



# Activated Sludge September 19-20, 2017 Halifax, NS

## Activated Sludge Operations Training Outline

### Day 1

8:00 am – 10:00 am

#### Overview of Biological Treatment

- Introduction to Treatment
- Treatment Steps – Preliminary, Primary, Equalization, Secondary, Sludge Handling

10:00 – 10:15 am Break

10:15 – 12:00 Noon

#### Primary Clarifier Operations

- Evaluating performance
- Negative impacts on activated sludge

#### Growth Pressures

- Effects of: Temperature, pH, Organic loading, Dissolved oxygen, Toxics, Hydraulic loading, Spills, Nutrients

12:00 – 1:00 pm Lunch

1:00 – 2:00 pm

#### Process Control and Monitoring Tests for Activated Sludge Operations

- Settlemeter – measuring/assessing sludge settling characteristics
- Depth of blanket - determining clarifier inventory and sludge detention time
- Microscope - determining microbial health
- Oxygen uptake - determining metabolic rate, detecting and managing toxicity, spills

2:00- 2:15 pm Break

2:30 – 5:00pm

#### Controlling Recycle Sludge Flow

- RSF strategies
- Optimizing clarifier capacity
- Clarifier State Point Analysis

### Day 2

8:00 am – 10:00 am

#### Controlling Waste Sludge Flow

- MCRT/Sludge age
- F/M
- Sludge yield
- MLSS concentration
- Sludge Inventory

10:00 -10:15 am Break

10:15 – 12:00 Noon

#### Controlling Aeration

- Types of Aeration, Equipment
- Monitoring, D.O. probes
- Oxygen demand, effects of spills

12:00 – 1:00 pm Lunch

1:00 – 2:00 pm

#### Nutrient Management

- Nutrients - ammonia, phosphate, nitrate
- Nutrient Management
- Nitrification/Denitrification

2:00 -2:15 pm Break

2:30 – 5:00 pm

#### Troubleshooting Sludge Settling Problems

- Foaming
- Floc Formation problems – pin floc, straggler floc
- Filamentous and slime bulking
- Low D.O. bulking, Low F/M bulking
- Nutrient-deficient bulking
- Septic/sulfide bulking
- Toxicity

**PRESENTER:**

Rick Marshall specializes in start-up, optimizing, and troubleshooting of wastewater and water treatment facilities, along with work in producing O & M manuals, troubleshooting guides, SOPs and other technical documents. He has over 35 years of experience in industrial (Pulp & Paper, various types of food processing, chemical, refinery) and municipal treatment systems. He has dealt with a variety operating problems ranging from sludge settling problems, floc formation problems, biomass toxicity, effluent toxicity, foaming and floating sludge problems.

**COURSE LOCATION:**

Captain William Spy Center 16 Sussex St.  
Halifax, NS

**CONTACT INFORMATION:**

Registration can be made by faxing or mailing the registration form on the reverse of this page. For further information, Clara Shea at 902-434-8874.

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Name: \_\_\_\_\_

Organization: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

City, Province: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ Email: \_\_\_\_\_

**Invoices will be sent to the address listed above.**

PO number to be included on the invoice \_\_\_\_\_

**Payment can be made by Visa, Master Card or cheque.**

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Name \_\_\_\_\_

Credit Card Number \_\_\_\_\_ Expiry \_\_\_\_\_

Signature \_\_\_\_\_

Email address for credit card receipt \_\_\_\_\_

**Payment can be made by cheque and is due prior to workshop date.**

Members \$630.00 plus HST 15% = \$724.50  
Non-Members \$650.00 plus HST 15% = \$747.50

**Lunch is on your own!**

**Cheques should be made payable to:  
MPWWA  
C/O Clara Shea, Executive Secretary  
PO Box 28142 Dartmouth, NS B2W 6E2  
Phone 902-434-8874 Fax 902-434-8859**