the requirements for recognition as a superior or approved system may erect signs denoting this honor.

Inspections. To receive or maintain recognition as a superior or approved water system, the system must be inspected and evaluated by commission personnel as to physical facilities, appearance and operation. Systems which fail to meet the above requirements in this section will be denied recognition or will have their recognition revoked. The signs shall be immediately removed on notice from the Executive Director.

(b) Appendix B. Sample Service Agreement.

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 plumbing practices. The purpose of this service agreement is to notify each customer of the plumbing restrictions which are in place to provide this protection. The utility enforces these restrictions to ensure the public health and welfare. Each customer must sign this agreement before the NAME OF WATER SYSTEM will begin service. In addition, when service to an existing connection has been suspended or terminated, the water system will not re-establish service unless it has a signed copy of this agreement.

II. PLUMBING RESTRICTIONS. The following unacceptable plumbing practices are prohibited by State regulations.

A. No direct connection between the public drinking water supply and a potential source of contamination is permitted. Potential sources of contamination shall be isolated from the public water system by an air-gap or an appropriate backflow prevention device.

B. No cross-connection between the public drinking water supply and a private water system is permitted. These potential threats to the public drinking water supply shall be eliminated at the service connection by the installation of an air-gap or a reduced pressure-zone backflow prevention device.

C. No connection which allows water to be returned to the public drinking water supply is permitted.

D. No pipe or pipe fitting which contains more than 8.0% lead may be used for the installation or repair of plumbing at any connection which provides water for human use.

E. No solder or flux which contains more than 0.2 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 unacceptable plumbing practices. 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 unacceptablle plumbing practices exist; or after any major changes to the private plumbing 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 unacceptable plumbing practice which has been identified during the initial inspection or the periodic reinspection.

D. The Customer shall immediately correct any unacceptable plumbing practice on his premises.

E. The Customer shall, at his expense, properly install, test, and maintain any backflow prevention device required by the Water System. Copies of all testing and maintenance records shall be provided to the Water System.

IV. ENFORCEMENT. If the Customer fails to comply with the terms of the Service Agreement, the Water System shall, at its option, either terminate service or properly install, test, and maintain an appropriate backflow prevention device at the service connection. Any expenses associated with the enforcement of this agreement shall be billed to the Customer.

CUSTOMER'S SIGNATURE:_____
DATE:_____

(c) Appendix C. Sample Sanitary Control Easement Document for a Public Water Well.

SANITARY CONTROL EASEMENT

DATE:_____, 19_____

GRANTOR:

GRANTOR'S ADDRESS:

GRANTEE:

GRANTEE'S ADDRESS:

SANITARY CONTROL EASEMENT:

Purpose, Restrictions, and Uses of Easement:

1. The purpose of this easement is to protect the water supply of the well described and located below by means of sanitary control.

2. The construction and operation of underground petroleum and chemical storage tanks and liquid transmission pipelines, stock pens, feedlots, dump grounds, privies, cesspools, septic tank or sewage treatment drainfields, improperly constructed water wells of any depth, and all other construction or operation that could create an insanitary condition within, upon, or across the property subject to this easement are prohibited within this easement. For the purpose of the easement, improperly constructed water wells are those wells which do not meet the surface and subsurface construction standards for a public water supply well.

3. The construction of tile or concrete sanitary sewers, sewer appurtenances, septic tanks, storm sewers, and cemeteries is specifically prohibited within a 50-foot radius of the water well described and located below.

4. This easement permits the construction of homes or buildings upon the Grantor's property as long as all items in Restrictions Nos. 2 and 3 are recognized and followed.

5. This easement permits normal farming and ranching operations, except that livestock shall not be allowed within 50 feet of the water well.

The Grantor's property subject to this Easement is described in the documents recorded at:

_____

Volume_____, Pages_____ of the Real Property Records of_____County, Texas.

Property Subject to Easement:_____

All of that area within a 150 foot radius of the water well located_____feet at a radial of_____degrees from the_____corner of Lot_____, of_____ a Subdivision of Record in Book_____, Page_____ of the_____ County Plat Records, _____ County, Texas.

TERM:

This easement shall run with the land and shall be binding on all parties and persons claiming under the Grantor for a period of two years from the date that this easement is recorded; after which time, this easement shall be automatically extended until the use of the subject water well as a source of water for public water systems ceases.

ENFORCEMENT:

Enforcement of this easement shall be proceedings at law or in equity against any person or persons violating or attempting to violate the restrictions in this easement, either to restrain the violation or to recover damages.

INVALIDATION:

Invalidation of any one of these restrictions or uses (covenants) by a judgement or court order shall not affect any of the other provisions of this easement, which shall remain in full force and effect.

FOR AND IN CONSIDERATION, of the sum of One Dollar ($1.00) and for other good and valuable consideration paid by the Grantee to the Grantor, the receipt of which is hereby acknowledged, the Grantor does hereby grant and convey to Grantee and to its successors and assigns the sanitary control easement described in this easement.

GRANTOR

By:_____

INDIVIDUAL ACKNOWLEDGEMENT

STATE OF TEXAS §
§
COUNTY OF_____§

BEFORE ME, the undersigned authority, on the ____ day of _____, 19__, personally appeared _____ known to me to be the person(s) whose name(s) is(are) subscribed to the foregoing instrument and acknowledged to me that _____ executed the same for the purposes and consideration therein expressed.

_____
Notary Public in and for
THE STATE OF TEXAS
My Commission Expires: _____

_____
Typed or Printed Name of Notary

HUSBAND AND WIFE ACKNOWLEDGEMENT

STATE OF TEXAS §
§
COUNTY OF_____ §

BEFORE ME, the undersigned authority, on the ___ day of ____, 19 __, personally appeared _____ _____, husband and wife, known to me to be the persons whose names are subscribed to the foregoing instrument and acknowledged to me that they executed the same for the purposes and consideration therein expressed.

_____
Notary Public in and for
The State of Texas
My Commission Expires: _____

_____
Typed or Printed Name of Notary

Recorded in _____ Courthouse, _____, Texas on _____, 19__.

(d) Appendix D. Sample Service Inspection Certification.

Service Inspection Certification

Name of PWS _____
PWS I.D.# _____
Location of Service _____

I _____, upon inspection of the private plumbing facilities connected to the aforementioned public water supply do hereby certify that, to the best of my knowledge:

		Compliance	Non-Compliance
(1)	No direct connection between the public drinking water supply and a potential source of contamination exists. Potential sources of contamination are isolated from the public water system by an air gap or an appropriate backflow prevention assembly in accordance with state plumbing regulations. Additionally, all pressure relief valves and thermal expansion devices are in compliance with state plumbing codes.	☐	☐
(2)	No cross-connection between the public drinking water supply and a private water system exists. Where an actual air gap is not maintained between the public water supply and a private water supply, an approved reduced pressure-zone backflow prevention assembly is properly installed and a service agreement exists for annual inspection and testing by a certified backflow prevention device tester.	☐	☐
(3)	No connection exists which would allow the return of water used for condensing, cooling or industrial processes back to the public water supply.	☐	☐
(4)	No pipe or pipe fitting which contains more than 8.0% lead exists in private plumbing facilities installed on or after July 1, 1988.	☐	☐
(5)	No solder or flux which contains more than 0.2% lead exists in private plumbing facilities installed on or after July 1, 1988.	☐	☐
(6)	No plumbing fixture is installed which is not in compliance with a state approved plumbing code.	☐	☐

Water service shall not be provided or restored to the private plumbing facilities until the above conditions are determined to be in compliance.

I further certify that the following materials were used in the installation of the plumbing facilities:

Service lines Lead ☐ Copper ☐ PVC ☐ Other ☐
Solder Lead ☐ Lead Free ☐ Solvent Weld ☐ Other ☐

I recognize that this document shall become a permanent record of the aforementioned Public Water System and that I am legally responsible for the validity of the information I have provided.

_____ _____
Signature of Inspector Registration Number

_____ _____
Title Type of Registration

_____
Date

(e) Appendix E. Boil Water Notification.

BOIL WATER NOTIFICATION

Due to conditions which have occurred recently in the water system, the Texas Natural Resource Conservation Commission has required the system to notify all customers to boil their water prior to consumption.

To ensure destruction of all harmful bacteria and other microbes, water for drinking, cooking, and ice making should be boiled and cooled prior to consumption. The water should be brought to a vigorous rolling boil and then boiled for two minutes. In lieu of boiling, you may purchase bottled water or obtain water from some other suitable source. When it is no longer necessary to boil the water, water system officials will notify you.

If you have questions regarding this matter you may contact (a)_____ at (b)_____.

(a) Utility Official(s) (b) Phone Number(s)

INSTRUCTIONS:

List more than one utility official and phone number. Do not list the Commission as the primary contact. If a customer wishes to call the Commission, please have them call 512/239-6020.

(f) Appendix F. Sample Backflow Prevention Assembly Test and Maintenance Report.

The following form must be completed for each assembly tested. A signed and dated original must be submitted to the public water supplier for recordkeeping purposes:

BACKFLOW PREVENTION ASSEMBLY TEST AND MAINTENANCE REPORT

NAME OF PWS: _____
PWS I.D. # _____
LOCATION OF SERVICE: _____

The backflow prevention assembly detailed below has been tested and maintained as required by TNRCC regulations and is certified to be operating within acceptable parameters.

TYPE OF ASSEMBLY

☐ Reduced Pressure Principle ☐ Pressure Vacuum Breaker
☐ Double Check Valve ☐ Atmosphere Vacuum Breaker

Manufacturer _____ Size _____
Model Number _____ Located At _____
Serial Number _____

	Reduced Pressure Principle Assembly			Pressure Vacuum Breaker	
	Double Check Valve Assembly			Air Inlet	Check Valve
	1st Check	2nd Check	Relief Valve	Opened at _____psid	_____psid
Initial Test	DC-Closed Tight ☐ RP-_____psid Leaked ☐	Closed Tight ☐ Leaked ☐	Opened at _____psid	Did not Open ☐	Leaked ☐
Repairs and Materials Used					
Test After Repair	DC-Closed Tight ☐ RP_____psid	Closed Tight ☐	Opened at _____psid	Opened at _____psid	_____psid

The above is certified to be true.

Firm Name _____ Certified Tester _____

Firm Address _____ Cert. Tester No. _____ Date_____

(g) Appendix G. Operator and/or Employment Notice.

Section 290.46(e), Operation by Certified Personnel, paragraph 4, requires certified operators to provide a written, dated, and signed notice listing the public water systems which they operate or are employed. This is required when applying for, renewing, or upgrading a certificate of competency. This notice must be amended in writing within 10 days of any change in responsibility.

SYSTEM NAME	I.D. #	COUNTY
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

_____ _____

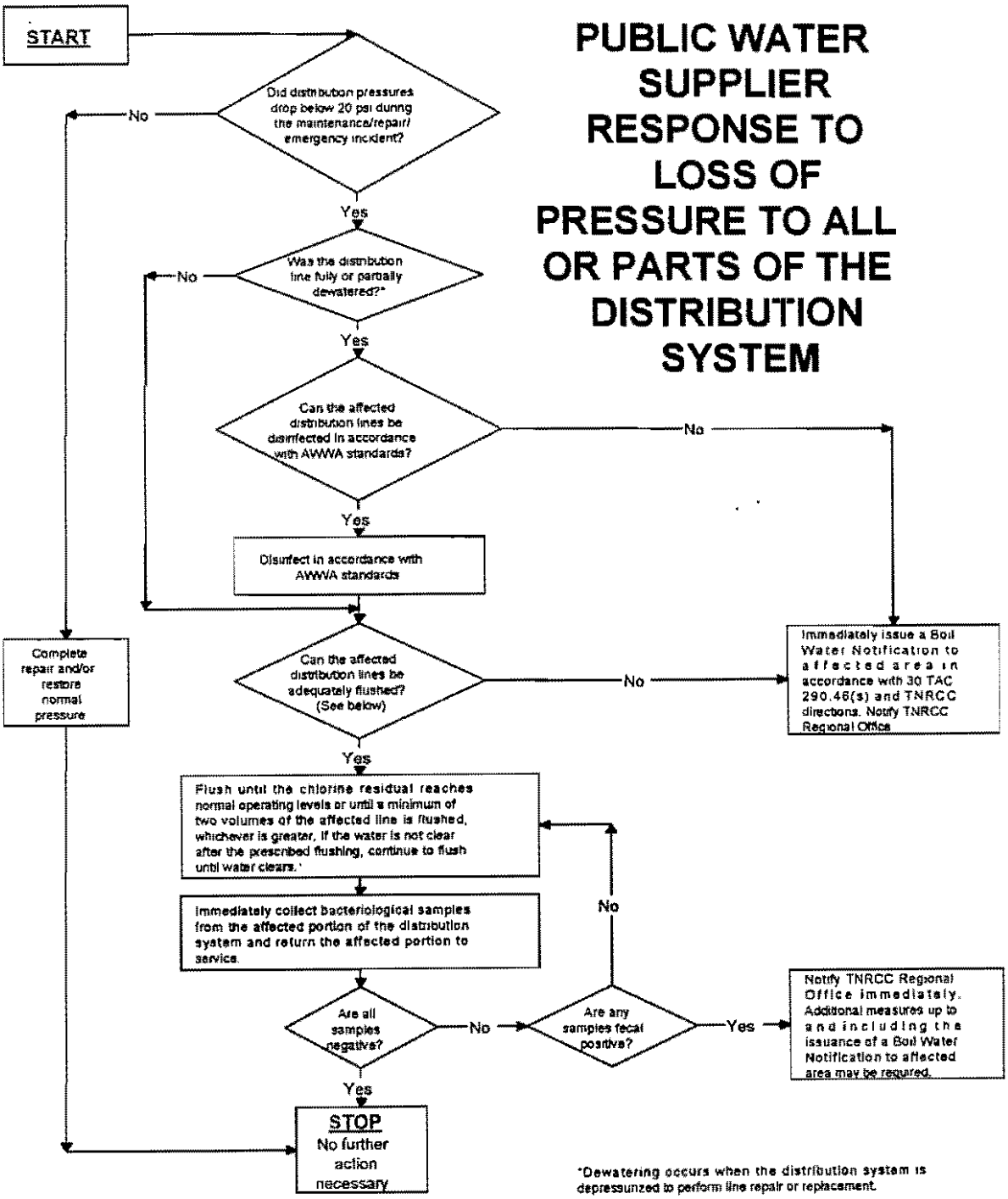
Signature of Operator Social Security Number

_____ _____

Grade of Certificate Expiration Date

This notice should be submitted to the Occupational Certification Section, Environmental Training Division, Texas Natural Resource Conservation Commission, P.O. Box 13087, Austin, Texas 78711-3087.

(h) Appendix H. Special Precautions Flowchart.



PUBLIC WATER SUPPLIER RESPONSE TO LOSS OF PRESSURE TO ALL OR PARTS OF THE DISTRIBUTION SYSTEM

SUBCHAPTER E : FEES FOR PUBLIC WATER SYSTEMS

§290.51. Fees for Services to Drinking Water System

(a) Purpose and scope.

(1) The purpose of this section is to establish fees for services provided by the commission to public water systems.

(2) The commission will provide services to public water systems, as follows:

(A) scheduling of analysis of drinking water for chemical content;

(B) collection of samples of drinking water for chemical analyses;

(C) review system data for evaluation of sampling waivers;

(D) inspect public water systems;

(E) review plans for new systems and major improvements to existing systems; and

(F) provide technical assistance as needed.

(3) The fees which the commission will charge for services provided to community and nontransient noncommunity water systems under this subsection will be according to the following schedule:

Number of connections (c)*
$A_{fee} = (c)^{0.65} \times \$9.50$
Number of wells (w)
$B_{fee} = (w) \times \$40.00$
Number of surface plants (s)
$C_{fee} = (s) \times \$400.00$
TOTAL FEE = $A_{fee}+B_{fee}+C_{fee}$

*Number of connections will be determined from data collected from the latest inspection report. All nontransient nonçommunity systems, state, federal and other community water system installations determined by the commission which serve large populations through a few connections shall have the number of connections for fee purposes determined by dividing the population served by a value of ten. Examples of such installations include, but are not limited to, are universities, children's homes, correctional facilities, and military facilities which generally do not bill customers for water service.

**The minimum total fee will be $75.00.

(4) New public water systems will not be assessed a fee for services until water is supplied to the first connection.

(5) The commission will charge a fee of $75 for services provided to noncommunity water systems which are not addressed in paragraph (3) of this subsection.

(6) All fees are due by January 1 of each year, shall be paid by check or money order, and shall be made payable to the Texas Natural Resource Conservation Commission. Penalties and interest for the late payment of fees shall be assessed in accordance with Chapter 12 of this title (relating to Payment of Fees).

(b) Failure to make payments as required under this section will subject the violator to the penalty provisions of the Health and Safety Code, Chapter 341, of Subchapter C.

Adopted January 22, 1997 Effective February 14, 1997

SUBCHAPTER F : DRINKING WATER STANDARDS GOVERNING DRINKING WATER QUALITY AND REPORTING REQUIREMENTS FOR PUBLIC WATER SUPPLY SYSTEMS
§§290.101 - 290.121

§290.101. Purpose.

The purpose of these standards is to assure the safety of public water supplies with respect to microbiological, chemical and radiological quality and to further efficient processing through control tests, laboratory checks, operating records and reports of public water supply systems. These standards are written so as to comply with the requirements of Public Law 93-523, the Federal "Safe Drinking Water Act," and the "Primary Drinking Water Regulations" which have been promulgated by the Environmental Protection Agency, under the authority granted by Public Law 93-523.

§290.102. Definitions.

The following definitions shall apply in the interpretation and enforcement of these standards.

Approved laboratory - A laboratory certified and approved by the Texas Department of Health to analyze water samples to determine their compliance with maximum allowable constituent levels.

Commission - the Texas Natural Resource Conservation Commission.

Community water system - A public water system which has a potential to serve at least 15 service connections on a year-round basis or serves at least 25 individuals on a year-round basis. Service connections shall be counted as one for each single family residential unit or each commercial or industrial establishment to which drinking water is supplied from the system.

Compliance cycle - The nine-year (calendar year) cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar-year cycle begins January 1, 1993 and ends December 31, 2001; the second begins January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

Compliance period - A three-year (calendar year) period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period is called the initial compliance period and runs from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001.

Control tests - Chemical, physical or microbiological tests made by the operator of the water system to control the quality or quantity of water served to the public and recorded regularly in the operating records.

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.

Entry Point - An entry point to the distribution system is a point which is representative of the water from each well after treatment or for surface water systems or a combination of surface and ground water systems: a point which is representative of each source or treatment point after any application of treatment.

Executive Director - The Executive Director of the Commission.

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.

MCL - An acronym for Maximum Contaminant Level.

Monthly Reports of Water Works Operations - The daily record of data relating to the operation of the system facilities compiled in a monthly report.

Non-community water system - Any public water system which is not a community water system.

Non-transient non-community water system or "NTNCWS" - A public water system that is not a community water system and that regularly serves at least 25 of the same persons over six months per year.

Public water system - A system for the provision to the public of piped water for human consumption. Such a system must have a potential to serve at least 15 service connections or 25 individuals at least 60 days out of the year. This term includes any collection, treatment, storage, and distribution facilities under 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 water 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 more 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 resides in, uses as his place of employment, or works in, a place to which drinking water is supplied from the system. A public water system is either a "community water system" or a "noncommunity water system" as defined in this section.

Repeat Compliance Period - Any subsequent compliance period after the initial compliance period.

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

§290.103. Standards of Chemical Quality.

All analyses to determine compliance shall be performed by an approved laboratory. Analyses shall be performed on treated water at all entry points to the distribution system except where otherwise stated.

(1) Inorganic Chemicals. The maximum contaminant levels for inorganic contaminants listed below apply to community and non-transient, non-community water systems. The maximum contaminant levels for nitrate, nitrite and total nitrate and nitrite also apply to transient non-community water systems.

Contaminant	MCL (mg/l)
Antimony	0.006
Arsenic	0.05
Asbestos	7 million fibers/liter (longer than 10μm)
Barium	2.0
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide	0.2 (as free Cyanide)
Fluoride	4.0
Mercury	0.002
Nickel	0.1
Nitrate	10.0 (as Nitrogen)
Nitrite	1.0 (as Nitrogen)
Nitrate & Nitrite (Total)	10.0 (as Nitrogen)
Selenium	0.05
Thallium	0.002

(2) Fluoride. Maximum contaminant level for fluoride in community water systems is 4.0 mg/l. Also, see §290.113 of this title (relating to Recommended Secondary Constituent Levels Applicable to All Public Water Systems) which establishes a recommended secondary constituent level of 2.0 mg/l.

(3) Maximum Contaminant Levels (MCLs) for Organic Compounds.

(A) Synthetic Organic Chemicals (SOCs). The following maximum contaminant levels for synthetic organic contaminants apply to community and non-transient, non-community water systems.

Contaminant	MCL (mg/l)
Alachlor	0.002
Aldicarb	0.003
Aldicarb Sulfoxide	0.004
Aldicarb Sulfone	0.002
Atrazine	0.003
Benzo[a]pyrene	0.0002
Carbofuran	0.04
Chlordane	0.002
Dalapon	0.2
Dibromochloropropane	0.0002
Di(2-ethylhexyl)adipate	0.4
Di(2-ethylhexyl)phthalate	0.006
Dinoseb	0.007
Diquat	0.02
Endothall	0.1
Endrin	0.002
Ethylene dibromide	0.00005
Glyphosate	0.7
Heptachlor	0.0004
Heptachlor epoxide	0.0002
Hexachlorobenzene	0.001
Hexachlorocyclopentadiene	0.05
Lindane	0.0002
Methoxychlor	0.04
Oxamyl (Vydate)	0.2
Pentachlorophenol	0.001
Picloram	0.5
Polychlorinated biphenyls (PCB)	0.0005
Simazine	0.004
Toxaphene	0.003
2,3,7,8-TCDD (Dioxin)	3×10^{-8}
2,4,5-TP	0.05
2,4-D	0.07

(B) Volatile Organic Chemicals (VOCs). The following maximum contaminant levels for volatile organic contaminants apply to community and non-transient, non-community water systems.

Contaminant	MCL (mg/l)
1,1-Dichloroethylene	0.007
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.005
1,2-Dichloroethane	0.005
1,2-Dichloropropane	0.005
1,2,4-Trichlorobenzene	0.07
Benzene	0.005
Carbon tetrachloride	0.005
cis-1,2-Dichloroethylene	0.07
Dichloromethane	0.005
Ethylbenzene	0.7
Monochlorobenzene	0.1
o-Dichlorobenzene	0.6
para-Dichlorobenzene	0.075
Styrene	0.1
Tetrachloroethylene	0.005
Toluene	1.0
trans-1,2-Dichloroethylene	0.1
Trichloroethylene	0.005
Vinyl chloride	0.002
Xylenes (total)	10.0

(4) Variances and exemptions. Variances and exemptions, as defined in subparagraphs (A), (B) and (C) of this paragraph, may be granted at the discretion of the commission.

(A) Variance - An exception to one or more of the maximum allowable levels which is necessary because the condition of the system's raw water is such that the maximum allowable level cannot be met despite the application of the best available treatment techniques (taking costs into consideration) subject to the following conditions:

(i) the public water system requesting the variance was in operation on the date these standards became effective;

(ii) the granting of the variance will not result in an unreasonable risk to public health;

(iii) a schedule, including increments of progress, is established to bring the system into compliance with the standard in question.

(B) Exemption - Exception to a provision of these standards where, because of compelling factors (which may include economic), the system is unable to comply with a specified allowable level. An exemption may be granted only under the following circumstances:

(i) the public water system requesting the exemption was in operation on the date these standards became effective, or for 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;

(ii) the granting of the exemption will not result in an unreasonable risk to public health;

(iii) a schedule is established to bring the system into compliance with the standard in question.

(C) Applications for such variances and/or exemptions must be submitted by the water system requesting a variance or exemption and must include the following:

(i) a statement of the standard which is not met;

(ii) an estimate of the risk involved to public health with supporting evidence from physicians or dentists in the area;

(iii) a long range plan for the correction of the problem. This plan or compliance schedule must be submitted within one year following written notification that a variance or exemption has been granted;

(iv) a detailed economic evaluation of the current and future situation.

(D) A variance or exemption covering a group or class of systems with a common standard which is not met may be issued by the commission without individual application. However, individual compliance schedules will be required for each such system within one year following written notification by the commission that such a variance or exemption has been granted. After receiving notification from the commission that a group or class variance or exemption has been issued to their system, each system must submit the above items in accordance with subparagraph (C) (ii)-(iv) of this paragraph.

(E) The commission is required to act upon all requests for variances or exemptions within a reasonable time period, not to exceed 90 days.

(F) Procedures for public comment and public hearings on variances, exemptions, and compliance schedules as a condition of a variance or exemption will be as stated in the EPA National Primary Drinking Water Regulations, of 40 Code of Federal Regulations, §141.4 and §142.20.

(5) Public notification requirements.

SUBCHAPTER G : WATER SAVING PERFORMANCE STANDARDS
§290.251-290.266

§290.251. Purpose, Authority, and Definitions.

(a) Purpose. The purpose of these sections is to establish water saving performance standards and labeling requirements for sink and lavatory faucets, shower heads, drinking water fountains, urinals, toilets, and flushometer toilets that are manufactured, imported, or otherwise supplied for sale in the State of Texas, and to establish labeling requirements for commercial or residential clothes-washing and dishwashing machines and lawn sprinklers to assist the consumer in making an informed purchasing decision. These sections apply to manufacturers, importers, and major suppliers of plumbing fixtures, who sell, offer for sale, distribute, or import plumbing fixtures into the state. These sections do not apply to plumbing fixtures manufactured in the state for sale outside of the State.

(b) Authority. The authority for these sections is the Health and Safety Code, Chapter 372, titled "Environmental Performance Standards for Plumbing Fixtures".

(c) Definitions. The following words and terms, when used in these sections, shall have the following meanings, unless the context clearly indicates otherwise.

(1) ANSI - The American National Standards Institute.

(2) ASME - The American Society of Mechanical Engineers

(3) Commission - The Texas Natural Resource Conservation Commission

(4) Executive director - The executive director of the Texas Natural Resource Conservation Commission.

(5) Importer - A business or individual that brings into the state plumbing fixtures from other countries or states for resale or installation (other than for their own domicile) within the state.

(6) Major supplier - A business or individual that provides plumbing fixtures to others for resale or installation (other than for their own domicile) within the state.

(7) Manufacturer - Someone that makes plumbing fixtures.

(8) Model - A type or design of a plumbing fixture

(9) Order - A request to purchase plumbing fixtures from a manufacturer, major supplier or importer.

(10) Plumbing fixture - A sink faucet, lavatory faucet, faucet aerator, shower head, urinal, toilet, flush valve toilet, or drinking water fountain.

(11) Toilet - A toilet or water closet except a wall mounted toilet that employs a flushometer valve.

(12) APA - The Administrative Procedures Act.

§290.252. Design Standards.

(a) A person may not sell, offer for sale, distribute, or import into the State of Texas a plumbing fixture for use in the state unless the plumbing fixture meets the water saving performance standards provided by subsection (b) of this section and the plumbing fixture is listed in §332.253 of this title (relating to Plumbing Fixture List).

(b) The water saving performance standards for a plumbing fixture are those established by the American National Standards Institute (ANSI), current revision, or the following standards, whichever are the more restrictive.

(1) The maximum flow from a sink or lavatory faucet or a faucet aerator shall not exceed 2.20 gallons of water per minute at a pressure of 60 pounds per square inch when tested in accordance with ANSI testing procedures.

(2) The maximum flow from a shower head shall not exceed 2.75 gallons of water per minute at a constant pressure equal to 80 pounds per square inch when tested in accordance with ANSI testing procedures.

(3) The maximum volume of water per flush from a urinal and the associated flush valve, if any, shall not exceed an average of one gallon when tested in accordance with ANSI testing procedures.

(4) The maximum volume of water per flush from a toilet shall not exceed an average of 1.60 gallons when tested in accordance with ANSI testing procedures.

(5) The maximum volume of water per flush from a wall mounted toilet that employs a flushometer valve shall not exceed an average of 2.00 gallons when tested in accordance with ANSI testing procedures.

(6) All drinking water fountains shall be operated by a self-closing valve.

§290.253. Plumbing Fixture List.

(a) The commission shall make and maintain a current list of plumbing fixtures that are certified to the commission by the manufacturer or importer to meet the water saving performance standards established by §290.252(b) of this title (relating to Design Standards). To have a plumbing fixture included on the commission's current list, a manufacturer or importer must:

(1) furnish identification method and testing data which clearly indicates that the plumbing fixture was tested in accordance with American National Standards Institute requirements and complies with the flow requirements established in §290.252(b).

(2) submit an identified sample plumbing fixture to the commission for testing and verification of water saving performance standards by the department; and

(3) pay the appropriate fee as listed in §290.255 of this title (relating to Fees).

(b) The commission retains the right to request a sample of the plumbing fixture for testing.

§290.254. Removal from List.

(a) A plumbing fixture listed in §290.253 of this title (relating to Plumbing Fixture List) shall be removed from the list if:

(1) the commission finds the manufacturer's or importer's certification to be inaccurately certified;

(2) the manufacturer or importer is delinquent in paying the fee as set forth in §290.255 of this title (relating to Fees); or

(3) the department finds that the fixture does not meet the standards set forth in §290.252(b) of this title (relating to Design Standards).

(b) Prior to removal of the plumbing fixture from the list, a manufacturer or importer shall have the right to seek a hearing with the commission. A hearing held pursuant to this section shall be held in accordance with the Administrative Procedures Act (APA) and the commission's formal hearing procedures.

(c) A plumbing fixture reinstated on the list after being removed due to a delinquent renewal fee will be considered a new product on the list.

§290.255. Fees.

An initial fee of $50 per plumbing fixture model will be assessed for certification review, inspection, identification and listing by the commission. An annual renewal fee of $25 per plumbing fixture model will also be assessed for maintenance of current listing. This fee will be payable to the commission by the manufacturer or importer of the listed plumbing fixture before October 31 of each year.

§290.256. Exemptions.

These sections do not apply to a plumbing fixture:

(1) that has been ordered by or is in the inventory of a building contractor or a wholesaler or retailer in Texas [of plumbing fixtures] on or before January 1, 1992;

(2) such as a safety shower or aspirator faucet, that, because of the fixture's specialized function, cannot meet the standards established by these sections (example: fixtures in handicapped modified showers, etc.);

(3) originally installed before January 1, 1992, that is removed and reinstalled in the same building on or after that date; or

(4) imported only for use at the importer's domicile.

§290.260. Labeling.

(a) Labeling requirements. A person may not sell, offer for sale, distribute or import into this state a plumbing fixture unless the plumbing fixture, including each component of a toilet, flush valve toilet or urinal and the associated packaging are marked and labeled in accordance with these sections. The labeling requirements in these sections shall take effect on October 25, 1994.

(1) Each water closet, urinal and flush valve shall be marked or labeled in accordance with the National Energy Policy Act of 1992 (42 USC §6294 et. seq) and as amended.

(2) Each water closet, urinal and flush valve package shall be marked or labeled in accordance with the National Energy Policy Act of 1992 (42 USC §6294 et. seq.) and as amended.

(3) Each faucet, aerator and showerhead shall be marked in accordance with the National Energy Policy Act of 1992 (42 USC §6294 et seq.) and as amended, except that each showerhead, flow restricting or controlling spout end device and aerator shall bear a permanent legible mark indicating the flow rate, expressed in gallons per minute (gpm). The flow rate shall be the actual flow rate or the maximum flow rate specified in §290.252 of this title (relating to Design Standards).

(4) Each faucet, aerator and showerhead package shall have the flow rate expressed in gallons per minute (gpm) clearly marked on the front.

(b) Prohibitions.. A person may not sell, offer for sale, distribute or import into this state a new commercial or residential clothes washing machine, dish washing machine or lawn sprinkler unless the clothes washing machine, dish washing machine or lawn sprinkler is marked or labeled in accordance with these sections:

(1) each clothes washing machine and dish washing machine shall have an attached label that shows the amount of water used per cycle; and

(2) each lawn sprinkler shall be marked with the water usage expressed in gallons per minute (gpm) by either a permanent mark on each sprinkler, or a label or tag attached to each sprinkler.

(c) Exemptions. This section does not apply to those clothes washing machines and dish washing machines that are subject to and are in compliance with the labeling requirements of the National Appliance Energy Conservation Act of 1987. public law 100-12 (42 USC 6294) and as amended.

§290.265. Administrative Penalty.

(a) A person who violates these sections shall be assessed an administrative penalty in an amount described in paragraphs (1)-(3) of this subsection but not to exceed $5,000 for each violation and for each day of a continuing violation.

(1) The penalty for sale, offering for sale, distributing or importing a plumbing fixture which does not meet the requirements of these sections shall be a minimum of $25 and a maximum of $500 for each unit sold, offered for sale, distributed or imported. The amount of the assessed penalty will be based upon subsequent cooperation by the violators with the commission.

(2) The penalty for sale, offering for sale, distributing, or importing a plumbing fixture not labeled in accordance with these sections shall be a minimum of $25 and a maximum $500 for each unit sold, offered for sale, distributed, or imported. The amount of assessed penalty will be based upon subsequent cooperation by the violators with the commission.

(3) The penalty for willful and continuing violation of paragraphs (1) and/or (2) of this subsection shall be above $5,000 for each violation.

(b) A person against whom an administrative penalty is assessed is entitled to a notice and hearing on the assessment of the penalty in accordance with the Administrative Procedure and Texas Register Act, Texas Civil Statutes, Article 6252-13a, and the commission's formal hearing procedures as described in 30 TAC Chapter 337 (relating to Enforcement).

(c) Not later than the 30th day after the date on which the commission's order assessing the administrative penalty is final, the person assessed the penalty shall pay the full amount of the penalty or file a petition for judicial review. A person who fails to comply with this subsection waives judicial review.

§290.266. Civil Penalty; Injunction.

(a) A person who violates these sections is subject to civil penalty not to exceed $5,000 for each violation and for each day of a continuing violation.

(b) If it appears that a person has violated, is violating, or is threatening to violate these rules. the commission, a county, or a municipality may bring a civil action in a district court in Travis County. the county in which the defendant resides or the county where the violation occurred, is occurring or is threatened for:

(1) injunctive relief to restrain the person from continuing the violation or threat of violation;

(2) assessment of a civil penalty for a violation; or

(3) both injunctive relief and a civil penalty.

(c) The commission is an indispensable party in a suit brought by a county or municipality under this section.

(A) Maximum contaminant level (MCL), treatment technique, and variance and exemption schedule violations. The owner or operator of a public water system which fails to comply with an applicable MCL or treatment technique established by this chapter or which fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, shall notify persons served by the system as follows:

(i) Except as provided in clause (iii) of this subparagraph, the owner or operator of a public water system must give notice:

(I) By publication in a daily newspaper of general circulation in the area served by the system as soon as possible, but in no case later than 14 days after notification from the commission of the violation or failure. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area; and

(II) By mail delivery (by direct mail or with the water bill), or by hand delivery, not later than 45 days after the violation or failure. The commission may waive mail or hand delivery if it determines that the owner or operator of the public water system in violation has corrected the violation or failure within the 45-day period. The commission must make the waiver in writing and within the 45-day period; and

(III) For violations of the MCLs of contaminants that may pose an acute risk to human health, by furnishing a copy of the notice to the radio and television stations serving the area served by the public water system as soon as possible but in no case later than 72 hours after the violation. The following violations are acute violations:

(-a-) Any violations specified by the commission as posing an acute risk to human health.

(-b-) Any violation of the MCL for nitrate or nitrite as defined in paragraph (1) of this section and determined according to §290.108 of this title.

(ii) Except as provided in clause (iii) of this subparagraph, following the initial notice given under clause (i) of this subparagraph, the owner or operator of the public water system must give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation or failure exists.

(iii) Alternate notification requirements shall be as follows.

(I) In lieu of the requirements of clause (i)(I) of this subparagraph, the owner or operator of a community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice by hand delivery or posting must begin as soon as possible, but no later than 72 hours after the violation or failure for acute violations (as defined in clause (i)(III) of this subparagraph), or 14 days after notification from the

commission of the violation or failure (for any other violation). Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three months for as long as the violation or failure exists.

(II) In lieu of the requirements of clause (i) and (ii) of this subparagraph, the owner or operator of a noncommunity water system may give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice by hand delivery or posting must begin as soon as possible, but no later than 72 hours after the violation or failure for acute violations (as defined in clause (i)(III) if this subparagraph) or 14 days after notification from the commission of the violation or failure (for any other violation). Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three months for as long as the violation or failure exists.

(B) Other violations, variances, exemptions. The owner or operator of a public water system which fails to perform monitoring required by these standards, fails to comply with a testing procedure established by this section, is subject to a variance or exemption granted under paragraph (6) of this section shall notify persons served by the system as follows:

(i) Except as provided in clause (iii) of this subparagraph, the owner or operator of a public water system must give notice within three months of the violation or granting of a variance or exemption by publication in a daily newspaper of general circulation in the area served by the system. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area.

(ii) Except as provided in clause (iii) of this subparagraph, following the initial notice given under clause (i) of this subparagraph, the owner or operator of the public water system must give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists. Repeat notice of the existence of a variance or exemption must be given every three months for as long as the variance or exemption remains in effect.

(iii) Alternate notification requirements shall be as follows.

(I) In lieu of the requirements of clauses (i) and (ii) of this subparagraph, the owner or operator of a community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice, within three months of the violation or granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places with the area served by the system. Posting must continue for as long as the violation exists or a variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

(II) In lieu of the requirements of clauses (i) and (ii) of this subparagraph, the owner or operator of a noncommunity water system may give notice, within three months of the violation or the granting of the variance or exemption, by hand delivery or by continuous

posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation exists, or a variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

(C) Notice to new billing units. The owner or operator of a community water system must give a copy of the most recent public notice for any outstanding violation of any maximum contaminant level, or any treatment technique requirement, or any variance or exemption schedule to all new billing units or new hookups prior to or at the time service begins.

(D) General content of public notice. Each notice required by this paragraph must provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the public water system is taking to correct such violation, the necessity for seeking alternative water supplies, if any, and any preventive measures the consumer should take until the violation is corrected. Each notice shall be conspicuous and shall not contain unduly technical language, unduly small print, or similar items that frustrate the purpose of the notice. Each notice shall include the telephone number of the owner, operator, or designee of the public water system as a source of additional information concerning the notice. Where appropriate, the notice shall be multi-lingual.

(E) Mandatory health effects language. In complying with subparagraph D of this paragraph, the owner or operator of a public water system shall include the language specified for each contaminant in 40 Code of Federal Regulations, §141.32 and available from the commission.

(F) Proof of public notification. Example copies of all notifications required under this paragraph must be submitted to the commission within 10 days of its distribution as proof of public notification.

(6) Best available technology (BAT) for treatment of violations of MCL's set in this section are listed in 40 CFR 141.61 for organic contaminants and 40 Code of Federal Regulations 141.62 for inorganic contaminants.

§290.104. Control Tests.

These tests may be conducted by the operator of the system to judge variations in water quality, to identify objectionable water characteristics, and to detect the presence of foreign substances which may adversely affect the potability of the water. These control tests shall be performed in accordance with procedures approved by the commission. Operators of water treatment plants at all public water systems utilizing coagulation, settling, softening or filtration shall perform daily chemical control tests on the filtered water for turbidity, PH, alkalinity and chlorine residuals; list results on the Monthly Report of Water Works Operation and copy to the commission after each month of operation.

§290.105. Maximum Contaminant Levels (MCLs) for Microbiological Contaminants.

(a) The MCL for microbiological contaminants is based on the presence or absence of total coliform bacteria in a sample.

(1) For a system which collects at least 40 bacteriological samples per month, if no more than 5.0 percent of the samples collected during a month are total coliform-positive, the system is in compliance with the MCL.

(2) For a system which collects fewer than 40 samples/month, if no more than one sample collected during a month is total coliform-positive, the system is in compliance with the MCL for total coliforms.

(b) Any fecal coliform-positive repeat sample or Escherichia coli- positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or Escherichia coli-positive routine sample, constitutes a violation of the MCL. For purposes of the public notification requirements in §290.103(6) of this title (relating to Standards of Chemical Quality), this is a violation that is an acute risk to health.

(c) Compliance with the MCL for total coliform bacteria in subsections (a) and (b) of this section will be determined for each month in which the system is in operation.

§290.106. Bacteriological Monitoring.

(a) Routine monitoring.

(1) Public water systems must collect routine bacteriological samples at active service connections which are representative of water throughout the distribution system according to a written sample siting plan. Other sampling sites may be used if located adjacent to service connections. These plans are subject to review and revision by the Commission.

(2) The bacteriological monitoring frequency for community and noncommunity water systems is based on the population served by the system, in accordance with the following table:

Population Served	Minimum Number of Samples per Month
1 to 1,000	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

The population for noncommunity systems will be based on the maximum daily population.

(3) The public water system must collect samples at regular time intervals throughout the month, except that a system which uses groundwater (except groundwater under the direct influence

of surface water, as described in §290.42 of this title (relating to Rules and Regulations for Public Water Systems), and serves 4,900 persons or fewer, may collect all required samples on a single day if they are taken from different sites.

(4) Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for microbiological contaminants.

(b) Repeat monitoring.

(1) If a routine sample is total coliform-positive, the public water system must collect a set of repeat samples within 24 hours of being notified of the positive result, or as soon as possible if the local laboratory is closed.

(A) A system which collects more than one routine sample per month must collect no fewer than three repeat samples for each total coliform-positive sample found.

(B) A system which collects one routine sample per month must collect no fewer than four repeat samples for each total coliform-positive sample found.

(2) The system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a fourth repeat sample is required, it must be collected within five service connections upstream or downstream. If the positive routine sample was collected at the end of the distribution line, one repeat sample must be collected at that point and all other samples must be collected within five connections upstream of that point.

(3) The system must collect all repeat samples on the same day, except that a system with a single service connection may collect daily repeat samples until the required number of repeat samples has been collected.

(4) If one or more repeat samples in the set is total coliform-positive, the public water system must collect an additional set of repeat samples in the manner specified in paragraphs (1)-(3) of this subsection. The additional samples must be collected within 24 hours of being notified of the positive result or as soon as possible if the local laboratory is closed. The system must repeat this process until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms has been exceeded.

(5) If a system collecting fewer than five routine samples per month has one or more total coliform-positive samples and the commission does not invalidate the sample(s) in accordance with subsection (c) of this section, it must collect at least five routine samples during the next month the system provides water to the public.

(6) After a system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliform bacteria, then the system may count the subsequent sample(s) as a repeat sample instead of as a routine sample.

(7) Results of all routine and repeat samples not invalidated by the commission must be included in determining compliance with the MCL for total coliforms in accordance with §290.105 of this title (relating to Maximum Bacteriological Contaminant Levels (MCLs) for Microbiological Contaminants).

(c) Invalidation of total coliform samples.

(1) A total coliform-positive sample invalidated under this subsection does not count towards meeting the minimum monitoring requirements of this section.

(2) The commission may invalidate a total coliform-positive sample only if one of the following conditions is met:

(A) the laboratory establishes that improper sample analysis caused the total coliform-positive result;

(B) the commission, on the basis of the results of repeat samples collected as required by this section, determines that the total coliform-positive sample resulted from a domestic or other nondistribution system plumbing problem. The commission cannot invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative. Under those circumstances, the system may cease resampling and request that the commission invalidate the sample. The system must provide copies of the routine positive and all repeat samples; or

(C) the commission has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required by this section, and use them to determine compliance with the MCL for total coliforms in §290.105 of this title (relating to Maximum Contaminant Levels (MCLs) for Microbiological Contaminants). The system must provide written documentation which must state the specific cause of the total coliform-positive sample, and what action the system has taken, or will take, to correct this problem. The commission may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

(3) If a laboratory invalidates a sample, the system must collect another sample from the same location as the original sample within 24 hours of being notified, or as soon as possible if the laboratory is closed, and have it analyzed for the presence of total coliforms. The system must continue to re-sample within 24 hours and have the samples analyzed until it obtains a valid result.

(d) Fecal coliform bacteria/Escherichia coli (E. coli) testing.

(1) If any routine or repeat sample is total coliform-positive, that total coliform-positive culture medium will be analyzed to determine if fecal coliforms or E. coli bacteria are present. If fecal coliforms or E. coli are present, the system must notify the commission by the end of the day when the system is notified of the test result, unless the system is notified of the result after the commission office is closed, in which case the system must notify the commission before the end of the next business day.

(e) Notification to the Texas Natural Resource Conservation Commission (TNRCC).

(1) A public water system which has exceeded the MCL for total coliforms in §290.105 of this title (relating to Maximum Contaminant Levels for Microbiological Contaminants) must report the violation to the commission no later than the end of the next business day after it learns of the violation, and notify the public in accordance with §290.103(8) of this title (relating to Standards of Chemical Quality).

(2) A public water system which has failed to comply with a coliform monitoring requirement must report the monitoring violation to the commission within ten days after the system discovers the violation, and notify the public in accordance with §290.103(8) of this title (relating to Standards of Chemical Quality).

§290.107. [Reserved for future use.]

§290.108. Inorganic Chemical Monitoring and Analytical Requirements.

Community water systems and non-transient, non-community water systems shall conduct monitoring to determine compliance with the maximum contaminant levels specified in §290.103 of this title (relating to Standards of Chemical Quality). Transient, non-community water systems shall conduct monitoring to determine compliance with the nitrate and nitrite maximum contaminant levels in §290.103 of this title (relating to Standards of Chemical Quality) (as appropriate) in accordance with this section.

(1) Monitoring locations for inorganic constituents other than asbestos shall be determined as follows:

(A) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system (hereafter called a sampling point).

(B) Surface water systems and systems using a combination of ground water and surface water sources shall take a minimum of one sample at every entry point to the distribution system (hereafter called a sampling point).

(C) If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

(D) Systems shall take subsequent samples at the same sampling points unless conditions make another sampling point more representative of each source or treatment plant.

(E) The commission may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed. Compositing of samples must be done in the laboratory or in the field by commission staff.

(i) If the concentration in the composite sample is greater than or equal to the proportional contribution of the MCL of any inorganic chemical, then a follow-up sample must be collected within 14 days from each sampling point included in the composite, (i.e., 20% of MCL when 5 points are composited). These samples must be analyzed for the contaminant(s) which were excessive in the composite sample. Detection limits for each analytical method are as listed in 40 Code Of Federal Regulations 141.23(a)(4)(i).

(ii) Compositing may be permitted only at ground water sampling points within a single system.

(iii) If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these instead of resampling. The duplicates must be analyzed within 14 days of the composite.

(2) The frequency of monitoring to determine compliance with the MCL for asbestos specified in §290.103 of this title (relating to Standards of Chemical Quality) shall be as follows:

(A) Each community and non-transient, non-community water system not receiving a waiver is required to monitor for asbestos during the first three-year compliance period of each nine-year compliance cycle beginning with the initial compliance period.

(B) The commission may grant a waiver based on a consideration of the following factors:

(i) Potential for asbestos contamination of the water source, and

(ii) The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.

(C) A waiver remains in effect until the completion of the three-year compliance period.

(D) A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe, under conditions where asbestos contamination is most likely to occur.

(E) A system vulnerable to asbestos contamination due solely to source water shall monitor in accordance with the provisions of paragraph (1) of this section.

(F) A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe, under conditions where asbestos contamination is most likely to occur.

(G) A system which exceeds the MCL for asbestos as determined in paragraph (9) of this section shall monitor quarterly beginning in the next quarter after the violation occurs.

(H) The commission may decrease the quarterly monitoring requirement to the frequency specified in paragraph (2)(A) of this section provided the commission has determined that the system is reliably and consistently below the maximum contaminant level. In no case can the commission make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface (or combined surface/ground) water system takes a minimum of four quarterly samples.

(I) If monitoring data collected after January 1, 1990 are generally consistent with the requirements of paragraph (2) of this section (relating to Standards of Chemical Quality), then the commission may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period.

(3) Monitoring conducted to determine compliance with the maximum contaminant levels in §290.103 of this title (relating to Standards of Chemical Quality) for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, and thallium shall be as follows:

(A) Beginning in the initial compliance period, groundwater systems shall take one sample at each sampling point once every three years. Beginning in the initial compliance period, surface water systems (or combined surface/ground) shall take one sample annually at each sampling point. Each of the sampling frequencies listed in this paragraph constitute one round of sampling for groundwater and surface water systems, respectively.

(B) The commission may grant waivers from the monitoring frequencies specified in subparagraph (3)(A) of this paragraph. The term during which the waiver is effective shall not exceed one compliance cycle (nine years).

(C) A condition of the waiver shall be that a system must take a minimum of one sample while the waiver is effective.

(D) The commission may grant a waiver provided surface water systems have monitored annually for at least three years and groundwater systems have conducted a minimum of three rounds of monitoring. (At least one sample shall have been taken since January 1, 1990.) Both surface and groundwater systems shall demonstrate that all previous analytical results were less than the MCL. Systems that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.

(E) In determining the appropriate reduced monitoring frequency, the commission shall consider:

(i) Reported contaminant concentrations from all previous monitoring;

(ii) The degree of variation in reported concentrations; and

(iii) Other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in the flow or characteristics of a reservoir or stream used as the water source.

(F) If a decision by the commission is made to grant a waiver it shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the commission. The commission shall review and, where appropriate, revise the waiver of monitoring frequency when other data relevant to the system become available.

(G) Systems which exceed the IOC MCL's as calculated in paragraph (9) of this section shall monitor quarterly beginning in the next quarter after the violation occurs.

(H) The commission may decrease the quarterly monitoring requirement to the frequencies specified in subparagraphs (A) and (B) of this paragraph provided it has determined that the system is reliably and consistently below the MCL. In no case can the commission make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

(4) All public water systems (community; non-transient, non-community; and transient, non-community) shall monitor to determine compliance with the maximum contaminant level for nitrate as follows:

(A) Community and non-transient, non-community water systems served by groundwater shall monitor annually beginning January 1, 1993; systems served by surface water shall monitor quarterly beginning January 1, 1993.

(B) Each transient non-community water system shall monitor annually beginning January 1, 1993.

(C) The repeat monitoring frequency for community and non-transient, non-community groundwater systems shall be quarterly for at least one year following any one sample in which the concentration is ≥ 50 percent of the MCL. The commission may allow a groundwater system to reduce the sampling frequency to annually after four consecutive quarterly samples are reliably and consistently less than the MCL.

(D) The commission may allow community and non-transient, non-community water systems to reduce the sampling frequency to annually if all analytical results from four consecutive quarters are less than 50 percent of the MCL. A surface water system shall return to quarterly monitoring if any one sample is greater than 50 percent of the MCL.

(E) After the initial round of quarterly sampling for surface water systems is completed, any community or non-transient non-community system which is monitoring annually shall take subsequent samples during the quarter which previously resulted in the highest analytical result.

(5) All public water systems (community; non-transient, non-community; and transient, non-community systems) shall monitor to determine compliance with the maximum contaminant level for nitrite as follows:

(A) All public water systems shall take one sample at each sampling point during the initial compliance period.

(B) After the initial sample, systems where the analytical result for nitrite is <50 percent of the MCL shall monitor at the frequency specified by the commission.

(C) The repeat monitoring frequency for nitrite for all public water systems shall be quarterly for at least one year following any one sample in which the concentration is ≥50 percent of the MCL. The commission may allow a system to reduce the sampling frequency to annual after determining the system is reliably and consistently less than the MCL.

(D) Systems which are monitoring annually shall take each subsequent sample during the quarter which previously resulted in the highest analytical result.

(6) Confirmation sampling:

(A) Where the results of sampling for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium or thallium indicate an exceedance of the MCL, one additional sample from the same sampling point shall be collected as soon as possible after the initial sample.

(B) Where nitrate or nitrite sampling results indicate an exceedance of the maximum contaminant level, the system shall take a confirmation sample within 24 hours of the system's receipt of notification of the analytical results of the first sample. Systems unable to comply with the 24-hour sampling requirement must immediately notify the consumers served by the public water system in accordance with §290.103(8)(A)(iii) of this title (relating to Standards of Chemical

Quality). Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

(C) If a commission-required confirmation sample is taken for any contaminant, then the results of the initial and confirmation sample shall be averaged. The resulting average shall be used to determine the system's compliance in accordance with paragraph (9) of this section. The commission has the discretion to delete results of obvious sampling errors.

(7) The commission may require more frequent monitoring than specified in paragraphs (2)-(5) of this section or may require confirmation samples for positive and negative results at its discretion.

(8) Systems may apply to the commission to conduct more frequent monitoring than the minimum monitoring frequencies specified in this section.

(9) Compliance with §290.103 of this title (relating to Standards of Chemical Quality) (as appropriate) shall be determined based on the analytical result(s) obtained at each sampling point.

(A) For systems which are conducting monitoring at a frequency greater than annual, compliance with the MCLs for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium is determined by a running annual average at each sampling point. If the average at any sampling point is greater than the MCL, then the system is out of compliance. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any sample below the method detection limit shall be calculated at zero for the purpose of determining the annual average.

(B) For systems which are monitoring annually, or less frequently, the system is out of compliance for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the commission, the determination of compliance will be based on the average of the two samples.

(C) Compliance with the MCLs for nitrate and nitrite is based on one sample if the levels of these contaminants are below the MCLs. If the levels of nitrate or nitrite exceed the MCLs in any sample, a confirmation sample is required in accordance with paragraph (6)(B) of this section, and compliance shall be based on the average of the initial and confirmation samples.

(D) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commission may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.

(10) Each public water system shall monitor at the time designated by the commission during each compliance period.

§290.109. Organic Chemical (Other Than Trihalomethanes) Monitoring, Analytical Requirements and Treatment Techniques.

(a) Monitoring and analysis of the SOC contaminants listed in §290.103(3)(A) of this title (relating to Standards of Chemical Quality) for the purposes of determining compliance with the maximum contaminant level shall be conducted as follows:

(1) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each subsequent sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(2) Surface water systems shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each subsequent sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(3) If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).

(4) Synthetic Organic Chemical (SOC) Monitoring Frequency:

(A) Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in §290.103(3)(A) of this title (relating Standards of Chemical Quality) during each compliance period beginning with the initial compliance period.

(B) Systems serving more than 3,300 persons which do not detect a contaminant in the initial compliance period, may reduce the sampling frequency to a minimum of two consecutive quarterly samples in one year during each repeat compliance period.

(C) Systems serving less than or equal to 3,300 persons which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

(5) The commission may grant a waiver from the requirement of paragraph (a)(4) of this section. after evaluating the following factors: Knowledge of previous use (including transport. storage, or disposal) of the contaminant within the watershed or zone of influence of the water source(s). If a determination by the commission reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(A) previous analytical results;

(B) the proximity of the system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at drinking water sources, manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources include the use of pesticides to control insects, weeds, or pests on agricultural areas, forest lands, home and garden property, or other land application uses;

(C) the environmental persistence and transport of the pesticide herbicide or contaminant.

(D) how well the water source is protected against contamination due to such factors as depth of the well, type of soil and the integrity of well construction. Surface water systems must consider watershed vulnerability and protection;

(E) elevated nitrate levels at the water supply source; and

(F) use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

(6) The commission will consider the waiver for each compliance period.

(7) If an organic SOC contaminant listed in §290.103 (3) (A) of this title (relating to Standards of Chemical Quality) is detected, as defined in 40 CFR 141.24 (h) (18), in any sample, then:

(A) The system must monitor quarterly at each sampling point at which a detection occurs.

(B) The commission may decrease the quarterly monitoring requirement specified in subparagraph (A) of this paragraph provided it has determined that the system is reliably and consistently below the MCL. In no case shall the commission make this determination unless a groundwater system takes a minimum of two consecutive quarterly samples and a surface water system takes a minimum of four consecutive quarterly samples.

(C) After the commission determines that a system is reliably and consistently below the MCL, it may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.

(D) Systems which have three consecutive annual samples with no detection of a contaminant be granted a waiver as specified in paragraph (6) of this subsection.

(E) If monitoring results in detection of one or more of certain related contaminants (aldicarb, aldicarb sulfone, aldicarb sulfoxide and heptachlor, heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.

(8) Systems which violate the MCL's of §290.103(3)(A) of this title (relating to Standards of Chemical Quality) as determined by paragraph (a)(11) of this section must monitor quarterly. After a minimum of four quarterly samples show the system is in compliance and the commission determines the system is reliably and consistently below the MCL, as specified in paragraph (a)(11) of this section, the system shall monitor at the frequency specified in paragraph (a)(7)(C) of this section.

(9) The commission may require a confirmation sample for positive or negative results. If a confirmation sample is required by the commission, the result must be averaged with the first sampling result and the average used for the compliance determination as specified by paragraph (15) of this subsection. The commission has discretion to delete results of obvious sampling errors from this calculation.

(10) The commission may reduce the total number of samples required from a system for analysis by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(A) If, in the composite sample, a detection of one or more SOC contaminants listed in §290.103(3)(A) of this title (relating to Standards of Chemical Quality) occurs, then a follow-up sample must be taken from each sampling point included in the composite and analyzed within 14 days of collection.

(B) If duplicates of the original sample taken from each sampling point used in the composite are available, the commission may use these duplicates instead of resampling. The duplicate must be analyzed within 14 days of collection and the results reported to the commission.

(C) Compositing may only be permitted at sampling points within a single system.

(11) Compliance with the MCL's of §290.103(3)(A) of this title (relating to Standards of Chemical Quality) shall be determined based on the analytical results obtained at each sampling point.

(A) For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be calculated as zero for purposes of determining the annual average.

(B) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the commission, the determination of compliance will be based on the average of the two samples.

(C) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commission may allow the system to give public notice to only that portion of the system which is out of compliance.

(12) If monitoring data collected after January 1, 1990, are generally consistent with the requirements of subsection (a) of this section, then the commission may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period.

(13) The commission may increase the required monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source, etc.).

(14) The commission has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

(15) Each public water system shall monitor at the time designated by the commission within each compliance period.

(b) Beginning with the initial compliance period: sampling and analysis of the VOC contaminants listed in §290.103 (3)(B) of this title (relating to Standards of Chemical Quality), for the purpose of determining compliance with the MCLs shall be conducted as follows:

(1) Groundwater systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point). Each subsequent sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(2) Surface water systems (and combined surface/ground water systems) shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each subsequent sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(3) If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).

(4) Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in §290.103 (3)(B) of this title (relating to Standards of Chemical Quality) during each compliance period, beginning with the initial compliance period.

(5) If the initial monitoring for VOC contaminants listed in §290.103 (3)(B) of this title (relating to Standards of Chemical Quality) as allowed in paragraph (b)(16) has been completed by

December 31, 1992, and the system did not detect any contaminant listed in §290.103 (3)(B) of this title (relating to Standards of Chemical Quality) then each ground and surface water system shall take one sample annually beginning with the initial compliance period.

(6) After a minimum of three years of annual sampling, the commission may allow groundwater systems with no previous detection of any contaminant listed for VOCs in §290.103 (3)(B) of this title (relating to Standards of Chemical Quality) to take one sample during each compliance period.

(7) Each community and non-transient groundwater system which does not detect a contaminant listed in §290.103(3)(B) of this title (relating to Standards of Chemical Quality) may be granted a waiver from the requirements of paragraphs (5) and (6) of this subsection after completing the initial monitoring. (For the purposes of this section, detection is defined as ≥0.0005 mg/l.) A waiver shall be effective for no more than six years (two compliance periods).

(8) The commission may grant a waiver after evaluating the following factor(s): the knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the water sources. If a determination by the commission reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(A) previous analytical results;

(B) the proximity of the system to a potential point or non-point source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at drinking water sources manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities;

(C) the environmental persistence and transport of the contaminants;

(D) the number of persons served by the public water system and the proximity of a smaller system to a larger system;

(E) how well the water source is protected against contamination (i.e., is it a surface or groundwater system). Groundwater systems must consider factors such as depth of the well, the type of soil, and well construction. Surface water systems must consider watershed protection.

(9) As a condition of the waiver a groundwater system must take one sample at each sampling point during the time the waiver is effective (i.e., one sample during two compliance periods or six years) and update its vulnerability assessment considering the factors listed in paragraph (8) of this section. Based on this updated vulnerability assessment the commission must reconfirm that the system is not vulnerable. If the commission does not make this reconfirmation within three years of the initial determination, then the waiver is invalid and the system is required to sample annually as specified in paragraph (5) of this section.

(10) Each community and non-transient surface water system which does not detect a contaminant listed for VOCs in §290.103(3)(B) of this title (relating to Standards of Chemical Quality) may be considered by the commission for a waiver from the requirements of paragraph (5) of this subsection after completing the initial monitoring. Systems meeting this criteria must be determined by the commission to be non-vulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the commission (if any).

(11) If a VOC contaminant listed in §290.103(3)(B) of this title (relating to Standards of Chemical Quality) is detected at a level exceeding 0.0005 mg/l in any sample, then:

(A) the system must monitor quarterly at each sampling point which resulted in a detection;

(B) the commission may decrease the quarterly monitoring requirement specified in subparagraph (A) of this paragraph provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case shall the commission make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples;

(C) if the commission determines that the system is reliably and consistently below the MCL, the commission may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter which previously yielded the highest analytical result;

(D) Systems which have three consecutive annual samples with no detection of a contaminant may be granted a waiver as specified in paragraph (7) of this subsection.

(E) groundwater systems which have detected one or more of the following two-carbon organic compounds: trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each sampling point at which one or more of the two-carbon organic compounds was detected. If the result of the first analysis does not detect vinyl chloride, the commission may reduce the quarterly monitoring frequency for vinyl chloride to one sample during each compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the commission.

(12) Systems which violate the VOC MCL's of §290.103(3)(B) of this title (relating to Standards of Chemical Quality), as determined by paragraph (15) of this subsection, must monitor quarterly. After a minimum of four consecutive quarterly samples which show the system is in compliance as specified in paragraph (15) of this section and the commission determines that the system is reliably and consistently below the maximum contaminant level, the system may monitor at the frequency and time specified in paragraph (11)(C) of this section.

(13) The commission may require a confirmation sample for positive or negative results. If a confirmation sample is required by the commission, the result must be averaged with the

first sampling result and the average is used for the compliance determination as specified by paragraph (15) of this section. The commission has discretion to delete results of obvious sampling errors from this calculation.

(14) The commission may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

(A) If the VOC concentration in the composite sample is ≥0.0005 mg/l for any contaminant listed in §290.103(3)(B) of this title (relating to Standards of Chemical Quality), then a follow-up sample must be taken and analyzed within 14 days from each sampling point included in the composite.

(B) If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these instead of resampling. The duplicate must be analyzed and the results reported to the commission within 14 days of collection.

(C) Compositing may only be permitted by the commission at sampling points within a single system.

(D) Procedures for compositing VOC samples are as stated in 40 Code of Federal Regulations §141.24 (f)(14)(iv).

(15) Compliance with §290.103 (3)(B) of this title (relating to Standards of Chemical Quality) shall be determined based on the analytical results obtained at each sampling point.

(A) For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately.

(B) If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the commission, the determination of compliance will be based on the average of the two samples.

(C) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commission may allow the system to give public notice to only that area served by that portion of the system which is out of compliance.

(16) The commission may allow the use of monitoring data collected after January 1, 1988 for purposes of initial monitoring compliance. If the data are generally consistent with the other requirements in this section, the commission may use these data (i.e., a single sample rather than four

quarterly samples) to satisfy the initial monitoring requirement of paragraph (4) of this subsection. Systems which use these samples and do not detect any contaminant listed in §290.103 (3)(B) of this title (relating to Standards of Chemical Quality) shall begin monitoring annually in accordance with paragraph (5) of this subsection beginning January 1, 1993.

(17) The commission may increase required monitoring where necessary to detect variations within the system.

(18) Each public water system shall monitor at the time designated by the commission within each compliance period.

(19) Analysis of unregulated contaminants shall be as specified in 40 Code of Federal Regulations (CFR) §141.40. The commission adopts by reference Federal Regulations referred to in this subsection. Copies are available for review in the Water Utilities Division, Texas Natural Resource Conservation Commission, P. O. Box 13087 Austin, Texas 78711-3087.

(c) Acrylamide and Epichlorohydrin Treatment Techniques. Each public water system must certify annually to the commission (using third party or manufacturer's certification) that when acrylamide or epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed 0.05% dosed at 1 ppm (or equivalent) for acrylamide and 0.01% dosed at 20 ppm (or equivalent) for epichlorohydrin.

§290.110. Radiological Sampling and Analytical Requirements.

(a) Maximum contaminant levels for radium-226, radium-228 and gross alpha particle radioactivity for community systems:

(1) Combined radium-226 and radium-228 - 5 pCi/l

(2) Gross alpha particle activity (including radium-226 but excluding radon and uranium) - 15 pCi/l.

(b) Maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides in drinking water in community water systems.

(1) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem (mrem)/year.

(2) Except for the radionuclides listed in Table A, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents shall be calculated on the basis of a 2-liter-per-day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," NBS Handbook 69 as amended August, 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ

shall not exceed 4 mrem/year. Table A - Average annual concentrations assumed to produce a total body or organ dose of 4 mrem/year.

Radionuclide	Critical Organ	pCi Per Liter
Tritium	Total Body	20,000
Strontium-90	Bone Marrow	8

(c) Monitoring frequency for radioactivity in community water systems.

(1) Monitoring requirements for gross alpha particle activity, radium-226 and radium-228.

(A) Compliance with subsection (a) of this section shall be based on the analysis or analyses of four quarterly samples.

(i) A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis provided that the measured gross alpha particle activity does not exceed 5 pCi/lat a confidence level of 95 percent (1.65 o where o is the standard deviation of the net counting rate of the sample.)

(ii) When the gross alpha particle activity exceeds 5 pCi/l, the same or an equivalent sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds 3 pCi/l the same or an equivalent sample shall be analyzed for radium- 228.

(B) Suppliers of water shall monitor at least once every four years following the procedure required by subparagraph (A) of this paragraph. At the discretion of the commission, when an annual record taken in conformance with subparagraph (A) of this paragraph has established that the average annual concentration is less than one-half the maximum contaminant levels established by subsection (a) of this section, analysis of a single sample may be substituted for the quarterly sampling procedure required by subparagraph (A) of this paragraph.

(i) More frequent monitoring shall be conducted when required by the commission in the vicinity of mining or other operations which may contribute alpha particle radioactivity to either surface or groundwater sources of drinking water, or when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in the finished water.

(ii) A supplier of water shall monitor in conformance with subparagraph (A) of this paragraph within one year of the introduction of new water source for a community water system.

(iii) A community water system using two or more sources having different concentrations of radioactivity shall monitor the source of water, in addition to water from a free-flowing tap, when required by the commission.

(iv) Monitoring for compliance with subsection (a) of this section after the initial period need not include radium-228 provided that the average concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by subparagraph (A) of this paragraph.

(v) Suppliers of water shall conduct annual monitoring of any community water system in which the radium 226 concentration exceeds 3 pCi/l when required by the commission.

(C) If the average annual maximum contaminant level for gross alpha particle activity or total radium as set forth in subsection (a) of this section is exceeded, the supplier of a community water system shall give notice to the commission and notify the public as required by §290.103(8) of this title (relating to Standards of Chemical Quality). Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the maximum contaminant level or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

(2) Monitoring requirements for man-made radioactivity in community water systems.

(A) Systems using surface water sources and serving more than 100,000 persons and such other community water systems as are designated by the commission shall be monitored for compliance with subsection (b) of this section by analysis of four quarterly samples. Compliance with subsection (b) of this section may be assumed without further analysis if the average annual concentration of gross beta particle activity is less than 50 pCi/l and if the average annual concentrations of tritium and strontium-90 are less than those listed in Table A of subsection (b)(2) of this section, provided that if both radionuclides are present, the sum of their annual dose equivalents to bone marrow shall not exceed 4 millirem/year.

(i) If the gross beta particle activity exceeds 50 pCi/l, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with subsection (b) of this section.

(ii) Suppliers of water shall conduct additional monitoring, as required by the commission to determine the concentration of man-made radioactivity in principal watersheds designated by the commission.

(iii) At the discretion of the commission, suppliers of water utilizing only groundwaters may be required to monitor for man-made radioactivity.

(B) After the initial analysis required by subparagraph (A) of this paragraph, suppliers of water shall monitor at least every four years following the procedure given in subparagraph (A) of this paragraph.

(C) The supplier of any community water system designated by the commission as utilizing waters contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90and tritium.

(i) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples. If the gross beta particle activity in a sample exceeds 15 pCi/l, the same or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds 50 pCi/l, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with subsection (b) of this section.

(ii) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. When iodine-131 is identified in the finished water more frequent monitoring shall be conducted as required by the commission.

(iii) Annual monitoring for strontium-90 and tritium shall be conducted by the analysis of four quarterly samples.

(iv) The commission may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the supplier of water where the commission determines such data is applicable to a particular community water system.

(D) If the average annual maximum contaminant level for man-made radioactivity set forth in subsection (b) of this section is exceeded, the operator of a community water system shall give notice to the commission and to the public as required by §290.103(6) of this title (relating to Standards of Chemical Quality). Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the maximum contaminant level or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

§290.111. Construction and Siting Requirements.

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 rules and regulations, as promulgated by the Commission.

§290.112. Recordkeeping and Reporting Required of Water Systems.

Any owner or operator of a public water system subject to the provisions of this chapter shall retain on the water system premises or at a convenient location near the premises the following records:

(1) Records of bacteriological analyses must be retained for no less than five years, and records of chemical analyses must be retained for no less than ten years.

(2) Records of action taken by the system 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.

(3) Copies of written reports, summaries or communications relating to sanitary surveys of the system conducted by the system itself, by a private consultant, or by the commission shall be kept for a period not less than ten years after completion of the survey involved.

(4) Records concerning a variance or exemption granted to the system shall be kept for a period ending not less than five years following the expiration of such variance or exemption.

(5) Any owner or operator of a public water system subject to the provisions of this chapter is required to report to the State the results of any test, measurement or analysis required to be made by these standards within ten days following such test, measurement or analysis.

§290.113. Secondary Constituent Levels.

(a) The following secondary constituent levels are limits, applicable to all public water systems. No drinking water supply which does not meet the Secondary Constituent Levels may be used without written approval from the commission.

CONTAMINANT	LEVEL (mg/l except where otherwise stated)
Aluminum	0.05 to 0.2
Chloride	300
Color	15 color units
Copper	1.0
Corrosivity	Non-corrosive
Fluoride	2.0
Foaming agents	0.5
Hydrogen sulfide	0.05
Iron	0.3
Manganese	0.05
Odor	3 Threshold Odor Number
pH	>7.0
Silver	0.1
Sulfate	300
Total Dissolved Solids	1,000
Zinc	5.0

(b) For all instances in which drinking water does not meet the recommended limits and is accepted for use by the commission, such acceptance is valid only until such time as water of acceptable chemical quality can be made available at reasonable cost to the area(s) in question.

(c) Community water systems that exceed the secondary maximum constituent level for fluoride but are below the level listed in §290.103 of this title (relating to Standards of Chemical Quality) must notify the public. The notice must be made annually by including it with the water bill or by separate mailing to all customers. The form and content of the notice shall be as prescribed by the commission.

§290.114. Modified Monitoring.

When a public water system supplies water to one or more other public water systems, the commission may modify the monitoring requirements imposed by this part to the extent that the interconnection of the systems justifies treating them as a single system for monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule specified by the commission in concurrence with the Administrator of the U.S. Environmental Protection Agency.

§290.115. Exceptions to these Standards.

These standards shall apply to each public water system, unless the public water system meets all of the following conditions:

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

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

(3) does not sell water to any person;

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

(5) is subject to plumbing restrictions and inspections by the public water system which provides the water.

§290.116. Control of Trihalomethanes in Drinking Water.

(a) For the purpose of this section the following definitions will apply:

(1) "Halogen" means one of the chemical elements chlorine, bromine, or iodine.

(2) "Trihalomethane" (THM) means one of the family of organic compounds named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

(3) "Total Trihalomethanes" (TTHM) means the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane, i.e., chloroform;

dibromochloromethane; bromodichloromethane; tribromomethane, i.e., bromoform) rounded to two significant figures.

(4) "Maximum Total Trihalomethane Potential" (MTP) means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven days at a temperature of 25° C or above.

(5) "Disinfectant" means any oxidant added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms.

(b) The maximum contaminant level (MCL) for total trihalomethanes shall be 0.10 milligrams/liter. The MCL shall apply only to those systems which serve a population of 10,000 or more individuals.

(c) Sampling and analytical requirements for total trihalomethanes:

(1) For the purpose of this section, the minimum number of samples required to be taken shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer shall be considered as one treatment plant for determining the minimum number of samples. All samples taken within one sampling period shall be collected within a 24-hour period.

(2) For all community water systems utilizing surface water sources in whole or in part, and for all water systems utilizing only groundwater sources that have not been determined to qualify for the reduced monitoring requirements of paragraph (4) of this subsection, analyses for total trihalomethanes shall be performed on at least four samples of water per quarter from each treatment plant used by the system. At least 25 percent of the samples shall be taken at locations within the distribution system reflecting the maximum residence time of the water in the system. The remaining 75 percent shall be taken at representative locations in the distribution system, taking into account number of persons served, different sources of water, and different treatment methods employed. The results of all analyses per quarter shall be arithmetically averaged and reported to the commission within 30 days of the system's receipt of such results. All samples collected shall be used in computing the average, unless the analytical results are invalidated for technical reasons.

(3) Upon the written request of a community water system, the monitoring frequency required by paragraph (2) of this subsection may be reduced by the commission to a minimum of one sample analyzed for TTHM's per quarter taken at a point in the distribution system reflecting the maximum residence time of the water in the system, upon a written determination by the commission that the data from at least one year of monitoring in accordance with paragraph (2) of this subsection and local conditions demonstrate that total trihalomethane concentrations will be consistently below the maximum contaminant level.

(A) If at any time during which the reduced monitoring frequency prescribed under this subsection applies, the results from any analysis exceed 0.10 milligrams/liter of TTHM's and such results are confirmed by at least one check sample taken promptly after such results are obtained,

or if the system makes any significant change to its source of water or treatment program, the system shall immediately begin monitoring in accordance with the requirements of paragraph (2) of this subsection.

(B) If a system is required to begin monitoring in accordance with paragraph (2) of this subsection, such monitoring shall continue for at least one year before a reduction in monitoring frequency may be considered.

(4) Upon the written request to the commission, a community water system utilizing only groundwater sources may seek to have the monitoring frequency reduced to a minimum of one sample for maximum TTHM potential per year taken at a point in the distribution system reflecting maximum residence time of the water in the system. The system shall submit to the Commission the results of at least one sample analyzed for maximum TTHM potential taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system's monitoring frequency may only be reduced upon a written determination by the commission that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than 0.10 milligrams/liter and that, based upon an assessment of the local conditions of the system, the system is not likely to approach or exceed the maximum contaminant level for TTHM's. The results of all analyses shall be reported to the commission within 30 days of the system's receipt of such results. All samples collected shall be used for determining whether the system must comply with the monitoring requirements of paragraph (2) of this subsection, unless the analytical results are invalidated for technical reasons.

(A) If at any time during which the reduced monitoring frequency prescribed under this subsection is in effect, the result from any analysis taken by the system for the maximum TTHM potential is equal to or greater than 0.10 milligrams/liter, and such results are confirmed by at least one check sample taken promptly after such results are received, the system shall begin immediately to monitor in accordance with the requirements of paragraph (2) of this subsection.

(B) If it becomes necessary to begin monitoring in accordance with paragraph (2) of this subsection, such monitoring shall continue for at least one year before the monitoring frequency may be reduced.

(C) In the event of any significant change to the system's raw water or treatment program, the system shall immediately analyze an additional sample for maximum TTHM potential taken at a point in the distribution system reflecting the maximum residence time of the water in the system for the purpose of determining whether the system must comply with the monitoring requirement of paragraph (2) of this subsection.

(5) Compliance with the MCL of 0.10 milligrams/liter for total trihalomethanes shall be determined based on a running annual average of quarterly samples collected by the system as prescribed in paragraph (2) of this subsection. If the average of samples covering any 12-month period exceeds the maximum contaminant level, the supplier of water shall report to the commission within 30 days and notify the public as required under §290.103(8) of this title (relating to Standards of Chemical Quality). Monitoring after public notification shall be at a frequency designated by the commission

and shall continue until a monitoring schedule as a condition of a variance, exemption, or enforcement action shall become effective.

(6) Before a community water system makes any significant modification to its existing treatment process for the purpose of achieving compliance with this subsection, the system must submit and obtain commission approval of a detailed plan setting forth its proposed modifications and those safeguards that it will implement to ensure that the bacteriological quality of the drinking water served by such system will not be adversely affected by such modifications.

(7) All analyses for determining compliance with the provisions of this subsection shall be conducted in accordance with the procedures required by the U.S. Environmental Protection Agency.

§290.117. Disinfection.

(a) A system that uses a surface water source must provide the disinfection treatment specified in subsection (b) of this section beginning July 1, 1993. A system that uses a groundwater source under the influence of surface water and provides filtration treatment must provide disinfection treatment as specified in subsection (b) of this section by July 1, 1993, or beginning when filtration is installed, whichever is later. Failure to meet any requirement of this section after the applicable date specified in this subsection is a treatment technique violation. Violation of any treatment technique of this section must be reported to the commission by the end of the next business day after the measurement was taken.

(b) Each public water system that utilizes surface water or groundwater under the influence of surface water must provide disinfection treatment as follows.

(1) The disinfection treatment must be sufficient to ensure that the total treatment processes of that system achieve at least 99.9 percent (3-log) inactivation and/or removal of Giardia lamblia cysts and at least 99.99 percent (4-log) inactivation and/or removal of viruses, as determined by the commission.

(A) The disinfectant concentrations(s) within the treatment process shall not be allowed to fall below acceptable levels for more than four hours.

(B) Disinfection contact time will be based on tracer study data submitted by the system and approved by the commission. Acceptable tracer study data must be submitted to the commission no later than January 1, 1993.

(2) The residual disinfectant concentration in the water entering the distribution system measured as specified in §290.119 of this title (relating to Turbidity and Disinfection) shall not be less than 0.2 mg/l free chlorine or 0.5 mg/l chloramine for more than four hours.

(3) The residual disinfectant concentration in the distribution system, as specified in §290.119 of this title (relating to Monitoring Requirements for Systems Using Surface Water

Treatment) shall not be less than 0.2 mg/l free chlorine or less than 0.5 mg/l chloramine in more than five (5.0) percent of the samples each month, for any two consecutive months that the system serves water to the public.

Where: the value "V" in the following formula shall not exceed five (5.0) percent per month for any two consecutive months --

$$V = \frac{b}{a} \times 100$$

Where: a = number of instances where the residual disinfectant concentration is measured;

b = number of instances where the residual disinfectant concentration is measured but is detected at less than 0.2 mg/l free chlorine or less than 0.5 mg/l chloramine.

§290.118. Filtration.

A public water system that uses a surface water source must provide filtration treatment which complies with this section by July 1, 1993. A public water system that uses groundwater under the direct influence of surface water must provide filtration by a date specified by the commission. Such date will not exceed 18 months from the date of notification. Failure to meet any requirement of this section after the applicable date specified in this section is a treatment technique violation. Violation of any treatment technique requirement of this section must be reported to the commission by the end of the next business day after the measurement was taken.

(1) For systems using conventional filtration or groundwater systems under the influence of surface water using direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 0.5 Nephelometric Turbidity Unit (NTU) in at least 95 percent of the measurements taken each month, measured as specified in §290.119 of this title (relating to Monitoring Requirements for Systems Using Surface Water Treatment); except that if the commission determines that the system is capable of achieving at least 99.9 percent removal and/or inactivation of Giardia lamblia cysts at some turbidity level higher than 0.5 NTU in at least 95 percent of the measurements taken each month, the commission may substitute this higher turbidity limit for that system. However, in no case may the commission approve a turbidity limit that allows more than one (1.0) NTU in more than five (5.0) percent of the samples taken each month.

(2) The turbidity level of representative samples of a system's filtered water must at no time exceed five (5.0) NTU.

§290.119. Monitoring Requirements Relating to Turbidity and Disinfection for Systems Using Surface Water Treatment.

A public water system that uses a surface water source or a ground water source under the influence of surface water must monitor in accordance with this section beginning July 1, 1993.

(1) Turbidity measurements as required by §290.118 of this title (relating to Filtration) must be performed on representative samples of the system's filtered water every four hours (or more frequently) that the system serves water to the public. A public water system may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy by calibrating on a weekly basis as a minimum frequency. Continuous monitoring results must be reported at equal intervals of four hours or less. For systems serving 500 or fewer persons, the system may reduce the turbidity sampling frequency to once per day.

(2) The residual disinfectant concentration of the water entering the distribution system must be monitored continuously, and the lowest value must be recorded each day. The system must also record the duration of the longest event when the residual leaving the plant fell below 0.2 mg/l free chlorine or 0.5 mg/l chloramine. Continuous disinfectant monitoring equipment must be calibrated at minimum frequency of monthly. 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. Systems serving 3,300 or fewer persons may take grab samples in lieu of providing continuous monitoring on an ongoing basis at the frequencies each day as prescribed in the following chart. Systems which sell water on a wholesale basis shall monitor the disinfectant residual leaving the plant based on the total number of connections served by the wholesale provider and its wholesale customers. If at any time the residual disinfectant concentration falls below 0.2 mg/l free chlorine or 0.5 mg/l chloramine in a system using grab sampling in lieu of continuous monitoring, the system must take a grab sample every four hours until the residual disinfectant concentration meets the disinfectant requirement.

System Size by Population	Samples/day[1]
<500.	1
501 to 1,000	2
1,001 to 2,500	3
2,501 to 3,300	4

[1] The day's samples cannot be taken at the same time. The sampling intervals are subject to commission review and approval.

(3) The residual disinfectant concentration must be measured at least at the same points in the distribution system and at the same time as bacteriological samples are collected, as specified in §290.106 of this title (relating to Bacteriological Monitoring). The disinfectant residual in the distribution system must also be monitored in accordance with the requirements of §290.46(f)(2) of this chapter (relating to Minimum Acceptable Operating Practices for Public Drinking Water Systems). Results of these residual measurements must indicate a minimum residual of 0.5 mg/l chloramine or 0.2 mg/l free chlorine, depending on disinfectant used.

§290.120. Regulation of Lead and Copper.

(a) General Requirements

(1) Applicability - The requirements of this section apply to community and non-transient non-community water systems and shall be effective on July 1, 1991. New water systems will be required to meet the requirements of this section when notified by the commission.

(2) Compliance - The water system is not in compliance if it fails to meet any reporting, monitoring, public education, or other requirement in this section relating to the regulation of lead and/or copper.

(A) All applicable water systems shall determine compliance based on monitoring and reporting requirements for lead and copper established in this section or contained in 40 CFR §141 and §142.

(B) Failure to satisfactorily conduct or satisfactorily report any requirements of this section shall constitute a monitoring, reporting or treatment technique violation, and shall be a violation of these standards.

(3) Action levels for lead and copper are 0.015 mg/l and 1.3 mg/l respectively. The action levels are exceeded if the concentration of lead and/or copper in more than ten percent (10%) of the first draw tap water samples collected during any monitoring period is greater that 0.015 mg/l for lead or 1.3 mg/l for copper.

(b) Site Selection and Material Survey

(1) By the applicable date for commencement of tap sample monitoring, each system shall complete a materials survey of its distribution system to identify a pool of tap sampling sites that meet the requirements of this section. All first draw tap samples are to be collected from this pool of sites. Sampling sites may not include faucets that have point-of-use or point-of-entry treatment devices.

(2) Information for conducting a materials survey and selecting sampling sites are provided to each system by the commission before initial tap sampling is initiated in accordance with the time schedule shown on Table Number 2 paragraph (8) of this subsection. Procedural requirements set forth in 40 CFR §141.86 will be followed for site selection activities except that reporting of tap sampling sites to the Commission shall be conducted using the materials survey and site selection forms supplied by the Commission. Supplemental explanatory correspondence from the system will be considered as part of the materials survey document. Systems must make a good faith effort to conduct a thorough and complete materials survey and submit a valid sample site selection form before initial tap sampling may be conducted.

(c) Tap Sampling.

(1) A first draw tap sample means a one liter sample of tap water collected from a cold water, frequently used interior tap, after the water has been standing in the plumbing for at least 6 hours

and is collected without first flushing the tap. It is recommended that water not be allowed to stand in the plumbing for more than 18 hours prior to collection.

(2) Sample collection may be conducted by either water system personnel or the residents. If the resident is allowed to collect samples for lead and copper monitoring, the water system must provide written instructions for sample collection procedures and the system may not challenge, based on alleged errors in the sample collection process, the accuracy of the sampling results.

(3) A water system shall collect each tap sample from the same sampling site from which it collected a previous sample. If this is not possible, written explanation to the commission must be provided and an alternate site from the system's sampling pool must be selected which meets similar criteria and is within reasonable proximity to the original site.

(4) Monitoring approved by the commission and conducted by systems in addition to the minimum requirements of this section shall be considered by the commission in making any determination of compliance.

(5) Number of Tap Samples - Initial Monitoring - Systems shall collect at least one set of tap samples during each of two consecutive six-month monitoring periods.

(6) The minimum number of sample sites required for initial monitoring are listed in Table Number 1, as well as the number of sites required of each system conducting reduced monitoring.

Table No. 1

SYSTEM SIZE (No. of People Served)	INITIAL MONITORING SITES	REDUCED MONITORING SITES
>100,000	100	50
10,001 - 100,000	60	30
3,301 - 10,000	40	20
501 - 3,300	20	10
101 - 500	10	5
<101	5	5

(7) Initial tap sampling shall be conducted only after the Commission has determined that a system has successfully completed a materials survey and has obtained approval of its sample site selection form which is required to be submitted by subsection (b)(2) of this section.

(8) The first six-month initial monitoring period begins on the dates listed in Table Number 2.

Table No. 2

SYSTEM SIZE (No. of People Served)	FIRST SIX-MONTH MONITORING PERIODS BEGIN
>50,000	January 1, 1992
3,301 - 50,000	July 1, 1992
<3,301	July 1, 1993

(d) Computing 90th Percentile Lead and Copper Levels - Determination of 90th percentile levels shall be obtained by ranking the results of lead and copper samples collected during a monitoring period in ascending order (lowest concentration = sample #1; highest concentration = sample #10, 20, 30, 40, 50, etc), up to the total number of samples collected. The number of samples collected during the monitoring period shall be multiplied by 0.9 and the concentration of lead and copper in the numbered sample yielded by this calculation is the 90th percentile sample contaminant level. The system is in compliance with the lead and/or copper action levels if the 90th percentile sample contaminant level is equal to or less than the action levels specified in subsection (a)(2) of this section. For water systems serving fewer than 101 people, the 90th percentile level is computed by taking the average of the highest two sample results.

(e) Reduced Tap Monitoring.

(1) The commission shall notify each water system that it is eligible for reduced monitoring of first draw tap samples if it is in compliance with the 90th percentile lead and copper action levels after completion of two six-month periods of initial tap sampling.

(2) Reduced monitoring shall be conducted annually during June, July, August, or September by collecting one set of samples from the appropriate number of reduced monitoring sites, after notification.

(3) The number of reduced monitoring sites required for each system are found in Table Number 1 located in subsection (c)(6) of this section, if not otherwise specified by the commission.

(4) If the system exceeds an action level for lead or copper during any reduced monitoring period, then:

(A) it must follow public education requirements applicable to action level exceedances during initial monitoring found in subsection (g) of this section;

(B) collect the remaining number of samples as required for initial monitoring within 60 days. The results of all samples related to reduced monitoring will be used to determine action level exceedance. Should an exceedance of lead or copper action levels be verified, then procedures of this section applicable to action level exceedances during initial monitoring will be followed.

(5) If after three annual periods of reduced monitoring the system continues to be in compliance with the lead and copper action levels, then the system will be notified to conduct reduced monitoring once every three years.

(f) Monitoring Requirements for Water Quality Parameters (WQP's) and Source Water.

(1) Water Quality Parameters.

(A) All large water systems (serving populations greater than 50,000) are required to conduct WQP monitoring beginning with the initial period of first draw tap samples and continuing until corrosion control is optimized.

(B) All medium and small systems (serving populations of 3,301 to 50,000 and less than 3,301, respectively) that exceed the lead or copper action level shall conduct WQP monitoring beginning in the first calendar quarter following the end of the period in which the exceedance of the lead and/or copper action level took place and continue as long as the system exceeds the lead or copper action level.

(C) WQP monitoring shall be conducted quarterly for the following parameters: pH; alkalinity; calcium; conductivity; water temperature; orthophosphate (when an inhibitor containing a phosphate compound is used) and silica (when an inhibitor containing a silicate compound is used). Temperature and pH must be measured at the sampling site at the same time of sample collection.

(D) Large systems must conduct WQP monitoring at all entry points and at the number of distribution sites specified in Table Number 3 of this section. Small and medium systems that are required to conduct WQP monitoring must monitor at all points of entry and at the required number of distribution sites as shown in the Table Number 3.

Table No. 3

SYSTEM SIZE (# of people served)	INITIAL WQP DISTRIBUTION SITES	REDUCED WQP DISTRIBUTION SITES	NO. OF SITES FOR WQP MONITORING
> 100,000	25	10	25
10,001 - 100,000	10	7	10
3,301 - 10,000	3	3	3
501 - 3,300	2	2	2
101 - 500	1	1	1
< 101	1	1	1

(E) WQP distribution sites (exclusive of entry points) may be sites normally used for bacteriological monitoring and samples need not be collected inside the home. These sites shall be representative of water quality throughout the distribution system.

(F) After corrosion control treatment is installed, water quality parameters shall be measured at the initial number of distribution sites as indicated in Table Number 3 quarterly and also at entry points biweekly.

(G) WQP monitoring after corrosion control treatment is installed shall be conducted for the following parameters: pH, alkalinity, orthophosphate (when an inhibitor containing a phosphate compound is used), silica (when an inhibitor containing a silicate compound is used), and calcium (when calcium carbonate stabilization is used as part of the treatment). These parameters must be measured at all points of entry and initial distribution sites.

(H) Any water system that maintains the range of values for WQP's reflecting optimum corrosion control as approved by the commission for one year may collect quarterly distribution samples at the reduced number of distribution sites indicated in Table Number 3. WQP samples shall continue to be measured at points of entry on a biweekly basis and results submitted to the commission.

(I) Any water system that reflects optimal corrosion control treatment during three consecutive years may reduce the frequency at which it collects distribution samples for applicable WQP's to annually.

(J) Any water system that reflects optimal corrosion control treatment during three consecutive years of annual WQP distribution monitoring may reduce the frequency at which it collects the number of WQP distribution samples for applicable WQP's to once every three years.

(K) Water quality parameter testing must be conducted at a laboratory that uses the methods described in 40 CFR §141.89 and it is the responsibility of the water system to collect, submit and report these values. If a water system fails to meet the WQP values/ranges specified by the Commission it is out of compliance with this section. WQP values may be verified by the system in accordance with 40 CFR §141.82(g) of the federal regulations. The state requires that the values be reported, but is not responsible for supplying sample bottles and testing services to the water system.

(L) Any water system subject to the reduced monitoring frequency that fails to operate within the approved range of WQP values shall resume distribution sampling in accordance with the number and frequency requirements in subparagraph (F) of this paragraph.

(2) Entry Point Water Sampling.

(A) Entry point water sampling for lead and copper shall be conducted by systems that exceed the lead or copper action levels in order to determine the lead or copper content of source water. Entry point water samples shall be collected in accordance with the requirements of this section regarding sample location, number of samples, and collection methods as specified in §290.108 of this title (relating to Inorganic Chemical Monitoring and Analytical Requirements) except that one sample shall be collected from each entry point to the distribution system (no compositing) within six months after notification of the exceedance of the lead and/or copper action level. If acceptable entry point water data is not available for large systems, the entry point water lead level shall be considered as zero for purposes of determining whether a corrosion control study is required.

(B) The commission shall complete an evaluation of all entry point water sample results, along with the corrosion control study, to determine if source water treatment is necessary. If source water treatment is deemed necessary by the commission, the system must install it in accordance with the scheduling requirements specified in 40 CFR §141.83(a) of the federal regulations.

(C) Any system that installs entry point water treatment shall collect an additional round of source water samples as described above during two consecutive six-month periods within 36 months after source water treatment begins.

(D) The monitoring frequency for lead and copper in source water, after the commission determines that source water treatment is not required, or after the commission has specified the maximum permissible source water levels for lead and copper, shall be in accordance with inorganic chemical monitoring practices and procedures as stated in §290.108 of this title.

(E) Reduced source water monitoring procedures as specified in 40 CFR §141.88(e) for lead and copper will be followed by the commission. Source water samples will be submitted by the water system in addition to other inorganic chemical monitoring requirements of these standards.

(g) Public Education Procedures

(1) A water system that exceeds the lead action level based on first draw tap water sampling shall deliver to the public the public education materials as listed in 40 CFR §141.85(a), in accordance with the requirements stated in paragraphs (2) and (3) of this subsection.

(2) A community water system must, within 60 days of notification by the commission:

(A) Insert notices in each customer's utility bill that includes the information in 40 CFR §141.85(a) and print the following alert on the water bill itself or on a bill insert in large print: **"SOME HOMES IN THIS COMMUNITY HAVE ELEVATED LEAD LEVELS IN THEIR DRINKING WATER. LEAD CAN POSE A SIGNIFICANT RISK TO YOUR HEALTH. PLEASE READ THE ENCLOSED NOTICE FOR FURTHER INFORMATION."**

(B) Submit the required information in 40 CFR §141.85(a) to the editorial departments of the major local daily or weekly newspaper circulated throughout the system.

(C) Deliver pamphlets and/or brochures that contain the public education materials as specified in 40 CFR §141.85(a)(2) and (4) to city or county health departments; to public schools or local school boards; Women, Infants and Children (WIC) and/or Head Start Programs when available; public and private hospitals and/or clinics; pediatricians; family planning clinics; and local welfare agencies, within their service area.

(D) Submit the public service announcement in 40 CFR §141.85(b) to at least five radio and/or television stations broadcasting to the area served by the water system.

(E) A community water system must repeat the tasks contained in subparagraphs (A), (B), and (C) of this paragraph, every 12 months and the tasks listed in subparagraph (D) paragraph, every six months for as long as the system exceeds the action level.

(F) Certain requirements of subparagraphs (C) and (D) of this paragraph may be modified by the commission if justified by local circumstances.

(3) A non-transient non-community water system must within 60 days of notification by the commission, deliver the public education materials in 40 CFR §141.85(c)(4) as follows:

(A) post informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system, and

(B) distribute pamphlets and/or brochures on lead in drinking water to each person served by the water system.

(C) a non-transient non-community water system must repeat the tasks contained in (3)(A) and (B) of this paragraph at least once during each calendar year in which the system exceeds the lead action level.

(4) A water system may discontinue delivery of public education materials if the system has met the lead action level during the most recent six-month monitoring period. Such a system shall recommence public education in accordance with this section if it subsequently exceeds the lead action level during any monitoring period.

(5) A water system that fails to meet the lead action level as stated in subsection (a)(3) of this section shall make available to any customer who requests it, information as to how and where water samples may be submitted for lead and copper analysis.

(h) Corrosion Control.

(1) All applicable water systems shall install and operate optimal corrosion control treatment; which means the corrosion control treatment that minimizes lead and copper concentrations at users' taps while insuring that the treatment does not cause the system to violate any other drinking water standard.

(2) Large water systems (serving greater than 50,000 people) are required to conduct corrosion control studies unless they can demonstrate that corrosion control is already optimized to the satisfaction of the commission. If required to conduct a corrosion control study, a large system must complete it by July 1, 1994, and the commission shall designate optimal corrosion control treatment and parameters by January 1, 1995. The system shall install corrosion control treatment by January 1, 1997. Large systems that exceed lead and/or copper action levels must conduct a demonstration study as described in paragraph (4)(B) of this subsection.

(3) Small and medium water systems (serving less than 3,301 or serving between 3,301 and 50,000 people, respectively) are deemed to have optimized corrosion control if the system meets the lead and copper action levels during each of two consecutive six-month monitoring periods. These systems will be required to conduct a desk- top corrosion control study to optimize corrosion control if at anytime the 90th percentile action level for lead and/or copper is exceeded. The study must be conducted and submitted within 18 months after exceedance notification by the commission for medium sized water systems and within 24 months after exceedance notification for small water systems.

(4) Performance for Corrosion Control Studies.

(A) Any public water system performing a corrosion control study shall evaluate the effectiveness of each of the following treatments (or combinations of treatments) to identify the optimal control treatment:

(i) alkalinity and pH adjustments;

(ii) calcium hardness adjustment;

(iii) addition of phosphate or silicate corrosion inhibitor.

(B) The water system shall conduct this evaluation using either pipe rig/loop tests, metal coupon tests, partial systems tests (demonstration study), or analyses based on treatments in documented analogous systems (desk-top study). Analogous system means a system of similar size, water chemistry, and distribution system configuration.

(C) The water system shall measure the parameters listed in susbsection (f)(1)(C) of this section.

(D) On the basis of the evaluation stated in subparagraph (4)(A) and (B) of this paragraph, the water system shall recommend to the commission, in writing, the treatment option that constitutes optimum corrosion control/treatment along with sufficient documentation as required by the state to establish the validity of the evaluation procedure. Operational WQP ranges shall be proposed to the state where applicable.

(E) The commission will, within six months after submittal of the corrosion control study by the water system, review the study and designate optimal corrosion control treatment and parameters.

(F) The water system shall install optimal corrosion control treatment within 24 months after the commission designates optimal corrosion control treatment and notifies the system.

(G) Large systems that install corrosion control treatment shall conduct first-draw lead and copper tap sample monitoring as in initial monitoring during each of two consecutive six-month periods by January 1, 1998. Small and medium systems shall complete the above stated monitoring within 36 months after the commission designates optimal corrosion control treatment. Small and medium systems are deemed to have optimized corrosion control if action levels for lead and copper are not exceeded in two rounds of subsequent tap sample monitoring. Large systems are deemed to have optimized corrosion control if they have demonstrated through first-draw tap monitoring conducted after treatment installation and water quality parameter sampling conducted in compliance with standards set by the commission for optimum corrosion control that they are operating within commission-designated parameters.

(H) Any system that has installed corrosion control treatment and demonstrates optimal corrosion control and operates in compliance with the commission-designated optimal water quality parameters, may conduct reduced tap sampling as described in subsections (e)(1)-(5) of this section, when written permission is granted by the commission after the commission has evaluated all pertinent data. Systems that do not meet the action levels for lead and copper after installing corrosion control treatment must continue to operate in accordance with WQP requirements established by the commission and follow procedures specified in subsection (e)(4) of this section.

(I) The commission may modify, upon its own initiative or in response to a water system request or a request from interested parties, its designated corrosion control treatment or parameters. The request and commission response pursuant to modification shall be in writing.

(5) Optimization of Corrosion Control

(A) Any water system may be deemed by the commission to have optimized corrosion control treatment if the system demonstrates, to the satisfaction of the commission, that it has conducted activities equivalent to the corrosion control steps listed in paragraph (4) of this subsection.

(B) Any large water system is deemed to have optimized corrosion control if it submits results of lead and copper tap water monitoring and entry point water monitoring in accordance with this section which demonstrates for two consecutive six-month monitoring periods that the 90th percentile tap sample lead level is less than 0.005 mg/l.

(i) Lead Service Line Replacement

(1) Systems that fail to meet the lead action level in first-draw tap sampling after installing corrosion control and/or source water treatment (whichever occurs last) shall immediately begin to replace annually 7 percent of the lead service lines identified during its materials survey process unless otherwise instructed by the commission.

(2) If the system is in violation for failure to install source water or corrosion control treatment, the commission may require the system to commence lead service line replacement after the date by which the system was required to conduct follow-up monitoring as specified in subsection (h)(4)(G) of this section.

(3) The water system shall replace the entire service line (up to the building inlet) unless it demonstrates to the satisfaction of the commission in writing that it controls less than the entire service line. The written statement must indicate that the water system has none of the following forms of control over the service line: municipal ordinances, public service contracts or applicable legal authority, authority to set standards for construction, repair or maintenance, or ownership. In such a case, the system shall replace that portion of the lead service line that it controls and notify the owner that it will also replace the building owner's portion of the line. The system is not required to bear the cost of replacing the building owner's portion of the line.

(4) Lead service line means a service line which is made all or in part of lead and connects the water main to the building inlet including any lead pigtail, gooseneck, or other fitting which is connected to such line.

(5) The system may cease replacing lead service lines whenever subsequent 90th percentile first-draw-tap sampling in two consecutive monitoring periods is less than the lead action level. Lead service line replacement shall immediately resume if first-draw-tap samples exceed the 90th percentile lead action/level.

(j) Analytical and Sample Preservation Methods.

(1) Analysis for lead and copper shall be conducted using methods stated in 40 CFR §141.89, published in the June 7, 1991, Federal Register, in laboratories certified by the Texas Department of Health Bureau of Laboratories. Analysis for pH, conductivity, calcium, alkalinity, or

the phosphate, silica, and temperature may be conducted in any laboratory as long utilizing EPA methods prescribed in 40 CFR §141.89.

(2) The Practical Quantitation Limits (PQL) and the Method Detection Limits (MDL) shall be as stated in 40 CFR §141.89.

(3) The commission has the authority to allow the use of previously collected monitoring data if the data were collected in accordance with 40 CFR §141.89.

(4) All lead levels measured between the PQL and the MDL must be reported as measured and all lead levels measured below the MDL must be reported as zero.

(5) First-draw-tap samples must be received in the laboratory within 14 days after the collection date along with correctly completed laboratory submission forms supplied by the commission.

(6) Bottles supplied by the commission or the certified laboratory must be used for collecting the tap samples.

(k) Reporting and Recordkeeping Requirements.

(1) Reporting Requirements.

(A) Report all results of Water Quality Parameter (WQP) analyses including the location/address of each distribution system sampling point. This report must include each WQP specified in subsection (f) of this section, as well as all sample results from entry points to the distribution system.

(B) Where applicable, the first draw tap monitoring shall be reported within 10 days following the end of each monitoring period as specified by the commission. (Analysis results from the TDH laboratory are normally provided simultaneously to the water system and the commission.) The water system's report shall include an explanation as to why a sampling site was changed from the previous round of sampling, if applicable.

(C) As part of the site selection form, each water system shall justify the selection of sites other than Tier 1 sampling sites as defined on the site selection form and, if lead service lines are present, why the system was not able to locate a sufficient number to make up at least 50 percent of its required number of sampling sites, should this condition arise.

(D) Where applicable, the system must certify that source water treatment has been installed as recommended by the commission and that installation was done in accordance with the specified time requirements.

(E) Where applicable, the water system must certify that lead service lines have been replaced in accordance with directives of the commission and in accordance with time schedules specified in subsection (i) of this section.

(F) Where applicable, the water system must provide copies of public education materials and certification that distribution of said materials is being conducted in accordance with subsection (g) of this section.

(G) When required by the commission, the system must report any sampling data collected by the water system in addition to the items listed in subparagraphs (A)-(F) of this subsection.

(H) Corrosion control treatment data shall be reported as required by the commission for systems that:

(i) have demonstrated optimum corrosion control;

(ii) are required to specify optimum corrosion control treatment (as part of the corrosion control study);

(iii) install corrosion control treatment as designated by the commission, and

(iv) are required to evaluate effectiveness of corrosion control treatments.

(2) Recordkeeping Requirements - Records of all sampling site data, sample submission forms, analysis results, reports, surveys, letters, evaluations, schedules, commission recommendations, requirements or determinations, and any other information deemed appropriate by the water system shall be retained by the water system for a minimum of 12 years. These records include, but are not limited to, the following items:

(A) tap water monitoring results including the location of each site and date of collection;

(B) certification of the volume and validity of first-draw-tap sample criteria via a copy of the laboratory analysis request form;

(C) where residents collected the sample, certification that the water system informed the resident of proper sampling procedures;

(D) the analytical results for lead and copper concentrations (provided to each system by the commission) at each tap sample site;

(E) designation of any substitute site not used in previous monitoring periods.

§290.121. Laboratory Analyses.

(a) All samples used to determine compliance with the rules of the commission for chemical, radiological, or bacteriological analyses must be submitted to a laboratory approved by the Texas Department of Health. Non-compliance tests, such as control tests taken to operate the system, may be run in the plant or local laboratory.

(b) Methods of analysis shall be as specified in 40 Code of Federal Regulations §141.21(f) (microbiological), §141.22(a) (turbidity), §141.23(f) (inorganics), §141.24(e) (f) and (g) (organics) and §141.25 (radionuclides) of the National Primary Drinking Water Regulations, or by any alternative analytical technique as specified by the Department and approved by the Administrator under 40 Code of Federal Regulations §141.27.

(c) The commission adopts by reference the Federal Regulations referred to in subsection (b) of this section.

Adopted 09/20/95 Effective 11/03/95

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