

TR-16: GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS

— *What's New in the 2011 Edition* —

In December 2011, NEIWPCC published a new edition of our Technical Report #16, commonly known as TR-16, which has long been one of the Commission's most requested publications. Like all previous editions, the new TR-16 covers in detail the important elements of wastewater treatment that must be considered in the design of wastewater treatment works. The content, however, has been completely updated to reflect current practices and to include advances in technology, nutrient removal, energy efficiency, and instrumentation. Some of the major changes are listed below, by chapter. The new version is available in hard copy or on CD.

For more information, visit www.neiwpcc.org/tr16guides.asp

Chapter 1: Procurement of Design and Construction Services

- Updated information on alternative project delivery
- Included information on QBS procurement process
- Added minimum requirements for O&M manual

Chapter 2: Sanitary Sewers/Wastewater Collection Systems

- Significantly expanded chapter to include sections on jack-and-bore and pipe jacking, microtunneling, and horizontal directional drilling
- Expanded discussion to include typical materials of construction
- Added subsections covering alignment tests and television inspection tests
- Highlighted need to consider fats, oils and grease in collection system design, and to consult local officials and applicable codes for specific design requirements
- Added guidance on sewer system investigation and rehabilitation techniques

Chapter 3: Wastewater Pumping Stations

- Updated information on flood protection
- Included new pump technologies
- Added electrical requirements in relation to NFPA 820
- Discussed design and use of VFDs in relation to IEEE 519
- Explained force main design in relation to air relief and surge control
- Added information on standby generators and fuel supply capacity

Chapter 4: Wastewater Treatment Works

- Explained sustainability as factor in design
- Described modifications to loading variability guidance, referencing primarily MOP-8
- Recommended that process modeling be used as design tool for biological processes

Chapter 5: Preliminary and Primary Treatment

- Included additional guidance on preliminary treatment of CSO/wet weather flows
- Added details pertaining to design of grit removal systems
- Expanded discussion of handling and conveyance of screenings, scum, and grease
- Added guidance on preliminary treatment upstream of advanced biological systems such as IFAS technology and membrane bioreactors (MBRs)

Chapter 6: Biological Treatment Processes

- Added MBBR and BAF attached growth technologies
- Incorporated flexibility in aeration design to improve energy efficiency
- Expanded secondary clarifier design criteria over a larger range of MLSS concentrations
- Added MBRs
- Addressed supplemental carbon addition for BNR
- Added integrated systems

Chapter 7: Physical and Chemical Processes for Advanced Treatment

- Added disc, compressible media, and continuous backwash filter technologies
- Modified filter redundancy criteria
- Added descriptive information on emerging phosphorus removal processes
- Incorporated TOC removal technologies involved with groundwater discharge systems

Chapter 8: Disinfection

- Added that “grandfathering” of lower chlorine contact time at peak flow is allowed (within reason) if previous experience at facility shows adequate treatment
- Significantly updated guidance for design of UV disinfection systems

Chapter 9: Land Treatment, Treated Effluent Disposal, and Treated Effluent Reuse

- Updated planning section to include criteria for identifying potential land treatment sites
- Expanded section on hydrogeological site analysis
- Added information on community subsurface disposal systems
- Updated NEIWPCC states’ regulatory summary to reflect current regulations
- Added table identifying NEIWPCC states’ design guides and reference documents available for land treatment and effluent disposal systems

Chapter 10: Odor and VOC Control

- Expanded discussion of chemicals used to control odors and corrosion in sewers
- Updated presentation on wet chemical scrubber technology
- Added section on biotrickling filters (biological scrubbers) used to treat odorous air

Chapter 11: Residuals Treatment and Management

- Added chart on sludge processing sidestream characteristics
- Provided new information on membrane thickening, co-digestion, and rotary and screw presses

Chapter 12: Receiving Hauled Wastes

- Added receiving station design considerations
- Provided elements of a hauled waste management program
- Included discussion of land application as a method of septage management

Chapter 13: Instrumentation, Controls, and Reporting

- Significantly revised sections on instrumentation, controls, sensors, monitoring, and communication tools
- Added operator interface hardware and software options