YELLOW BAY REGISTRATION FORM

PREREGISTRATION is required due to facility limitations. If you plan to attend the **Advanced Wastewater Training Course** in Yellow Bay on September 9-11, 2025, you must **preregister and payment must be made by August 15th**

Please send this form and payment to:

MRWS
9 3rd St N #304
Great Falls, MT 59401

Fax: (406) 454-3116

Email: MTRuralWater@mrws.org

For more information call MRWS at (406) 454-1151.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Employer: _____

E-mail Address: _____

Please identify which package you are registering for:

Package A: [ ] $550.00
Includes registration, workshop materials, and lunch Tuesday, 9/9. Accommodations made on your own. Polson 14 miles south and Bigfork 18 miles north.

Package B: [ ] $700.00
Includes registration, workshop materials, cabin lodging for Monday 9/8, (check-in by 7pm), Tuesday 9/9 and Wednesday 9/10. Large common shower/restroom facility- linens provided. **Cabin assignments will be made at check-in on Monday, September 9th.** Meals included are breakfast 9/9, 9/10 & 9/11, lunch & dinner on Tuesday 9/9/25

Mechanical Treatment track [ ] Lagoon track [ ]

Amount Paid $_____

[ ] Check # _____ [ ] PO# _____

Credit Card: [ ] Master Card [ ] Visa

Card Number: _____

Security Code: _____

Expiration Date: _____

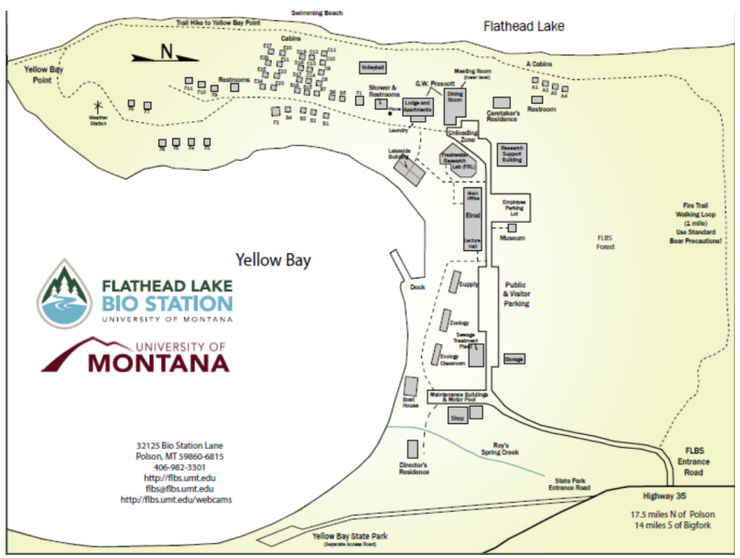
Card Holder Signature: _____

FLATHEAD LAKE BIO STATION
UNIVERSITY OF MONTANA

Last year we added a Lagoon track to the training at Yellow Bay that received very positive reviews! We are continuing this educational opportunity in 2025.

SPEAKER - Lagoons

Pete Boettcher, who is now enjoying retirement and dabbling on the side as a wastewater assistance technician, will be teaching the Lagoon track. Pete offers years of experience as a plant superintendent, a state compliance inspector, and a technical assistant for the state. Come enjoy Flathead Lake and this great training experience!



Montana Rural Water Systems, Inc

34th Annual

Advanced Wastewater Training for Mechanical Systems

Improving Performance of Biological Wastewater Treatment Systems

Mechanical Treatment or Lagoon Options are Both Available

YELLOW BAY

Flathead Lake Biological Station

Highway 35 between Polson and Big Fork

East side of Flathead Lake

Lakeside Building

September 9-11, 2025

34th Annual Advanced Wastewater Training

September 9-11, 2025

ABOUT THIS COURSE

This course is designed for operators and managers interested in a better understanding of the microbiological basis for WWTP performance. This course discusses strategies to reduce TSS, BOD and nutrients while avoiding significant capital costs. The course is designed for operators of secondary treatment plants utilizing activated sludge and BNR technologies. If you are considering a plant expansion, need to improve performance or reduce your O&M cost, consider this year's Yellow Bay workshop. **Plus evenings of fun - canoeing, hiking, ping-pong, who knows.**

CEUs = 2.00 **20 contact hours**

WHO SHOULD ATTEND

Operators, lab technicians and plant supervisors with an interest in improving the performance of their activated sludge systems will find this workshop beneficial. Individuals who design wastewater systems, provide regulatory oversight, or are responsible for process control will appreciate the use of case histories to illustrate the practical application of science and engineering that achieves optimal plant performance.

SPEAKER

PAUL KLOPPING, **Principal, Callan & Brooks, Inc.**

Mr. Klopping has over 40 years experience in biological treatment, training and technical assistance. He completed his undergraduate and graduate training at California State University, Long Beach. He is a certified WWTP operator and a certified environmental trainer, having delivered over 1,000 training programs across North America. **So bring your questions, a jug of mixed liquor, a settlometer and a good story to share.**

Improving Performance of Biological Wastewater Treatment Systems

Mechanical Treatment Track~2025

>>AGENDA<<

TUESDAY, September 9, 2025

7:30am Registration (Lakeside Building Classroom)

8:00 am - 12:00 pm

Biological Basis for Plant Performance

- Introduction & Course Objectives.
- Wastewater Microbiology & Biochemistry: Why Secondary Treatment & Advanced BNR Works the Way It Does.
- Floc Structure, microbial composition and settling characteristics.
- Introduction to Bulking & Foaming Problems.

How the Microbiology Affects WWTP Capacity and Performance

- Flocculation & Solids Separation Problems.
- Biopolymers & Charge Density. **NEW!!**
- Understanding & Controlling SVI.
- Making the Most of Your Operational Tactics - D.O., pH/Alkalinity, RAS, WAS, MCRT, SRT, & F/M. **NEW!!**
- Measuring Active Biomass via OUR and ATP.
- Advanced Microbiological Techniques including DNA sequencing. **NEW!!**

12:00 - 1:00 pm LUNCH PROVIDED

1:00 - 3:00 pm

Principles of Biological Nutrient Removal

- Forms of Nitrogen/Nitrogen Cycle.
- Nitrification & Denitrification.
- Selectors - Aerobic, Anoxic & Anaerobic.
- Review of BNR Designs & Modes of Operation.
- Denitrification Simulation.

3:00 - 5:00 pm

Hands-on Demo Lab Exercises

- **(**Bring your WWTP design criteria, process flow diagram and operating data, & at least 2 liters of MLSS. *Extra Credit* for bringing a Settlometer.)
- Care and Feeding of the Microscope.
- Assessment of MLSS Samples with a Phase Contrast Microscope-Guided Discussion on Big Screen.
- Video Review of MLSS Samples, Correlation Between Settling Characteristics and Microscopic Characteristics….Award for Most Filaments, Best Floc, Weirdest Microbe.
- SVI Measurements & Oxygen Uptake Rate.

WEDNESDAY, September 10, 2025

8:00 - 8:30 am

- Travel To Big Fork WWTP

8:30 - 9:30 am

- Tour Big Fork WWTP

9:30 am - 10:30 pm

- Travel to Whitefish WWTP

10:30 - Noon

- Tour Whitefish WWTP

Noon - 1:30 pm

- **LUNCH ON YOUR OWN** and Travel to Kalispell Advanced WWTP

1:30 - 5:00 pm

- Kalispell WWTP Tour & Discussion of Control Strategies

THURSDAY, September 11, 2025

8:00 am - 12:00 pm

Troubleshooting Performance Problems

- Diagnosing & Correcting Flocculation, Hydraulics, Sludge Inventory & Sludge Removal Problems.
- Using the Clarifier State Point Model to Predict Performance.
- Nitrification/Denitrification - Understanding & Controlling It.
- Managing the Clarifier During Extreme Conditions (Rainfall, High & Low Loading).
- Clarifier Modifications, Using Selectors to Improve Settleability & Reduce Energy.
- D.O. Control, ORP, Energy Conservation.
- BOD, TSS, & Nutrient Removal Problems & Case Histories.

Wastewater Jeopardy

Is That Your Final Answer?...Working in teams to apply the concepts covered in the course?

To Get the Most Benefit Out of the Course Please Bring:

- Your WWTP Design Criteria.
- Process Flow Diagram.
- Operating Data.
- Calculator.
- A Settlometer.
- At Least 2 Liters of MLSS.

2025 Yellow Bay Lagoon Class Agenda

Tuesday, September 9, 2025

8:00 AM to Noon
Basic Biology and Chemistry of the Lagoon System

- Introduction and Course Objectives
  - Wastewater lagoon Microbiology:
    - Algae, Bacteria, Protozoa, Etc.
  - Wastewater lagoon chemistry
    - BOD, TSS, pH, Temperature, Alkalinity, DO, Etc
  - Operational Methods
    - BOD, TSS, DO, pH, Alkalinity, Problems and Solutions
  - Making the Most of Operational Methods –
    - DO, pH/Alkalinity, Series/ Parallel Sequencing

Noon – 1:00 – Lunch

1:00 PM

- Sludge Accumulation and Removal
- Signs it is time to remove sludge
- Nitrogen and Phosphorus Problems and Solutions
- Lagoon System Hydraulics

3:00 to 5:00 PM

- Aeration and Dissolved Oxygen Problems
- Pathogen Control
- Cold Weather Operations
- Discuss Field work for Wednesday

Wednesday, September 10, 2025

8:00 AM
Discuss Field work set up groups

8:30 AM

- Travel to Pablo WWTF
- Field work/ optimizing sample collection techniques
  - Dissolved Oxygen, pH, and Temperature sample collection
  - Field laboratory analysis (Ammonia, Alkalinity)

10:00 AM

- Complete field work; compile data
- Discuss results of the data

NOON to 1:30 PM - Lunch on your own

1:30 PM

- Discuss field work and observations in classroom

2:30 PM

- Discuss Compliance Inspections
  - Permit Requirements
  - Most common lagoon permit violations
    - DMR Violations
    - Maintenance Violations
    - What to do in the event of a violation

3:00 to 5:00 PM

- Lagoon Systems Case Studies
  - Troubleshooting Performance Problems
  - Diagnosing the Problem and options to correct problems
  - Data, Hydraulics, sludge level and removal issues
  - DO Control
  - BOD, TSS, and Nutrient Removal Problems and Case Studies

Thursday, September 11, 2025

8:00 AM

- Lagoon System Case Studies, continued

Bring Your System Data to Class:

Lagoon Design Criteria
Process Flow Diagram
Operating Data (2 years)
Discharge Permit
Specific questions about your system
Calculator

Pete Boettcher Wastewater Ops Assistance