



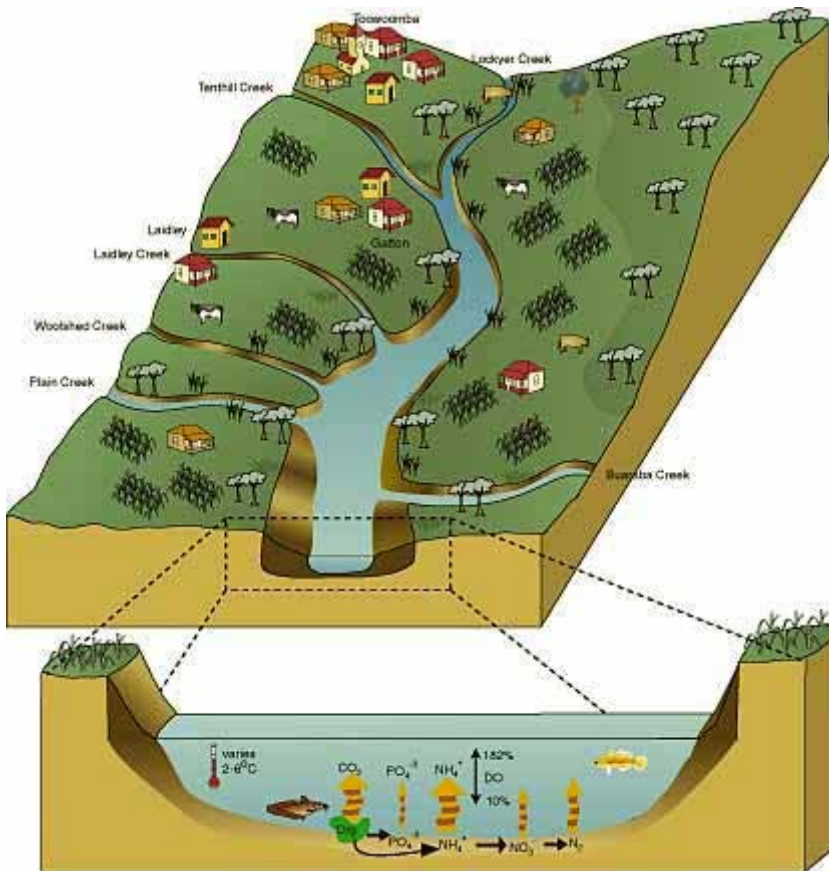
Monitoring our waterways

Water is our most valuable renewable resource. The effect of our activities on Queensland's surface and ground water resources should be of major concern to us all. Changes in land management practices have sometimes resulted in a decline in water quality. Clearing of vegetation and industrial, urban and rural development have affected the physical, chemical and biological characteristics of our waters.

Water courses contain messages about how well we are looking after our country. These messages remind us that everything we do will be reflected in the waters of our catchment. To read these messages we must monitor the parts of the system that will help us understand river health and our impacts on it.

water quality sampling

Base-flow sampling describes the physio-chemical parameters (e.g. nutrients and sediment loads, pH, salinity level, dissolved oxygen concentration) that are most commonly measured when assessing a waterway. Measuring these sorts of parameters allows us to determine what sorts of chemicals are entering our waterway, and provides insight into potential problems that may occur or the reason for existing problems. For example, if nutrient loads are high we might predict that an algal bloom is likely to occur.



Flood event sampling combined with flow estimates assesses the export of soil, nutrients and contaminants from a catchment, representing asset losses and threats to downstream environments or users.

Figure 1: Stream monitoring perspective (SEQ Waterwatch)

water bug sampling

The quality of the water and of the habitat determines the diversity and abundance of species that will be found in a stream. Consequently examining what species and how many are found in a waterway can provide an excellent indication of overall condition. This sort of test is called a biological, or 'water bug' assessment, and helps to carry out a biological assessment using freshwater macro-invertebrates.



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stream habitat assessment

A stream habitat assessment involves visually assessing the quality and extent of riparian and in-stream habitat. This is achieved by looking at riparian vegetation presence and structural diversity, whether it is dominated by native species or exotics, bed and bank stability and the amount of food and shelter available to aquatic organisms.

planning for sampling

Before undertaking any field sampling, the purpose and process should be assessed and understood. It is not necessarily the task of the sampler to design a sampling program, but awareness of the purpose will help to ensure the samples fulfill the needs of the program.

Stream sampling purpose

The purpose of any particular stream sampling task may have one or more of the following purposes:

- Engagement – evoke an interest in the stream condition by land users, industry or other stakeholder groups
- Education – raise the awareness of the stream condition, impact of land use and of the physical and biological science associated with riverine environments
- Indication of condition or trend – general indication of the health of the stream or the suitability of water for a particular use and coarse measure of the trend of the stream health and/or water quality
- Scientific measure of condition or trend – thorough measure of stream condition or water quality for reporting and for definite trend identification.

Stream sampling process

From the design purpose, a sampling process should be available for sampler reference. The nature and detail of the process may vary according to the purpose, but the sampler needs to understand at the outset:

- What is to be sampled – water quality, stream biota or riparian condition?
- Where is the sampling to be undertaken?
- How – which parameters are to be assessed and what equipment or sample process is to be used to evaluate these parameters?

This information should be contained in a sampling procedure for use prior to deployment onsite. From the nominated sampling program and procedure the sampler will need to ensure the suitability of equipment and personnel involved in the sampling.

For more information, or to get involved in a volunteer stream monitoring program for enhanced natural resource assessment and management, contact your local Landcare Co-ordinator or QMDC Water Quality Officer.

references

Border Rivers Waterwatch CD (2004), Border Rivers Catchment Centre, Waggamba Square, Goondiwindi.

QMDC Community Monitoring Manual (2005), Landcare Discovery Centre, Campbell St, Toowoomba.

Waterwatch Queensland <http://www.qld.waterwatch.org.au/index.html> accessed February 2006.