



TCEQ GUIDANCE

Water Supply Division and Regional Areas
Guidance Document • September 2016

Review and Approval Process for Regulation of Mobile Water Treatment Systems (MWTs)

The Texas Commission on Environmental Quality (TCEQ) regulates public drinking water systems (PWSs), including Mobile Water Treatment Systems (MWTs) determined to be PWSs. This document is intended to inform the MWTs owners and site operators of MWTs of the review and approval process for these types of systems. This document is limited to MWTs that treat groundwater sources that use free chlorine disinfectant and are NOT under the direct influence of surface water for drinking water or human consumption purposes. Treatment of surface water and groundwater sources under the direct influence of surface water requires additional review which is not covered in this document. An MWTs must be approved by the TCEQ and must be operated in compliance with all site-specific requirements prior to providing treated water for human consumption.

MWTs are determined to be a PWS based on operational characteristics and are regulated similarly to water haulers as transient noncommunity PWSs. The Environmental Protection Agency (EPA) has determined that water haulers are considered PWSs if they meet “the minimum standards for number of the outlets or customers served.” The TCEQ is applying the same approach to the regulation of MWTs. In general, a water hauler can be considered a mobile distribution system and an MWTs is exactly what it purports to be, a mobile water treatment system. This document is meant to address MWTs that utilize pretreatment, reverse osmosis membranes, and disinfection using free chlorine.

This guide is not a substitute for the rules. It is the MWTs owner’s and site operator’s responsibility to ensure their operation complies with applicable regulations. Requirements for PWSs, including transient noncommunity PWSs, can be located online at:

- The federal Safe Drinking Water Act
<http://water.epa.gov/lawsregs/rulesregs/sdwa/index.cfm>
- The Texas Health and Safety Code, Chapter 341, Subchapter C
<http://www.statutes.legis.state.tx.us/Docs/HS/htm/HS.341.htm>
- The Texas Administrative Code (TAC), Title 30, Chapter 290, Subchapters D and F
[http://texreg.sos.state.tx.us/public/readtac\\$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=290](http://texreg.sos.state.tx.us/public/readtac$ext.ViewTAC?tac_view=4&ti=30&pt=1&ch=290)
- TCEQ Guidance Document for Water Haulers
http://www.tceq.texas.gov/drinkingwater/technical_guidance/staff_guidance/WaterHauler

In addition, the TCEQ website provides helpful PWS information at
<http://www.tceq.texas.gov/drinkingwater/index.html>

Related Definitions

To increase your understanding as you read this document it will be helpful for you to become familiar with the following definitions:

4-log treatment – At least 99.99% (4-log) treatment of viruses using inactivation, removal, or an executive director-approved combination of 4-log virus inactivation and removal. The 4-log treatment must be able to be properly validated and achieved before the first connection of the specified water source. 30 TAC §290.103(39)

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. 30 TAC §290.38(23)

Finished water - Water that is introduced into the distribution system of a public water system and intended for distribution and consumption without further treatment, except as necessary to maintain water quality within the distribution system (e.g., booster disinfection, addition of corrosion control chemicals). 30 TAC §290.103(18)

Groundwater – Any water that is located beneath the surface of the ground and is not under the direct influence of surface water. 30 TAC §290.38(31)

Groundwater under the direct influence of surface water – Any water beneath the surface of the ground with:

- (A) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia* or *Cryptosporidium*;
- (B) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions; or
- (C) site-specific characteristics including measurements of water quality parameters, well construction details, existing geological attributes, and other features that are similar to groundwater sources that have been identified by the executive director as being under the direct influence of surface water. 30 TAC §290.38(32)

Human consumption - Uses by humans in which water can be ingested into or absorbed by the human body. Examples of these uses include, but are not limited to drinking, cooking, brushing teeth, bathing, washing hands, washing dishes, and preparing foods. 30 TAC §290.38(34)

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

located on adjacent land will be considered a public water system when the total potential service connections in the combined systems are 15 or greater or if the total number of individuals served by the combined systems total 25 or greater at least 60 days out of the year. Without excluding other meanings of the terms "individual" or "served," an individual shall be deemed to be served by a water system if he lives in, uses as his place of employment, or works in a place to which drinking water is supplied from the system. 30 TAC §290.38(69)

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. 30 TAC §290.38(81)

Approval Process

A water provider who uses an MWTS to treat groundwater sources for drinking water or human consumption purposes is subject to the following requirements:

- The MWTS shall be considered as serving one single Point of Use Entry Point (POU EP). This is where the bacteriological, chemical, and disinfectant compliance monitoring will occur.
- The MWTS must have engineering plans and specifications approved by TCEQ in accordance with 30 TAC §290.39.
- All planning material and business plans shall be submitted in a manner consistent with a new PWS. 30 TAC §290.39(e) and (f)
- All components of the MWTS and any associated treatment chemicals and media must be certified by the American National Standards Institute/National Sanitation Foundation International (ANSI/NSF) for potable water use under 30 TAC §290.44(a)(1) and 30 TAC §290.42(j).
- Baseline "worst case" water quality parameters (WQPs) which the MWTS is able to treat effectively shall be established by a professional engineer licensed in the State of Texas and substantiated by the submission of reverse osmosis (RO) modeling as allowed by 30 TAC §290.39(e)(6)(C).
- If the design of the MWTS cannot be approved based on RO modeling, the PWS can conduct a pilot study which demonstrates the effectiveness of treatment for particular water quality parameters under an exception request to provide *Innovative/Alternate Treatment* as outlined in 30 TAC §290.42(g).
- The operating parameters (such as flow rates, cleaning intervals, pretreatment chemical dosages, and post-treatment, and chemical dosages) must be appropriate for the feed water quality to the MWTS. The operation of each MWTS shall be limited by a "worst case" feed water quality. For membrane technologies, the licensed engineer must have sufficient data for the constituents that affect the efficiency of the MWTS, cleaning intervals, and/or cause scaling or fouling. At a minimum, the feed water quality analysis must include the ion concentrations for all constituents listed in the table below and those required by the manufacturer's model (if RO or nanofiltration is used). In all cases, the feed water to the MWTS shall be limited to the water quality used for the demonstration (modeling, pilot testing, and/or water quality limitations of the equipment manufacturer) of the unit. Therefore, prior to submitting data for MWTS approval, consideration must be given to water quality variability. This variability may be due to site location, blending ratios with other sources, and/or seasonal changes.

- Each groundwater source to be treated by an MWTS must be analyzed for the following analytes as well as those required by the manufacturer's model (if RO or nanofiltration is used), using EPA approved laboratory methods. The analytical results must come from a TCEQ accredited laboratory with a current National Environmental Laboratory Accreditation Program (NELAP) certification.

MCL	PRIMARY	SCL	SECONDARY	SCL (mg/L)	SECONDARY	SCL	SECONDARY
10 (as N)	Nitrate	0.2	Aluminum	5.0	Zinc	300	Sulfate
1 (as N)	Nitrite	1.0	Copper	1,000	Total Dissolved Solids	300	Chloride
0.010	Arsenic	0.3	Iron	2.0	Fluoride	≥ 7.0	pH
4.0	Fluoride	0.05	Manganese	N/A	Lead		

(all units except pH shown are mg/L)

Corrosive Water Parameters	
Parameter	Units
Alkalinity as CaCO ₃	mg/l
Calcium as CaCO ₃	mg/l
Sodium	mg/l

- Before an MWTS can be used at a groundwater source, a raw water sample must be collected and submitted for chemical analysis. The results must be compared to the baseline treatable WQPs. If the water quality of the source is equal to or better than the baseline treatable WQPs, the owner of the MWTS may proceed with hook-up and treatment. If the water quality of the source is worse than the baseline treatable WQPs, the owner must contact the Technical Review and Oversight Team in TCEQ's Water Supply Division at 512-239-4691.
- The baseline treatable WQPs established for an MWTS may be changed based on the submission of new RO modeling or pilot study results and approval of those new results by the TCEQ.
- Before an MWTS can be used at a groundwater source, a raw water sample must be collected and submitted for microbiological analysis until three successive daily raw water samples are free of coliform organisms. If three successive daily raw water samples free of coliform organisms cannot be obtained, the owner must contact the Technical Review and Oversight Team in TCEQ's Water Supply Division at 512-239-4691.
- The raw water source cannot be exposed to the atmosphere to ensure no biological contamination occurs. All storage and treatment units of the MWTS must be fully enclosed and all vents properly screened.
- The MWTS must meet the minimum free chlorine disinfection requirements of at least 4-log treatment of viruses before water is distributed to any customer and shall maintain acceptable disinfectant residuals at the POU EP.
- All lines, tanks, and applicable components of the MWTS must be disinfected in accordance with American Water Works Association requirements before being connected to a new groundwater source.

Cross-Connection Control and Backflow Prevention

The MWTS owner or site operator shall ensure that any cross-connections on the piping conveying the raw water source to the MWTS are adequately protected by requiring a reduced-pressure principle backflow prevention assembly (RPBA) or air gap. Examples of potential sources of contamination may include, but are not limited to:

- Groundwater sources exposed to atmospheric contamination;
- Surface water sources; or
- Housing, commercial, production, or industrial operations.

The MWTS owner or site operator shall ensure that the MWTS is protected from actual or potential contamination hazards by requiring an RPBA or air gap after the last treatment process and prior to the Point of Use Entry Point.

Testing requirements for RPBAs installed to provide protection against health hazards will apply per 30 TAC §290.44(h)(4).

Design, Operation, Maintenance, Compliance Monitoring and Reporting Requirements

When an MWTS is approved, the owner will receive an approval letter with detailed, site-specific design, operation, maintenance, compliance monitoring and reporting requirements. The compliance monitoring and reporting requirements will be in accordance with those for a transient noncommunity public water system. Failure to comply with the conditional approval may result in violations, enforcement action, and/or revocation of the approval to use the MWTS.

Owners and operators must maintain documentation demonstrating compliance with the conditions of the approval letter and all applicable PWS requirements and provide them to the executive director or representative upon request. MWTSs are subject to TCEQ investigations to evaluate compliance with PWS requirements.