**A.2 Table of Contents**

A3. Distribution List

The following individuals will receive a copy of the QAPP:

- St. Joseph County Conservation District: Carolyn Grace, Administrator
- Volunteers Lead 2021
- New Hire, Program Coordinator
- Denny Seltzer, Scientific Supervisor for Bug Brigade
- Michigan Clean Water Corps: Dr. Paul Steen

## A4 1-4 Program Organization

1. **Management Responsibilities**:

New hire or Carolyn Grace, Administrator and Program Coordinator, St. Joseph County Conservation District

**Responsibilities**

- Implement a Quality Assurance Project Plan
- Assist Administrator with program acidity promotion and volunteer recruitment
- Assist, Coordinate and conduct volunteer stream monitoring training
- Coordinate and implement volunteer stream monitoring filed data collection sessions
- Implement indoor macroinvertebrate identification sessions with Denny Seltzer
- Provide copies of all products and deliverables in hard and electronic form

Carolyn Grace, Administrator, St. Joseph County Conservation District 269-467-6336 ext 5, carolyn.grace@mi.nacdnet.net

**Responsibilities**

- Provide administrative and budget oversite for the program
- QAP implementation and oversite
- Assist with data entry and analysis
- Write quarterly financial reports
- Provide all products and deliverables in hard and electronic forms
- Assist with volunteer stream monitoring training session
- Assist with macroinvertebrate identification
- Coordinate and implement school sessions, and other groups for indoor identification
- Submit final report
- Submit release of claims statement

2. **Field Responsibilities**

Field sampling is performed by volunteers. Team Leaders and Collectors receiving training in field data collection methods by Program Coordinator and Administrator.

Team Leaders organize a stream monitoring strategy and delegate monitoring roles for each team. In the field, Team Leaders completely fill out data sheets, explain sampling of the site, time guidelines,

collection directions and any other responsibilities. Pickers follow instructions from team leaders. Collectors sample all in-stream habitats and provide the pickers the samples to be identified. They will sort at the site picking out the macroinvertebrates from the sorting tray and ice trays, putting them in a collection jar, and preserving them in 70% ethanol for later identification.

3. **Laboratory Responsibilities:**

Denny Seltzer, Macroinvertebrate identifier, has agreed to act as the Scientific Supervisor for the St. Joseph County Conservation District Volunteer Stream Monitoring Program. He will help the administrator with purchasing two microscopes and prove two other high powered microscopes of his own for sample identification. Volunteers, students and SJCCD staff will take part in collection and identification events. Any sample identification that cannot be completed during the scheduled time will be completed by Denny.

4. **Corrective Action:**

The Administrator and program Coordinator are the primary persons responsible for initiating, developing, approving, implementing and reporting corrective actions concerning data quality.

## A5. Problem Definition/Background

The first primary goal for this monitoring project are to provide data for previously sampled sites in the Rocky River Watershed management plan. This River has 2 sites in our county. This data then will be used to report to the SJCCD for an update to the Rocky River Watershed Management Plan and to the state. However, currently Grant writing Updates are not available. So, we will continue to monitor until the time arises for a new opportunity

Another primary goal for the project include the three Portage River sites from the Portage River watersheds. These sites have been identified by the NRSC lead personnel in the SJCCD, and the St. Joseph County Drain Commissioners office as non-point source pollution problems.
The Portage river in 2021 will have a Dam removal project completed by the DNR Heavy Equipment Team and the St. Joseph county conservation district as the lead. We have been monitoring the River since 2015 and will continue until 2024. In 2020 we relocated 50 or so mussels, 5 different species, to a safer part of the Portage River. This was an exciting endeavor.

The final goal for the project is to collect the data from the Prairie River watershed. The plan was written by the Branch County Conservation District and they had identified several sites in that watershed that were potential sampling sites, we choose three within our district and will report our findings to the Branch district as well as to the state.

## A6. Program Description

The primary objective of this program is to track long term changes in the stream health and water quality through an ever growing established volunteer monitoring program in the Rocky River, Prairie River and the Portage River watersheds. Twice each year, macroinvertebrate samples will be collected at the nine sampling locations within the three the three watersheds. The sampling events will take place once in the fall and once in the spring. Collections will be stored at the SJCCD office for identification within two weeks of the sample collection. Data will be entered and maintained in hard copy and electronic format at our office. Program reports will be completed and distributed to project partners.

Sampling results will also be made available to the general public. It is the hope of the administrator that the residents of St. Joseph County will get involved in this program and become a long-term volunteer for not only this program, our river cleanup program and our Local food dinner.

## A7. Data Quality Objectives

**Precision:** Rivers monitored in this project are assessed by examining aquatic macroinvertebrate community diversity. Quality control during field data collection, to guarantee precision and accuracy, is accomplished by the Administrator and Project Coordinator who accompanies teams to observe their collection techniques and note any divergence from protocols. In addition, key team members such as leaders and collectors must have attended at least one training event prior to the field collection event. Since this is a new program, the administrator and or Coordinator will also perform independent side-by-side collection for duplicate samples at one of the sites monitored by each volunteer team. When the program expands the administrator or coordinator will accompany new teams during their first macroinvertebrate sampling event and collect duplicate samples.

Techniques reviewed at training events and in the field will 1. Include a vigorous and thorough collecting style, 2. Will include all habitats and be through in each habitat diversity. 3. The picking style must be thoroughly picked through all materials collected and all sizes and types picked. 4. Must ensure a variety and or diverse and abundant samples of organisms. And 5 the transfer of the collected macroinvertebrates from the net to the jars will be properly handled and labeled correctly.

Side by side sampling results by administrator are compared with volunteer team results to determine if there is a strong divergence between measures of stream quality index (SQI) and total diversity (TD). If either score varies using an 80% threshold, then follow up is carried out where the project administrator reviews methods with team members and encourages attending another training.

The accuracy of specimen identification is dependent upon the ability of the experts aiding in the indoor identification session. Because of the inexperience of the entire team, Denny Stelzer, will verify all identifications for the first three collection events. This will allow for the administrator, coordinator and any volunteer to gain experience in identification without affecting accuracy. With training by Denny to the administrator they will review at least one sampling at each river identified and if more than 10% of specimens were misidentified, then Denny will once again be the expert reviewing the sample.

A given site's stream quality index (SQI) score or total diversity (TD) measure across macroinvertebrate taxa will be noted as "preliminary" until three fall samplings and three spring samplings have been collected. We were on schedule for this to happen but with the Covid19 shutdown we had to stop for 2020 season. We will begin again in 2021.

**Bias:** Sites will be sampled by different teams at least once every three years to examine the effects of bias in individual collection styles. A relative percentage difference (RPD) calculation between the new measure and the mean of past measures should be less than 40% for both SDI and D. Sites meeting this data quality objective will be evaluated by the administrator using the proper formula. If the sample falls outside this range, then administrator will conduct a more thorough investigation to determine which team or individual is likely at fault. The Coordinator will accompany teams to observe their collection techniques and note any divergence from protocols. The Program Coordinator may also perform an independent collection or duplicate sample no less than a week after the team's original collection.

It is also possible that the Program Coordinator can conclude that all sampling was valid and the discrepancy between samples is due to natural variations such as changing over time or unrepresentative sampling conditions.

**Completeness**: A measure of the amount of valid data actually obtained versus the amount expected to be obtained as a specified in the original sampling design. It is usually expresses as a percentage. For example, if 100 samples were scheduled but volunteers samples only 90 times due to bad weather the completeness record would be 90%.
Following a quality assurance review of all collected and analyzed data, data completeness is assessed by dividing the number of measurements judges valid by the number of the total measurements performed. The data quality objective for completeness for each parameter for each sampling is 90%. If the program does not meet this standard, the Program Coordinator will consult with MiCorps staff to determine the main causes of data invalidation and develop a course of action to improve the completeness of future sampling.

**Representativeness:** Study sites are selected to represent the full variety of stream habitat types available locally. A; available habitats within the study site will be sampled and documented to ensure a thorough sampling of all pf the organisms inhabiting the site. Resulting data from the monitoring program will be used to represent the ecological conditions of the contributing watershed. Since limited resources are available to allow the program to cover each watershed in its entirety, some areas will not initially be represented. Additional sampling sites will be added as volunteers allow and staff is acquired.

**Comparability:** Comparability represents how well data from one river or study site can be compared to data from another. To ensure data comparability, all volunteers participating in the monitoring program will follow the same sampling methods and use the same units of reporting. The methods for sampling and reporting are based on MiCorps standards that are taught at macroinvertebrate trainings. The administrator and program coordinator will train volunteers to follow those same methods to ensure comparability of monitoring results among other MiCorps programs. To the extent possible, the monitoring of all study sites will be completed in a two day period and certainly within a two-week time frame.

## A8. Special Training/Certifications

Carolyn Grace, administrator received MiCorps training. A web based training for the new hire will occur Team leaders and volunteers such as collectors and pickers, including hands on sampling techniques will be taught. Team leaders will be trained prior to their initial sampling events. All team leaders will be required to attend program training at least once every other or every three years. Other volunteers including the pickers and collectors will be offered training prior to or the day of the sampling event.

Training of Team Leaders and Collectors:

- The training covers program goals and objectives
- Macroinvertebrate collection methods
- Filling out field data sheets
- Safety issues and waivers
- Quality assurance practices.

Training will be held at the Conservation District prior to each field event if the volunteer group changes. A spreadsheet will be utilized by the project coordinator that lists all volunteers that have received training as well as the date and a brief explanation of their ability.

After the training at the Conservation District the participants will visit a stream to practice assessing physical habitat characteristics, sampling of macroinvertebrates and familiarity with identification to the order level. The program coordinator will maintain the database for the trained volunteers.

## B1 Study Design and Methods

**Sight1**: Rocky River at Bent Rd. This is the first accessible site at which the Rocky River flows into St. Joseph County from Cass County. It was chose due to three small tributaries flowing in to this section which have had livestock and E.coli concerns. According to the 2006 Rocky River Watershed management plan this area was fair. The data collected will be compared to the older data on hand. Site One : lat and long 41.945548, -85.636972

**Site 2**: Memory Isle Park. Downtown Three Rivers. Section 18 at the intersection of the Rocky River, Portage River and St. Joseph River. A comparison to the Rocky Watershed Management plan will be conducted as it was in poor condition at the 2017 collected data. A new culvert and the removal of a drainage pipe was completed in spring of 2018 and the condition increased to good, however, a very low score in the good range. We are hopeful in 2021 that it has improved.
#2 41.983810, -85.648070

**Site 4:** Portage River at Silver Street Bridge. A quarter mile downriver from the mouth of Portage Lake Concerns have been raised by the homeowner's about this site as many recreational canoe and kayakers enter the river at this point. #1 42.038833, -85.515675

**Site 5**: Portage River at Parkville Rd. The SJCCD has been placed on the DNR removal for the current dam at the Parkville Rd Bridge. This site will be tested over the three years to see macroinvertebrate population before during and after removal of the dam. We are hopeful that the Excellent score from 2018 will continue. We understand that in 2021 fall collection and possible 2022 spring collection, the aquatic life may be down due to dam removal but only collection data will support that prediction.
#2 42.0145518, -85.547580

**Site 6**: Portage River at Hoffman Bridge. Section 17 in the city of Three Rivers. Levels of E.coli have been detected. City manager would like to have this site monitored for further data and with the new changes to the area, noted above, the aquatic life may continue to improve.
#3 41.947091, -85.628311

**Site 7:** Prairie River at Deer Park Rd. This site was chosen because of the location and availability and proximity to the school and Conservation District for training purposes. Also it is directly inside the county line from Branch. The Prairie Watershed Management Plan (PRWMP) identified this as a priority but could not be sampled due to completion of the plan before crew could sample. The data collected will be added to the Prairie River Watershed management plan as needed. #1 41.846318, -85.312483

**Site 8:** Prairie River at Hackman Road. Section 7 in Burr Oak Township. This is an area of concern identified by the PRWMP and the drain commissioner as it contains a great deal of sediment.
#2 41..88695, -85.40971

**Site 9:** Prairie River at Findley Road crossing. The apparent runoff from local farmers was identified in the PRWMP and no data was collected to support the questions raised by them. We will continue to monitor in 2022. #3 41.903294, -85.5288433

For each sampling site event that is not completed in a single day, monitoring by volunteers will be completed within the two week period. If a site is temporarily inaccessible, for example by high water, the monitoring time may be extended for an additional two weeks. If that may occur the Program Coordinator will make other arrangements for site testing.

## B2. Instrument/Equipment Testing, inspection and Maintenance

In the week prior to the monitoring event, the Administrator and Project coordinator will check all equipment carefully. Supplies for each team will be put in a 5 gallon pail to include 2 smaller buckets, 2 nets, 2 plastic sorting trays, 3 tweezers, 2 eye droppers, one or two squirt bottles, an ice cube tray, clip board with pencil attached, datasheets for each site, a map, and pre-labeled jars with alcohol. A first aid kit will be given to the Team leader. All equipment will be stored at the St. Joseph County Conservation District storage closet.

- **D-frame nets**: inspected before and after sampling to look for any defects or tears. All nets hosed down after each use and before storing.
- **Collection jars**: All jars will be opened and closed to ensure tight fit. Fresh ethanol will be provided for each sampling team prior to collection event. Damaged jars will be disposed of and new purchased.
- **Forceps/tweezers**: will be cleaned and inspected to make sure the tips still are able to be used to pick bugs.
- **Sorting Trays**: inspected and washed to ensure ready to be used.
- **Buckets, ice cube trays and squirt bottles**: inspected for cracks and leaks.
- **Magnifiers/Scopes**: Will be cleaned and inspected to make sure they function properly
- **Waders and Life Jackets**: Waders and life jackets will be available to volunteers for collection events. They will be inspected for leaks and washed before storing.
- **First aid kit**: Each will contain a bandages, gauze tape and supplies for low risk injury.

## B3 Inspection/Acceptance for Supplies and Consumables

- **D-frame nets:** . Nets to be replaced when damaged or program grows and more are needed. 6 purchased June 2016 and 4 more in 2018. No new nets needed at this time
- **Collection jars:** 36 4oz jars and 24 2oz jars purchased June 2016, resupplied in 2018 and beyond as needed.
- **Forceps/tweezers**: 36 purchased June 2016. Replacements will be ordered when no longer functioning. So far we have not needed new tweezers.
- **Ethanol**: Purchased jug June 2018, replace when all consumed, However, Phifser Corp has provided us with extras in the past.
- **Sorting Trays**: 12 trays purchased June 2016. 6 more purchased in 2018 none needed at this time.
- **Buckets, ice cube trays and squirt bottles**: Obtained June 2016, many new squirt bottles needed in 2021, but will supply drinks to volunteers at training and recycle them for the program.
- **Waders and Life Jackets**: will be kept in the storage shed next to the SJCCD office and repurchased when needed. None needed at this time 2021.
- **First aid kit**: will be checked after each event to be restocked if needed.

Prior to event all data sheets will be printed and put onto the clip board for sampling event. All labels and any other material needed put into buckets for easy transportation.

**B4. Non-direct Measurements**

This section is not applicable to our project

**B5: Data Management**

Macroinvertebrate and habitat assessment data will be entered by either the Administrator or Program Coordinator in to MS Excel workbook for long-term storage. After each of the sampling events, all new data will be entered into the MiCorps data exchange system. Data sheets will be filed at the St. Joseph County Conservation District office for five years. After each event, any photographs and digital files will be stored on the SJCCD server and on a flash drive.

The final data will be shared on the SJCCD web page for others to view and get excited about joining the next round of sampling events.