UPDATING THE DESIGN CRITERIA FOR DOMESTIC WASTEWATER TREATMENT SYSTEM (30 TAC Chapter 217)

Clean Waters Initiative
Utility Asset Management for Sanitary Sewer Systems

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This chapter applies to any person who proposes to construct, renovate, or re-rate a wastewater collection system or commission permitted wastewater treatment facility...
## CHAPTER 217

| Subchapter A | • Administrative Requirements |
| Subchapter B | • Treatment Facility Design Requirements |
| Subchapter C | • Conventional Collection Systems |
| Subchapter D | • Alternative Collection Systems |
| Subchapter E | • Preliminary Treatment Units |
| Subchapter F | • Activated Sludge Systems |
| Subchapter G | • Fixed Film and Filtration Units |
| Subchapter H | • Natural Treatment Facilities |
| Subchapter J | • Sludge Treatment Units |
| Subchapter K | • Chemical Disinfection |
| Subchapter L | • UV Light Disinfection |
| Subchapter M | • Safety |
WHAT INITIATED THE RULE UPDATE?
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TIMELINE FOR THE REVISION

7/2014
• Staff finalizes draft rule

8/2014
• Staff request approval to publish draft rule on web

9/2014
• If approved, draft rule will be posted on web

10/2014
• Staff reviews stakeholder comments and edits rule

11/2014 – 2/2015
• Staff finalizes rule doc and briefs managements

3/2015
• Proposal agenda
The first consolidated design criteria was adopted by Texas State Department of Health on 9/18/1950.

SUBCHAPTER A
ADMINISTRATIVE REQUIREMENTS
PREVIOUS DESIGN CRITERIA

Section to 217.1 (Applicability)

Adding a section to clarify the grandfathering clause. Stating that the existing wastewater treatment system is subject to design requirements at the time of approval.
NEW/REVISED DEFINITIONS

MAINTENANCE

REHAB

SURCHARGE

GRAVITY RELIEF SEWER

DESIGN FLOW

GRINDER PUMP

EQUALIZATION BASIN

ALTERATION
APPLICABILITY EXAMPLES FOR ALTER

• Replace a treatment unit or a collection system unit.
• Modify in a way that changes:
  – capacity;
  – function;
  – process;
  – mode of operation;
  – configuration;
  – a design parameter;
  – a major design assumption.

**Example:** Replaced a gravity thickener with a belt press and plans to use thickener as a digester instead.

This is subject to new criteria under 30 TAC 217.
Repair of a collection system using a lining or coating method.

- Trenchless technologies:
  - Cement mortar lining
  - Epoxy spray lining
  - Cure in place piping
  - Slip lining

- Other trenchless method of installing, replacing, or repairing

Rehabilitate a portion of a 50-year old collection system by cleaning, televising and spraying an epoxy lining inside the pipe.

This is subject to the new criteria under 30 TAC 217.
APPLICABILITY EXAMPLES

RE-RATE

• Change the design flow or design organic loading of a treatment unit, without altering the unit, based on actual performance data.

• An existing WWTP has a new permit with stricter effluent limitations. Without increasing the flow capacity the plant is going to demolish its activated sludge process and constructs a membrane process in its place.

• This is subject to the new criteria under 30 TAC 217.
APPLICABILITY EXAMPLES
MAINTENANCE

Scheduled preventative care, repair, or replacement of components of a treatment unit or a collection system unit.

Replacement must not cause alteration.

Does not include replacement of a treatment unit or a collection system unit.

The owner has a package extended air WWTP. The sides of the aeration basin have corroded. Aeration basin is replaced with a new one instead of repairing the old one. The new aeration basin is the same size with same aeration capacity as the original.

This is subject to the new criteria under 30 TAC 217.
APPLICABILITY EXAMPLES

MAINTENANCE

• Replacement must not cause alteration.
• The scheduled preventative care, the repair, or the equivalent replacement of components or appurtenances of a treatment unit or a collection system unit.
• Maintenance does not include replacement of a treatment unit or a collection system unit.

• -WWTP replaces the motor on a pump with the same horsepower & voltage motor.
• -Replacing the squeegee blades on a mechanical clarifier
• These are **NOT** subject to the new criteria under 30 TAC 217.
<table>
<thead>
<tr>
<th>Source</th>
<th>Remarks</th>
<th>Daily Wastewater Flow (gallons/person)</th>
<th>Wastewater Strength (mg/l BOD₅)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipality</td>
<td>Residential</td>
<td>75-100</td>
<td>200-350</td>
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<tr>
<td>Subdivision</td>
<td>Residential</td>
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<tr>
<td>Trailer Park (Transient)</td>
<td>2½ Persons per Trailer</td>
<td>50-60</td>
<td>250-300</td>
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<tr>
<td>Mobile Home Park</td>
<td>3 Persons per Trailer</td>
<td>50-75</td>
<td>300</td>
</tr>
<tr>
<td>School</td>
<td>Cafeteria &amp; Showers</td>
<td>20</td>
<td>300</td>
</tr>
<tr>
<td></td>
<td>Cafeteria/No Showers</td>
<td>15</td>
<td>300</td>
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<tr>
<td>Recreational Parks</td>
<td>Overnight User</td>
<td>30</td>
<td>200</td>
</tr>
<tr>
<td></td>
<td>Day User</td>
<td>5</td>
<td>100</td>
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<tr>
<td>Office Building or Factory</td>
<td>A facility must be designed for the largest shift</td>
<td>20</td>
<td>300</td>
</tr>
<tr>
<td>Hotel/Motel</td>
<td>Per Bed</td>
<td>50-75</td>
<td>300</td>
</tr>
<tr>
<td>Restaurant</td>
<td>Per Meal</td>
<td>7-10</td>
<td>1000*</td>
</tr>
<tr>
<td>Restaurant with bar or cocktail lounge</td>
<td>Per Meal</td>
<td>9-12</td>
<td>1000*</td>
</tr>
<tr>
<td>Hospital</td>
<td>Per Bed</td>
<td>200</td>
<td>300</td>
</tr>
<tr>
<td>Nursing Home</td>
<td>Per Bed</td>
<td>75-100</td>
<td>300</td>
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<tr>
<td>Alternative Collection Systems (Subchapter D)</td>
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*Based on a restaurant with a grease trap
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<th>Wastewater Strength (mg/l NH$_3$-N)</th>
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CLARIFICATIONS

- Clarify the differences between the permitted flow from max 30 day average and annual average.

- Clarify the minimum information needed to rerate a wastewater treatment plant.

- Emergency power requirements in 217.36 and 217.63 are consistent.

- Flow measurement weirs for small plants.
SUBCHAPTER C
CONVENTIONAL COLLECTION SYSTEMS
Clarify intent related to gaskets on pressure rated pipe when 9 foot separation from water lines cannot be provided or add a requirement that gaskets operate properly at atmospheric pressure.

Correct 217.53(k)(4) to refer to the structural calculations in 217.53(k)(2):
• Currently refers to 217.53(k)(3), which provides the pipe stiffness equation required in 217.53(k)(2).
MANHOLES

Clarify where bolted and gasketed manholes are required

Add a requirement for engineer to specify an appropriate national reference standard for sealing manhole covers
Consider reducing the maximum allowable leakage in the infiltration/exfiltration test

- Currently 50 gallons per inch diameter per mile of pipe per day
TESTING REQUIREMENTS FOR MANHOLES

Correct units in 217.58(b)(2)(d), related to tightening external clamps on the vacuum testing cover

Allow ASTM testing requirements for manholes
LIFT STATIONS

Clarify allowable fence types and set 8 feet as the minimum fence height

Clarify intent for above ground valves
- Concrete pad adjacent to wet well O.K. (fenced)
- Locked/chained in the fence
- Tamper-resistant structure allowable

Consider swing-type check valves that do not have external levers
LIFT STATIONS

• Add backup high water float requirement for wet well level detection

• Other clarifications
  – Control pad must be large enough for personnel to do electrical work safely
  – Ladders and access hatches must also meet OSHA
  – Non-corrosive vents for all lift stations
  – Explosion-proof equipment for all lift stations
  – Dry well pumps must discharge to wet well
LIFT STATIONS

- Other clarifications (cont.)
- Hoisting equipment and access
- Separate pipes for sump pumps
- Expected peak flow for firm pumping capacity
EMERGENCY PROVISIONS FOR LIFT STATIONS

- Clarify that generators or auxiliary pumps may be used
- Add minimum fuel tank size requirements based on hours of fuel
- Add a section for gravity relief sewers
- Clarify quick connection design and generator electric loading design
FORCE MAINS

Add fatigue life calculation requirements

Consider basing minimum velocities on the smallest pump operating at full speed
Consider additional flushing requirement for variable speed pumps that normally operate below minimum velocities

Clarify that air release valves must be noncorrosive
RECLAIMED WATER

Remove requirement that electrical equipment be operable during a 100 year flood event

- Consider requirement that equipment be protected from a 100 year flood event

Consider swing-type check valves that do not have external levers
SUBCHAPTER E
PRELIMINARY TREATMENT UNITS
CLARIFICATIONS

• General requirements section added
• Grinding devices vs screening devices
• Correct the spelling on Coarse Screen.
• Clarify the requirements on EQ basin
• Clarify and update the flow velocity in the sludge pipe.
MEMBRANE BIOREACTOR SYSTEMS

• Clarify and update the nutrient removal requirements.
AERATION SIZING EQUIPMENT

Clarify the oxygen requirement for high NH₃-N plant.

Add a table showing the max allowed % transfer efficiency at varying depths for fine and coarse bubble

Other Clarifications
SOLIDS MANAGEMENT

• Add a new section for Airlift Pump Design (217.162)
ADVANCED NUTRIENT REMOVAL

Revising this section to require the engineer to submit all calculations on nutrient removal.
CLOTH FILTERS

Added requirements for cloth filters and other similar filters
NATURAL SYSTEMS

- Considerable rewording done to §217.203 Design Criteria for Natural Treatment Facilities
- Corrected aerated pond treatment efficiency equation
SUBCHAPTER J
SLUDGE TREATMENT UNITS
SUBCHAPTER K
CHEMICAL DISINFECTION
CHLORINATION/DECHLORINATION SYSTEMS

- Clarify intent related to tank placement for spill containment
- Allow a minimum length to width ratio as an alternate to modeling for chlorine mixing
SUBCHAPTER M
SAFETY

Safety First
PIPE COLOR CODING

• Updating the pipe color coding to be consistent with the MOP 8 and National Plumbing Codes.
What Can Happen If You Have Leaking Pipes?
SMOKE TESTING
How does your collection system look?
ANY QUESTIONS?