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## **MONITORING MONTANA WATERS**

*Providing assistance with water monitoring efforts in Montana*

### **2022 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**

2022

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

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

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

Big Sky Watershed Corps member?

Program leader

Program paid staff

Community volunteers

Students

Other (*please describe*):

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

We had three goals for the 2022-monitoring season:

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



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

We collected 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 Seeley Lake. We also collected data (temperature, pH, and nutrients (TP/TN, NO<sub>2</sub>/NO<sub>3</sub>/SRP, and E. coli)) on Morrell Creek. This year's data repeat a portion of the baseline data collection that was completed in 2021. In addition to serving as a comparison to the 2021 baseline, the 2022 data expand our collection of data and begin to allow for future trend analysis. Current and future analysis of these data will allow us to better understand the source of aquatic changes in the Clearwater Watershed.

**Describe how you analyzed your data.**

We collected and plotted point data (transparency and nutrients on lakes and temperature, pH, and nutrients for streams). We also collected and plotted dissolved oxygen profile data. 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 Morrell Creek'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.**

In every instance except for one, the nutrient levels at the upstream Morrell Creek site (MORRELLC-03) are less than the nutrient levels at the downstream Morrell Creek site (MORRELLC-04). These sites were strategically chosen to understand whether the town of Seeley Lake, which Morrell Creek runs through, has an impact on the stream's water quality. For example, the average difference between the NO<sub>2</sub>+NO<sub>3</sub> levels at the upstream and downstream Morrell Creek sites is 20.26 ug/l. This result suggests that there may be a direct source of NO<sub>2</sub>+NO<sub>3</sub> between these two stream sites.

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

Yes

No

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

In addition to point data, we had planned to collect and plot profile data from a YSI Hydrolab (temperature, pH, conductance, and total algae). However, due to possible equipment malfunction, all the profile data were lost.



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

As noted previously, the profile data from the YSI Hydrolab were lost. The exact cause of this is not yet understood, but we intend to implement additional procedures to ensure this does not happen in future years.

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

Future monitoring events should start earlier in the morning to allow for transport time to FLBS.

CRC would benefit from developing a schedule for the blanks and duplicates prior to the monitoring season. This would ensure that blanks and duplicates occur at the correct site and at the correct frequency.

Finally, field data should be transferred from the field devices after each sampling round.

**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?**

Given that the aquatics program is run in part by a BSWC member, yearly trainings on the best practices for water sampling would be helpful.

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