

DESIGNING THE RIVER / STREAM STUDY Pat Tuite

Before a stream monitoring project begins, the committee should develop a plan that addresses the following questions. Considering these questions beforehand ensures that the data collected will meet the project's needs. The committee, which should include advisors and volunteers, should discuss these issues before the project starts. Keep in mind that the answers to these questions may change as the project progresses.

Establish a planning committee and put in place plans to collect data to suit stated objectives.

A planning committee ideally comprised of:

- study coordinator
- key volunteers
- scientific advisors
- project supporters
- data users

and investigates how to recruit volunteers and how to secure funding for the project.

Issues to be addressed in the stream study design.

WHY THE PROJECT?

- for the interest of the volunteers
- to develop stream baseline data
- to document water quality changes over time
- to determine the impact of sewage treatment facility and land use activity eg farming or forestry
- to educate the local community to encourage pollution prevention and environmental stewardship
- to show public officials that local citizens care about the condition and management of our water.

WHO WILL USE THE DATA?

- the volunteers themselves
- the local school
- local area water officials
- biologists and fisheries officials (depending on the quality and standards employed in data collected)

HOW WILL THE DATA BE USED?

- to educate the local school children and local citizens
- to publicize a water quality problem
- to establish a baseline (for further study) of the river condition
 - it's physical condition – catchment survey and habitat assessment
 - it's biological condition – macroinvertebrate content
 - it's chemical condition - water quality sampling

WHAT PARAMETERS OR CONDITIONS WILL BE MONITORED?

Depends on:

- needs of the data users
- intended use of the data
- resources of the volunteer programme

To establish a baseline characterisation of the stream the physical, chemical and biological parameters are integrated at the appropriate level of expertise.

HOW GOOD DOES THE MONITORING DATA NEED TO BE?

In our case, at this preliminary stage of the stream monitoring project, the quality of the data is secondary to the actual process of collecting it, the initial focus being on the overall training of volunteers and educational aspects of the project.

WHAT METHODS SHOULD BE USED?

The methods used by a volunteering programme will depend on how the data will be used.

Sampling considerations:

- how samples will be collected
- what sampling equipment will be used
- what equipment preparation methods are necessary
- what protocols will be followed.

Analytical considerations:

- macroinvertebrate identification – in the field or in the laboratory
- will colour charts provide adequate nitrate and phosphate data
- are visual observations and habitat assessment adequate

Projects with an educational focus can often use less sensitive equipment and less sophisticated methods to meet their goals.

WHERE ARE THE MONITORING SITES?

The monitoring sites are chosen for:

- accessibility
- proximity
- located in problem areas
- value to potential data users

If possible select a site close to a professionally monitored site to compare the quality of the volunteered collected data. The monitoring programme will need to maintain the same site over time.

If the project is providing baseline data to characterize the stream or to determine whether a particular activity or source of pollution is having an impact:

- monitor a number of sites representing a range of conditions in the stream
- monitor conditions above and below agricultural areas, sewage treatment plants and other potential sources of pollution.

Before selecting monitoring sites:

- are other groups monitoring the site
- identify the sites on a map, by latitude and longitude, and on the ground
- is the site representative of the catchments does it have water during the times of the year that monitoring takes place
- is there safe and convenient access to the site
- is the site far enough downstream of drains or tributaries
- can all the tests be performed at the site
- have enough sites been selected for the study objective.

WHEN WILL MONITORING OCCUR?

Biological sampling should be conducted at the same time each year as natural variations in insect populations and stream side vegetation changes as seasons change. Monitoring at the same time of day and at regular intervals helps ensure comparability of data over time.

The sampling programme should specify:

- what time of day is best for sampling
- what time of year is best for sampling
- frequency of sampling.

HOW WILL MONITORING DATA BE MANAGED AND PRESENTED?

Decide how to present the results to different groups/audiences:

- prepare a clear plan for dealing with the data collected each year
- field data sheets (and laboratory data sheets if appropriate) should be checked for completion
- data should be screened for outliers
- a data base should be developed or adapted to store and manage the data.

HOW WILL THE PROJECT ENSURE THE DATA IS CREDIBLE?

To ensure the data collected is credible:

- prepare a quality assurance project plan which can be simple or elaborate and documents how data are to be generated
- define specific answers and procedures to address the questions above
- properly train, test and retrain volunteers
- evaluate the project's success after the pilot stage and make any necessary adjustments
- assign specific tasks to qualified individuals on the team
- document in a written plan all the steps to be taken to sample, analyse, store, manage and present data

The written plan to include at an appropriate level of detail:

- sampling procedures
- analytical method details
- site selection details
- test parameters
- project goals
- data quality considerations