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
  - Capitol 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:
Subchapter A: 217.15(a) The facility owner is responsible for having an operations and maintenance manual developed under the direction of the engineer.

Comment: Does it have to be developed by an engineer? Qualify it more. Have an out for someone else developing it. Can it say “under the direction of the engineer or other qualified person”?
Comment: Qualify it, don’t get out of design parameters.

The intent is to have documentation for operators in case of emergency – more for medium size systems – 1-5 MGD

Subchapter A: 217.16 Operational Considerations
Compromise language – engineer will talk with operations staff

Increasing review time from 10-30 days

Subchapter B: 217.32 (3) Table is showing big swings – finding out Houston and MUDs have flow numbers going down and BODs going up – higher concentrations

May change table to 350 for new subdivisions.

If new subdivision has graywater system, it can lose 75% of water

Comment: Restaurants should be given a reason to lower their BODs. Maybe put in grease traps?

Subchapter C: Collection Systems:
Increasing openings for manholes to 30”

Comment: Just for new manholes?
Answer: Yes, others will be grandfathered in.

Subchapter F: 217.154 Aeration Basin and Clarifier Sizing
Volume flux in Appendix
Deeper Clarifier
Smaller footprint
Subchapter F: 217.157  Sequencing Batch Reactors
Problem with continuous flow SBRs
Go with 20 minute detention time
Looking for input

Subchapter H: Natural Systems 217.5
Pond liner requirements
Adding more flexibility to clay liners – need comments on agree or disagree

Subchapter K: 217.271 Chlorine and Sulfur Dioxide Disinfection and Dechlorination Systems:
Prohibition on heating blankets
Safety issue – feedback from those using them

Subchapter L: Safety
Does this need to be included in TCEQ rule or be content with it in OSHA rule?
Problem with color codings?
Need input
Chapter 217 Design Criteria for Sewerage Systems
Stakeholder Group
Odessa, Texas
December 12, 2006
Attendee List

Mike McCleery               TCEQ, Region 7, Midland
Matt Iroin                   City of Odessa
Debbie McReynolds           City of Odessa