

**“Course Outline”**  
**N.J. Public Wastewater Collection Systems**

1,2 INTRODUCTION

COURSE OVERVIEW

- N.J.D.E.P. Licensing Requirements
- Sewer Use Ordinance/Regulations
- Collection System Math
- Quiz

3,4 WASTEWATER COLLECTION SYSTEM COMPONENTS

Pipeline Facilities

- Pressure, Gravity & Vacuum
- Sanitary Sewers
- Combined Sewers
- Storm Sewers

Materials of Construction

- PVC, P.E., A.B.S.
- Vitrified Clay
- Reinforced Concrete
- Ductile Iron
- Cast Iron
- Truss
- Lined
- Asbestos Cement
- Joints & Couplings
- Valves

Appurtenance Facilities

- Flow Regulators
- Manholes
- Inverted Siphons
- Flow Metering
- Air Release
- Cleanout
- Sewage Retention Tanks
- Disinfection
- Odor control
- House/Building connections

### Alternative Facilities

- STEP System
- Community Collection System – Subsurface Disposal
- Small Diameter Pressure Sewer
- Vacuum Collection Systems

## 5,6 COLLECTION SYSTEM APPLICATIONS

### Fluid Mechanics

Hydraulic Elements – Pressure/Gravity, Head versus PSI

### Flow Quantity

- Average, Specific
- Flow Per Capita
- Inflow/Infiltration
- Industrial Equivalent

### Flow Velocity

- Velocities in Sewers, Scouring Velocities
- Calculated versus Field Measurement
- Flow Composition
- Pressure and Gravity Flow Devices and Field Measurements
- Chemical/Solution Additions
- Quiz

## 7,8 OPERATION & MAINTENANCE OF PIPELINES

Pipe Cleaning, Preventative Maintenance & Maintenance  
Inspecting and Testing

- Air
- Smoke
- Pressure
- Water
- Trenching & Installation
- TV Inspection
- Illegal Hookups
- Inflow
- Infiltration/Inflow
- Illegal Hookups
- Root Control
- Safety/Traffic Control

9 NEW CONSTRUCTION, START-UP

Plans & Specifications

- Joints
- House Connection
- Pipe Slope
- Trenching
- Construction safety
- Bedding & Backfill
- Testing

10 SEWER/MANHOLE REHABILITATION & REPAIR

- Replacing Structurally Damaged Pipes
- Grouting
- Slip Lining
- Repair/Replace/Rehabilitation
- Mechanical Sealing
- Chemical Sealing
- Quiz

11,12,13 PUMPING FACILITIES AND APPURTENANCES

Pumping Station, Submersible Pump, Lift Station, Ejector, Air Release, Cleanout, Grinder Pumps, Force Main, Grit Removal, Screenings, Comminution, Chemical Additions

- Start-up
- Testing
- Cleaning
- Maintenance & Preventative Maintenance
- Operation
- Odor/Sulfide Control
- Disinfection – Chlorination
- Ozonization
- Ventilation
- Auxiliary Power Source
- Cross-Connections
- Explosion Proof Equipment

## Safety

- Management Responsibilities
- Sewers
- Electrical Hazards
- Mechanical Equipment Hazards
- Explosion & Fire Hazards
- Bacterial Infection (Health Hazard)
- Chlorine Hazards
- Oxygen Deficiency & Noxious Gases
- Laboratory Hazards
- Safety Equipment
- Process Chemical Handling
- References

## 14 EMERGENCY RESPONSE AND TROUBLESHOOTING

- Cause & Effect
- Protection Measures
- Responses & Reporting Requirements
- TEST

## 15 PUBLIC RELATIONS, MAINTENANCE MANAGEMENT

### Public Relations

- Relationships with Government Agencies
- Relationships with General Public
- Relationships with Property Owners
- Relationships with Contractors
- Construction Procedure Contact

### Maintenance Management

- Logistics
- Organizations
- Equipment
- Records & Reports