

**WASTEWATER SYSTEMS OPERATION SPECIALIST
(Time-Based)**

APPENDIX A

O*NET CODE 51-8031.00

This training outline is a minimum standard for Work Processes and Related Instruction. Changes in technology and regulations may result in the need for additional on-the-job or classroom training.

WORK PROCESSES

	Approximate Hours
A. Tools, Equipment and Workplace Safety	240
1. Become familiar with tools, pipe and other materials used on the job;	
2. Understand and use Personal Protective Equipment (PPE) and safety procedures;	
3. Demonstrate general plant safety and security operations;	
4. Plan and set up work area for safety of crew and public;	
5. Monitor confined spaces and traffic control zones;	
6. Perform all work in conformance with the Occupational Safety and Health Administration (OSHA) guidelines for General Industry;	
7. Perform all work in conformance with the Public Employees Safety and Health Act (PESH) guidelines for General Industry (where applicable).	
B. Vehicles and Heavy Equipment (Excluding Operation of Heavy Equipment)	400
1. Develop a working knowledge of pre-trip inspection which includes ensuring lights and warning lights are operational, inspecting safety chains on dump truck tailgates, ensuring audible alarms are operational, making sure pins on excavators/backhoes/tailgates are securely fastened;	
2. Gain the ability to identify swing paths for excavation equipment – for both ground level and overhead (utility poles, overhead wires, oncoming vehicle or foot traffic within excavation area), understand hand signals between equipment operators and ground staff while properly setting up a work zone (signs, cones, barrels) ensuring employee, vehicle and foot traffic safety;	

3. Use necessary safety procedures while working in proximity to heavy equipment, such as: excavators, backhoes, front loaders, dump trucks, service trucks, pumps, air compressors & generators;
4. Demonstrate understanding of different excavation techniques for water and wastewater such as; excavation around natural gas lines and buried electric lines, swabbing new fitting with disinfectant to prevent any contamination before excavation, and mitigating any potential health hazards such as de-watering a water main before it is excavated;
5. Understand proper equipment placement (i.e., dump trucks next to excavation), proper materials placement and assisting the heavy equipment operator with identifying other utilities (gas & electric) in an excavation;
6. Master the overhead crane operation: safety and operation in using overhead cranes for pump and motor repairs and replacements.

C. System Operations & Maintenance

1920

1. Develop a working knowledge of the operation, methods and procedures of a wastewater treatment & collection system;
2. Perform inspection of new sewer lines and services;
3. Demonstrate the ability to read and interpret maps, as well as drawings of the wastewater system;
4. Assist with the maintenance and repair of the wastewater treatment plant, collection system, pump stations and lift stations;
5. Develop a working knowledge of preventive maintenance, troubleshooting & repair of mechanical equipment;
6. Learn the safety and proper use of sludge pressing equipment to remove processed sludge from the facility.

D. Quality Control

960

1. Learn to perform all aspects of sampling, monitoring and testing required to maintain compliance with Federal, State, and Local regulations;
2. Identify normal and out-of-range values;
3. Maintain open communication & report results to supervisors;
4. Learn emergency response procedures.

E. Logistics, Reports and Supervision

480

1. Complete work order forms;
2. Order equipment and supplies as needed;
3. Document routine maintenance;
4. Visit other facilities to learn about new technology.

Approximate Total Hours 4000

Apprenticeship work processes are applicable only to training curricula for apprentices in approved programs. Apprenticeship work processes have no impact on classification determinations under Article 8 or 9 of the Labor Law. For guidance regarding classification for purposes of Article 8 or 9 of the Labor Law, please refer to <https://dol.ny.gov/public-work-and-prevailing-wage>.

WASTEWATER SYSTEMS OPERATION SPECIALIST

APPENDIX B

RELATED INSTRUCTION

Safety, Health, and the Workplace

1. OSHA Standards & state guidelines
2. First Aid & CPR (minimum 6.5 hours)
3. Safety Data Sheets (SDS)
4. 811 Call Before You Dig
5. Excavation, trenching & shoring
6. Confined space: identifying, entry & hazardous gases
7. Fire & Electrical Safety
8. Traffic control
9. Chlorine and chemical safety
10. Apprenticeship Program Overview
11. Circuit Rider training assistance
12. The National Rural Water Association (NRWA) University
13. Sexual Harassment Prevention-MUST comply with Section 201-g of the Labor Law

Professional Requirements

1. Responsibilities of a Wastewater System Operations Specialist
2. Ethics of a public health & environmental professional
3. Customer service & community outreach
4. Professional Organizations

Operations & Maintenance

1. Pumps & motors
2. Energy efficiency
3. Valves & other appurtenances
4. Collection systems
5. Gravity & force mains
6. Lift & pump stations
7. Inflow & infiltration
8. Fats, oils & grease

9. Inspection & cleaning
10. Treatment Processes
11. Preliminary, primary & secondary treatment
12. Land treatment
13. Disinfection methods
14. Tertiary or advanced treatment
15. Decentralized (onsite or cluster) systems
16. Laboratory procedures
17. Detention structures & settling basins
18. Biosolids handling
19. Reuse
20. Supervisory Control and Data Acquisition (SCADA)
21. Work orders

Operator Mathematics

1. Problem solving strategies
2. Calculating chemical dosage & detention time
3. Flow & rate problems
4. Horsepower calculations

Security & Emergency Response

1. Critical Infrastructure Sector designation
2. National Incident Management System
3. ISC-100: Introduction to the Incident Command System Certificate (FEMA)
4. Emergency response plans & procedures

Laws & Regulations

1. Pollutants
2. Clean Water Act basic requirements
3. State laws & regulations
4. Regulatory compliance
5. National Pollutant Discharge Elimination Systems (NPDES) permits
6. State Pollutant Discharge Elimination System (SPDES)
7. Combined sewers and sanitary sewer overflows

8. Peak flows at treatment plants

Introduction to Utility Management

1. Capacity development & sustainable utility management
2. Finances, rates & billing
3. Water University-Utility Management Certification
4. Understanding budgets, geographic information systems
5. Working with boards and elected officials

Overview of Construction Projects

1. Assessment of existing facilities
2. Working with engineers & consultants
3. Preliminary design & alternatives
4. Funding sources & requirements
5. Construction design process
6. Interpreting and understanding construction plans and specifications
7. Bid process & contract signing inspections
8. Resident inspector
9. Substantial completion
10. Final inspection & certification
11. Operations & maintenance manuals
12. Ongoing grant & loan requirements

Other Related Courses as Necessary

A Minimum of 288 hours of Related Instruction is Required for Each Apprentice.

Appendix B topics are approved by New York State Education Department.