

Chapter 217 Design Criteria Stakeholder Meeting – Austin, Texas

The 317 Design Criteria rule will be changing to 217. All water rules will be going to the 200 series. The old rule has been in place since 1951. TCEQ will be taking comments until March 1, 2007.

The new Design Criteria rule – Louis Herrin

- Gives engineer and owner of the plant direction on what parts have to meet latest design criteria during upgrades and modifications.
- Allows design engineer to design plant based on annual average flow instead of maximum monthly flow
- Requires electric panels be wired for generator – phased in state-wide for new and existing facilities
- Draft criteria will allow city to rerate their plant based on lower organic loading
- Criteria provides options for rerating plants based on influent organic and flow data
- Provides clearer description of the requirement for backup power
- Has section on reuse of effluent within the treatment process whenever possible

Subchapter C: Conventional Collection Systems

- Manholes will go to 30 inches
- National mandrel test
- All lift stations wired for generators

Subchapter D: Alternative Wastewater Collection Systems:

- Vacuum sewer systems – 5 large systems along the Texas coast
- Pressure sewers – spell out management side
- Small diameter variable grade sewers – explains how to take care of that situation

Comment: When system has an emergency, can it require the public to cut down on usage - similar to Drought Contingency plan?

Subchapter E: Preliminary Treatment Units

- Requires metering at front and back end of plant – flow measurement

Subchapter F: Activated Sludge Systems

- Provides design criteria for Sequencing Batch Reactors (SBRs)
- Provides table to determine net solids production
- Changes hopper bottom clarifiers from 25,000 to 10,000
- Requires multiple basin and clarifiers for flows greater than 400,000 gallons

Subchapter G: Fixed Film and Filtration

- Gives credit to trickling filters for nitrification
- Provides design engineer better guidelines for design of filters and fixed film reactors

Subchapter H: Natural Treatment Systems

- Adds more flexibility to design for natural system – raise and lower water level as in wetlands
- Greater flexibility for liner installations
- Criteria for evaporative pond systems
- Criteria for integrated facultative lagoons – can remove 80% BOD
- Reinstates design criteria for Imhoff tanks

Subchapter J: Sludge

- Criteria for chemical pretreatment of sludge
- Provides criteria for sulphur dioxide
- Update design criteria for ultraviolet light disinfection – will have fecal limit in order to get dissolved solids down

Subchapter L: Safety

- Requires safety audit – Emergency plans – Homeland Security
- Job Hazard Analysis and Protective Equipment Lists

Membrane Bioreactors Treatment Systems – Debbie Helstrom

- Ultrafiltration Membranes
- Hollow Fiber Membranes
- Flat Plate Membranes

Membrane Bioreactors (MBR)

- Advantages
 - Smaller footprint
 - High quality effluent
 - Automatic control
 - Less sludge
- Disadvantages
 - Capital costs
 - Energy costs for aeration and scouring
 - Highly variable flow require equalization

Membrane Bioreactors – Expected Performance

- CBOD5 <5 mg/l
- TSS <1mg/l
- Ammonia <1 mg/l
- Total Nitrogen (w/pre-anoxic zone) <10 mg/l
- Total Nitrogen (w/pre-anoxic and post-anoxic zone) <3 mg/l
- Total Phosphorus (with chemical addition)
- Total Phosphorus (with Bio-P removal)
- Turbidity <0.2 NTU
- Bacteria up to 6 log removal (99.9999%)

Currently compiling surveys from vendors of membranes to develop design criteria

concerns

- Prevention of fouling
- Adequate aeration of high MLSS concentrations
- Achievable rate of flow through membranes
- Adequate pretreatment i.e. fine screening
- Hydraulics
- Ensure integrity
- Foam control
- Warranty
- Nutrient removal

Results of Survey, Literature and other state Regulations

- Membranes
 - Nominal pore size
 - Absolute pore size
- Pretreatment
 - Fine screen (Type, size)
 - Primary clarifier, grit removal, oil and grease removal (when required)
- Operation
 - Gross flux rate @20C
 - Net flux rate @ 20C
 - Operational range for TMP
 - Maximum Operational TMP
 - Operational range of MLSS concentration in Bio Reactor
 - Operational range of MLSS concentration in membrane tank
 - Operational control parameters used and range of values (turbidity, SRT, DO, TMP, ORP)
 - Amount of air used per square foot of membrane
 - Method of integrity testing (i.e. Turbidity)
 - Method of foam control
- Maintenance clean
 - Method
 - Frequency
- Chemical clean
 - Frequency
 - Chemicals used
 - Concentrations
- Redundancy
 - N+1 or other method
- Peak Flow
 - Peak ratio which requires Equalization
- RAS rate (#Q)
- Hydraulics
 - Head required for gravity
- Controls
 - Method of backup for controls

- Warranty
 - Membranes, other equipment and process

217.158 Membrane Bioreactors Treatment Systems (MBR)

- Engineering report required
- Common range of values
- Justification for using parameters outside the common range
- 2 year performance bond

Input from Stakeholders:

217.16 Operational Considerations

(a) The engineer shall consult with the relevant operations staff while designing the project.

Comment: Good idea to talk to operating staff

Comment: Good idea, but not practical. Need to clarify “operations staff”. It could possibly be one of many companies operating across the country.

Comment: The client has a contract with the engineer. Would this not compromise the agreement?

Comment: State should not certify compliance.

Comment: The owner is paying the engineer.

Comment: The intent is good, however, sometimes the operator does not get to give input until the plant is done.

Comment: Put the responsibility on the owner, not the engineer.

Comment: What is the enforcement standard? The intent is good, but not entirely necessary.

Comment: Maybe this could be integrated into the civil engineering report.

217.17(a) An engineer shall develop a report for any wastewater facilities constructed.

Comment: Change language to “proposed wastewater facility”.

Comment: Need clearer definition of wastewater treatment system and wastewater facility.

217.32 (3) Table B.1 Design Organic Loadings and Flows for New Wastewater Treatment Systems

BODs going up and flow loadings are going down for new subdivisions

May change municipal and subdivision from 200 to 350

Comment: Leave date like it is if there is not enough to signify change

Comment: Difficult to write uniform rule to cover all situations. Poundage is close.

Comment: In lieu of showing otherwise, make it 350.

This chart is for brand new facilities. The criteria is written for engineers, not the general public.

Comment: How can new restaurants base it on per meal?

They could do it on square footage.

Comment: If they have a land application permit, would these rules still apply?

Yes, land application permits are still considered discharge permits.

217.35 Backup Power Requirement

All lift stations must have backup power and must be wired so that generators can be hooked up.

Some plants along the coast may have to be retrofitted.

Comment: Shouldn't the rule be consistent for FEMA and Homeland Security?

Comment: Aren't standby generators being put in most wastewater facilities now?

Comment: Certain areas are more vulnerable than others. FEMA may have more specific rules.

Comment: Does the rule say how big the generators need to be?

217.37 Effluent Reuse

Comment: While it is a great incentive, can it really be used in every situation? Are there any scenarios it might impact?

Comment: Must package plants tie reuse pump in?

Comment: Should reuse be mandated or is it just a good business practice?

Comment: Will the 290 Public Drinking Water rules be rewritten so that there is no distinction between new and existing facilities?

217.53(n) Inverted siphons/Sag pipes

Need more flexibility in size for siphons

Comment: Sewer mains should be constructed in a place that has easy access for maintenance

Comment: Will 210 be cross-referenced during this rulemaking?

217.55(f)(1) Manhole Covers

Rule requires 30" or larger diameter clear opening

Some concerns that 30" covers will be too heavy

Comment: Will a lot of utilities be impacted?

Most are already doing it, however the cost is increased by weight.

217.55(f)(2)(E) " A manhole with wastewater collection system pipes of different sizes must have the tops of the pipes at the same elevation and flow channels in the invert sloped on an even slope from pipe to pipe."

Comment: Change language to same elevation or above.

Subchapter D: Alternative Wastewater Collection System

Homeowners are an integral part of the collection system

Subchapter F: Activated sludge systems

Comment: Do we want to mandate DO concentration of 2.0mg/l

217.52(c)(3) A weir must adjust to allow the change of water surface elevation in the clarifier

Comment: How often does a weir have to be adjusted?

217.158 Membrane Bioreactor Treatment Systems (MBR)

Send comments to Debbie Helstrom at TCEQ

217.181 Trickling filters

Discussion – no changes suggested

Subchapter H: Natural Treatment Systems

217.202(f) Disinfection- Chemical or ultraviolet disinfection is not required if a detention time of at least 21 days is provided in the entire, free-water surface, natural treatment system

Comment: Heating blankets prohibited, so allow blankets with some controls on the requirements. Add more detail to the ventilation system.

217.275 Ultraviolet Light Systems

Many changes in the market over the years

Comment: Exception to the rules (David Luedecke)

Subchapter L: Safety

Comment: Aren't OSHA rules sufficient?

Comment: List is unnecessary. Afraid something would not be mentioned. List is too specific.

Conclusion: Comments are due to Louis by March 1, 2007

**Chapter 217 Design Criteria for Sewerage Systems
Stakeholder Group
Austin, Texas
December 14, 2006
Attendee List**

Tejashri Kyle	Freese & Nichols, Inc.
James Grabbs	Austin Water Utility
Joe Jenkins	CH2M Hill
Brad Castleberry	Lloyd Gosselink
Carol Batteredton	WEAT
Matt Cullen	City of Austin Water Utility
Allen Wuelke	CDM
Seyed Miri	COA
Ayman Benyamin	COA Fac. Eng.
Darren Strozewski	HDR Engineering
Joe Sesi	ACWP
Raj Bhattarai	City of Austin
Steve Schrader	AWU
Natalie Hossa	LCRA
Lonnie Robinson	COA – Austin Water Utility
Dong Nguyen	COA – Austin Water Utility
Gopal Guthikonda	COA – Austin Water Utility
David Luedecke	Newman Agency
Joan Balogh	COA – Watershed Protection
Loan Nguyen	City of Austin
Robert Lamb	City of Austin
Bob Brush	TCEQ
H. Neil Kepple	AWU/UDS
Joe Smith	Earth Tech/ACWP
Gail H. Pigg	Weston Solutions