



Program Manager: Dr. Rachel Malison  
[mmw@flbs.umt.edu](mailto:mmw@flbs.umt.edu); (406) 872-4518  
32125 Bio Station Lane  
Polson, Montana, U.S.A. 59860  
<http://flbs.umt.edu/newflbs/outreach/mmw>



## **MONITORING MONTANA WATERS**

*Providing assistance with water monitoring efforts in Montana*

### **2021 FINAL REPORT**

Groups that are awarded laboratory analyses funds from MMW are requested to submit a final report after receiving all their data and prior to applying for a new funding cycle. Please use this fillable form to prepare final reports for submittal to MMW.

#### **Organization Name**

Clearwater Resource Council (CRC)

#### **Year**

2021

#### **How many people participated in data collection?**

This year we had three CRC-employed main collectors, seven regular volunteers, and on occasion guest volunteers.

#### **Who participated in your VM Program? (check all that apply)**

Big Sky Watershed Corps member? yes

Program leader yes

Program paid staff yes

Community volunteers yes

Students yes

Other (*please describe*):

#### **What were the monitoring goals that you included in your SAP?**

We had three goals for the 2021-monitoring season:

1. Evaluate current nutrient conditions in six lakes and two streams to establish a baseline for future comparisons.
2. Evaluate water quality in six lakes and two streams to continue monitoring and establish baselines for new parameters.
3. Evaluate whether septic systems are a likely source of excess nutrients in the six lakes and two streams.



Program Manager: Dr. Rachel Malison  
[mmw@flbs.umt.edu](mailto:mmw@flbs.umt.edu); (406) 872-4518  
32125 Bio Station Lane  
Polson, Montana, U.S.A. 59860  
<http://flbs.umt.edu/newflbs/outreach/mmw>



**Describe how the monitoring you conducted helped your VM program achieve these goals.**

We obtained baseline data (transparency, temperature, pH, conductance, dissolved oxygen, total algae, and nutrients (TP/TN, NO<sub>2</sub>/NO<sub>3</sub>/SRP, and E. coli)) on six lakes. We obtained baseline data (temperature, pH, discharge, and nutrients (TP/TN, NO<sub>2</sub>/NO<sub>3</sub>/SRP, and E. coli)) on two streams. All data collected will be used in future comparisons.

We obtained nutrient data (TP/TN, NO<sub>2</sub>/NO<sub>3</sub>/SRP, and E. coli) at four stream sites, two above and two below development. We will use this data to make a direct comparison and start to determine whether septic systems could be a source of excess nutrients in the Clearwater Watershed and downstream waters.

**Describe how you analyzed your data.**

We collected and plotted both profile data (temperature, pH, conductance, dissolved oxygen, total algae) and point data (transparency and nutrients on lakes and temperature, pH, and nutrients for streams). Comparisons were made to historical lake data (temperature, dissolved oxygen, and transparencies). Nutrient data were compared to DEQ thresholds for the period July 1-September 30. A direct comparison of the stream's nutrient data of upstream/above development to downstream/below development sites was made.

**Share one or more findings or observations based on your data.**

Based on the data available to this date, the baseline data collected in 2021 suggests that all the lakes undergo seasonal variation. However, data also shows that the lakes with development experience seasonal variation to a greater extent than the lakes that have little to no development built along their shores.

**Did you complete all the monitoring described in your program's SAP?**

- Yes  
 No

**If not, what prevented you from collecting all planned data?**

Click or tap here to enter text.



Program Manager: Dr. Rachel Malison  
[mmw@flbs.umt.edu](mailto:mmw@flbs.umt.edu); (406) 872-4518  
32125 Bio Station Lane  
Polson, Montana, U.S.A. 59860  
<http://flbs.umt.edu/newflbs/outreach/mmw>



**Briefly describe any data quality issues you encountered.** For example, methods not followed, instrument malfunctions, samples lost or broken, holding times exceeded, contamination, etc.

We learned mid-way through collecting that we should have worn gloves for all nutrient sampling. We did our best to not contaminate the samples and adjusted once we were made aware.

When collecting profiles, it was often difficult if the boat didn't have an anchor to stay in the same spot. There were several times we experienced a good amount of drift. Our boat drivers did their best to stay in the same place however, the weather conditions made it near impossible at times, and we would have to make adjustments midway through the profiles.

Some of our samples have exceeded the holding times due to funding reasons. During the monitoring season, we were awarded a grant to cover the cost of some of the remaining samples not covered by MMW. However, the funds did not come in time to get the samples to the lab within the holding times.

**Describe one or more actions that you could take to improve your monitoring project in the future.**

Having a training session with MMW or the BioStation before the season would have made things more clear.

Investing in an anchor would make the profile collections much easier to deal with, especially during difficult weather conditions.

**Do you plan to continue volunteer monitoring in the future?**

Yes

No

**Are there any resources or trainings that you need and wish to have in the future?**

Having trained with MMW/ BioStation before we started collecting samples or having them attend the first sample collection.

**Add any additional information you wish to share?**

Due to funding reasons as described above, some of the samples collected for the 2021-monitoring season have not yet been analyzed in the lab. Arrangements have been made to send the samples into the lab to be analyzed at a future date. After the samples have been processed in the lab, CRC will analyze the data from the remaining samples and incorporate it into the 2021 baseline assessment.



Program Manager: Dr. Rachel Malison  
[mmw@flbs.umt.edu](mailto:mmw@flbs.umt.edu); (406) 872-4518  
32125 Bio Station Lane  
Polson, Montana, U.S.A. 59860  
<http://flbs.umt.edu/newflbs/outreach/mmw>



**FLATHEAD LAKE  
BIO STATION**  
UNIVERSITY OF MONTANA