

# Water Distribution Systems Operations

## Course Outline

### **Course Description**

This 4.5 day course is designed to provide the operator with knowledge and practical (hands-on) experience on a live 6 inch water distribution system including components such as fire hydrants, valves, meter, gauges, and backflow prevention. The time distributed for this course is roughly 2/3 theory and 1/3 practical. The main objective of the course is for the operator to understand the components that make up a water distribution system as well as proper operation and maintenance of the system. This course is NOT designed to prepare the operator to write a certification exam.

### **Course Pre-requisites**

There are no specific pre-requisites for this course. However, Grade 12 (or equivalent) math skills are an asset. Math upgrades are available –contact us.

### **CEU Credit**

This course is currently under review with EOCP.

### **Course Duration**

- 4.5 days
- 8:30 am to 4:00 pm each day (except 5<sup>th</sup> day from 8:30 am to 12:00 am)
- 1 hour lunch break
- morning and afternoon break (15 minutes each)

### **Course Agenda and Objectives**

#### Introduction

- Housekeeping
- Instructor Introduction
- Operator Introduction
- EOCP Certification and Renewal

#### Water Facts

- Percent Fresh Water on Earth
- The Hydrologic Cycle
- Oceans
- The Plastic Island
- Prescription Drugs

#### The Basic Water Distribution System

- Development
- Materials
- Watering Points and Hauling
- Advantages/Disadvantages
- Leaks & Breaks
- Couplings
- Fittings
- Pipe Data

#### Piping Systems in Detail

- History of piping Systems
- Types of Piping Material
- Advantages and Disadvantages of the Types of Materials
- Types of Joints and Fittings
- Common Pipe Repairs
- Thawing Methods
- Fitting Description Sequence

#### Safety Considerations

- Responsibilities
- Personal Protective Equipment
- Tools
- Working Around Heavy Equipment
- Trench Excavation/Shoring
- Construction Site Safety
- Traffic Control & Safety

#### Fire Hydrant Operation & Inspection

- Uses of Hydrants
- Types of Hydrants
- Advantages/Disadvantages
- Structure/Operation/ Maintenance

#### Distribution System Valves

- Basic Valve Nomenclature
- Functions
- Types/Applications
- General Operation of Valves
- Valve Boxes & Lids
- Flow, Pressure, & Surge Control
- Cross Connection
- Line Valve Exercising Program
- Air Valve Inspection
- Routine Maintenance

#### Distribution Storage

- Normal Operation
- Emergency Storage
- Uses of Distribution Storage
- Storage Types, Components, Construction Materials
- Appurtenances
- Controls/Fittings
- Altitude Valves/Level Controls
- Storage Inspections

#### Booster Station Operation

- Types of Booster Stations
- Components
- Pumps
- Valves/Gauges/Meters

#### Customer Services

- Saddles
- Corporate, Curb, and Pitorifice Stops
- Meter Types, Construction, and Installation
- Tapping

#### Distribution System Inspection & Monitoring

- Mapping and Dig Packages
- Water Quality Monitoring
- Corrosion Control
- Flushing Program

#### Meters & Gauges

- Small Flow Types
- Large Flow Types
- Combination (Compound Meters)
- Gauges & Registers

### **Four Day Outline**

#### Day One:

8:30 am to 9:00 am: Introduction  
9:00 am to 10:00 am: Water Facts  
10:00 am to 10:15 am: Health Break  
10:15 am to 12:00 pm: The Basic Water Distribution System  
10:30 am to 12:00 pm: Lunch Break  
1:00 pm to 2:15 pm: The Basic Water Distribution System (cont.....)  
2:15 pm to 2:30 pm: Health Break  
2:30 pm to 4:00 pm: Hand-on Training: Live Distribution System:

#### Day Two:

8:30 am to 10:00 am: Piping Systems in Detail  
10:00 am to 10:15 am: Health Break  
10:15 am to 12:00 pm: Piping Systems in Detail (cont.....)  
12:00 pm to 1:00 pm: Lunch Break  
1:00 pm to 1:45 pm: Piping Systems in Detail (cont.....)  
1:45 pm to 2:15 pm: Hand-on Training: Live Distribution System  
2:15 pm to 2:30 pm: Health Break  
2:30 pm to 4:00 pm: Hand-on Training: Live Distribution System (cont.....)

Day Three:

8:30 am to 10:00 am: Safety Considerations

10:00 am to 10:15 am: Health Break

10:15 am to 12:00 pm: Fire Hydrant Operation & Maintenance

12:00 pm to 1:00 pm: Lunch Break

1:00 pm to 2:15 pm: Hand-on Training: Live Distribution System

2:15 pm to 2:30 pm: Health Break

2:30 pm to 4:00 pm: Hand-on Training: Live Distribution System (cont.....)

Day Four:

8:30 am to 10:00 am: Distribution System Valves (1.5)

10:00 am to 10:15 am: Health Break

10:15 am to 11:15 am: Distribution Storage (1.0)

11:15 am to 12:00 pm: Booster Station Operation (0.75)

12:00 pm to 1:00 pm: Lunch

1:00 pm to 2:00 pm: Customer Services (1.0)

2:00 pm to 2:15 pm: Health Break

2:15 pm to 4:00 pm: Hand-on Training: Live Distribution System (1.75)

Day Five (1/2 day)

8:30 am to 9:30 am: Distribution System Inspection & Monitoring

9:30 am to 10:15 am: Meters & Gauges

10:15 am to 10:30 am: Health Break

10:30 am to 12:00 pm: Hand-on Training: Live Distribution System

**Course Requirements**

Attendance and participation in class are required. CEUs will be allocated based on attendance and course completion; Yukon University records will show a pass or fail result. If the participant doesn't attend the class, Yukon University records will show a "no show" result and no CEUs will be allocated.

**Evaluation**

There will be a quantifiable evaluation at the end of this course with a passing mark of 70%. If anyone fails this evaluation, arrangements can be made for a re-assessment. Please note that this evaluation is for self-assessment purposes only.