

Organize your technical committee

1. List the members of your technical committee and their expertise. Write a job description of the roles and responsibilities of the technical committee members.

Why are you monitoring?

1. Provide background information on your stream: For example, describe the geography of your stream, where it begins, where it joins larger water bodies and other important characteristics of its watershed.
2. List (or map) the classifications, designated uses or other ecological values associated with your stream.
3. Describe the issues facing your stream posed by the threats or conflicts and what, if anything is being done to address them?
 - List the stream segments that do not support, or only partially support, their uses.
 - List the causes or reasons that specific stream segments do not support their uses.
 - List the protection or restoration efforts underway to address the problems.
 - List the information that you believe you will need to address the issues.

What will you monitor?

1. List the indicators you will use to monitor your stream.
2. Describe the significances of each indicator and how they will help answer your questions.

What are your data quality objectives?

1. List the intended uses and users of your information.
2. List your data quality objectives.
3. List your data quality requirements of the sampling and analysis of each indicator:
 - Accuracy is how close are your results are to the true values.
 - Precision is how close are your results are to each other.
 - Sensitivity is the smallest change or lowest concentration you seek to detect.

How will you monitor?

1. Describe how you will collect your samples. Note: If you are using a specific program (e.g. WV Save Our Streams) you will only need to reference the SOPs.
 - What will be sampled (e.g. the water, bottom sediment, aquatic life etc.)?
 - List the types of sampling containers and/or other equipment and devices to be used.
 - What quantity of sample(s) will be collected?
 - How many samples will your monitoring team collect at each location?
 - Provide a description of your procedures (reference a method if applicable).

Where will you monitor?

1. List the criteria you used to select sampling sites.
2. List each sampling site and the rationale for each one. This could be a table with the following column heading:

Monitoring study design

- Site “station” Number and/or name.
 - How the site be sampled (e.g. wading, from shore, by boat etc.).
 - Why the site is being monitored.
3. List where each indicator will be analyzed (field or lab etc.).

When will you monitor?

1. List the sampling and analysis dates for each type of sampling.
2. List the time of day each sample will be taken.
3. List the holding times for each type of sample.
4. Define your **index period** if collecting **benthics** etc.

Who will monitor?

1. List the paid and volunteer positions.
 - Title
 - Responsibility
 - Name, address, phone number, E-mail etc.

What are your QAQC measures?

1. List the quality assurance and quality control (QAQC) measures you will use:
 - External checks
 - Internal checks
2. Describe each one and how it will be carried out.

In certain circumstances your plan may need to be expanded to include a **Quality Assurance Project Plan** (QAPP). A QAPP integrates all technical and quality aspects of a project, including planning, implementation, and assessment. Note: An approved QAPP is required for all federally funded projects that require monitoring.

Put your plan in writing and review it annually

The members of your technical committee should complete the annual review with input from others, especially field personnel.

Resources

The Volunteer Monitor's Guide to Quality Assurance Project Plans, U.S. EPA, Document Number: 841-B-96-003, September 1996

https://www.epa.gov/sites/production/files/2015-06/documents/vol_qapp.pdf

EPA Requirements for Quality Assurance Project Plans for Environmental Data Operations (R-5), U.S. EPA, 2001

https://www.epa.gov/sites/production/files/2016-06/documents/r5-final_0.pdf

River Network: River Monitoring Study Design Workbook

<https://www.rivernetwork.org/resource/river-monitoring-study-design-workbook/>

ALLARM study design manual

http://www.dickinson.edu/download/downloads/id/7016/study_design_manual_2017pdf