

# What is the Water Management field?

Water Management is a career field that applies the principles of science, math, technology, engineering, communication, economics, management, and law to ensure water quality and to sustainably manage water as a resource to protect public health and the environment.

## What is a Water Professional?

A water professional applies knowledge, skills, and abilities to perform scientific, technical, managerial, regulatory, and communication tasks and responsibilities.

### Administration

- Customer Service Representative
- Health and Safety Coordinator
- Information Technology (IT) Professional
- Project Manager
- Public Relations and Human Resources Specialist
- Regulatory Compliance Manager
- Security Coordinator

### Engineering

- Construction Inspector
- Construction Supervisor
- Corrosion Control Specialist
- Geographic Information Systems (GIS) Specialist
- Hydraulic Specialist
- Hydrology Technician
- Surveyor

### Laboratory

- Environmental Sampling/Monitoring Technician
- Instrumentation Technician
- Lab Analysis Technician
- Laboratory Health and Safety Supervisor
- Quality Assurance/Quality Control (QA/QC) Technician

### Plant Maintenance

- High Voltage Electrician
- Low Voltage Electrician
- Plant Maintenance Supervisor
- Plant Maintenance Technician

### Regulations and Compliance

- Biosolids Land Application Technician
- Cross-Connection Control Specialist
- CSO/SSO Monitoring Specialist
- Enforcement Specialist
- Environmental Compliance Technician
- Fats/Oils/Grease (FOG) Manager
- FOG Inspector
- Industrial Pretreatment Specialist
- Large Animal Confinement Inspector
- Permit Specialist
- Pretreatment Manager
- Stormwater Compliance Inspector

### Wastewater Operations

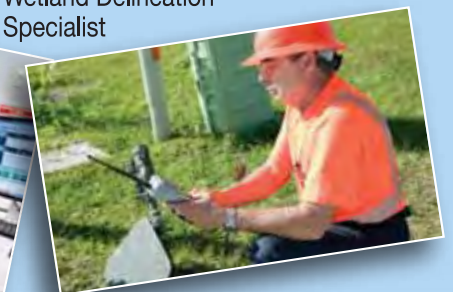
- Chief Operator
- Collection System Operator\*
- Industrial Pretreatment Operator
- Instrumentation Technician\*
- Plant Operator\* (treatment, biosolids, reclamation, construction)
- Pretreatment Coordinator
- Process Control Operator\*\*

### Water Operations

- Cross-Connection Control Specialist
- Distribution Operator/Foreman
- Heavy Equipment Operator
- Industrial Water Systems Operator
- Instrumentation Technician
- Leak Detection Technician
- Meter Reader/Installer
- Meter Tester/Mechanic
- PLC/SCADA Programmer
- Treatment Plant Mechanic
- Utility Locator ("Dig Safe")
- Water Treatment Operator

### Watershed and Runoff Control

- Agricultural Water Specialist
- Aquatic Habitat Restoration Technician
- Dredge Operator
- Forestry Technician
- Ground Water Remediation Technician
- Hydrogeology Technician
- Hydrology Technician
- Modeling Technician
- Residential Water Purification Technician
- Septic Tank Maintenance Technician
- Source Water GIS Technician
- Stormwater/MS4 Technician
- Surface Water Monitoring Technician
- Sustainable Landscaper
- Water Conservation Technician
- Well Driller
- Wetland Delineation Specialist



\* Various levels (e.g., supervisor, team leader, senior lead, shift supervisor, operator I, operator II, operator III, non-certified maintenance worker, operator-in-training (OIT))

\*\* Various levels (e.g., operator, engineer, supervisor)



# DEFINING WATER

## MANAGEMENT

# Emerging Issues & Future Trends

How can high schools & community colleges contribute to the Water Management field?

High school and community college guidance counselors and advisors can convey to potential students what a valuable and important line of work Water Management can be. Not many people initially consider the water field, but it's a great and relatively stable career path. Additionally, it's largely immune to external anomalies and cannot be exported outside the U.S.

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### Outreach

- Perform more public outreach and education.
- Promote public awareness of water issues and recognition of true value of water—cost will only rise.
- Social media is becoming an important communication tool and a means of knowledge transfer.
- Promote conservation (using less water, etc.).

### Sustainability

- Plan for systems sustainability and resiliency.
- Water professionals need to be more aware of production of greenhouse gases from various treatment processes.
- Promote energy efficiency and plant optimization.
- Consider gray water systems.
- Consider reclaimed water—direct and indirect water reuse.
- Manage nonpoint source pollution.

### Administration

- Manage limited business resources—do more with less. Systems are growing, but budgets are not.
- Provide adequate human resources.
- Retain employees.
- Target research and emphasize regional differences as to water/wastewater needs.
  - Nutrients management is a coastal concern; not so much of a problem in the middle of the country.*
  - Majority of water plants are small—many size differentials, based on region.*
- Systems have historically been decentralized, then became large and centralized. Now they're heading back to being more decentralized.
  - Centralized facilities tend to be used for economy of scale, but the trend is now moving back in the opposite direction.*
  - Decentralization promotes reclamation and reuse (i.e., reclaim and reuse water at the point of generation).*
- Build durability in systems for emergency response, including preparedness for extreme weather and other natural and human-made disasters.
- Address homeland security issues (e.g., training for human-made disasters and emergencies).
- Identify and recover operation maintenance cost between new development and users (full cost recovery).
- Determine how to pay for needed infrastructure.
- Prepare for pollutant credit trading programs.
- Manage distribution and collection for system optimization.
- Utilize asset management systems.
- Perform succession planning.
- Legislation, rules, and regulations are changing more rapidly than ever, and this will likely increase.
- Simplify overly-complicated regulatory reporting requirements.

### Technology

- Green infrastructure
- Sustainable and resilient systems
- Energy recovery
- Nutrient recovery
- Desalinization
- Resources reuse
- Integration of renewable energy into facilities (energy recovery, etc.)
- Quality assurance technology
- Management of microconstituents
- Increased use of computer controls for treatment processes
- Advances in analyzing data
- Zero discharge technologies
- AMR (Automated Meter Reading)
- Global access to safe drinking water (wells, purification, etc).

### Training

- Funding
- Distance training
- Encourage operators to become trainers, to utilize experienced operators' knowledge in training.
- Standardize the requirements for Continuing Education Units (CEUs) and contact hours across the country (currently developed state by state).
- Mandatory certification for wastewater
- Stormwater certification
- Promote knowledge transfer and ability to operate facility in a manual mode during an emergency and/or disaster.
- Leadership development



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