

TESTING THE WATER

Why test?

Sid and its tributaries:

- Provide habitat for many different animal species living in, on and around the water. From fish to mayfly nymphs, from water measurers to dippers, from otters to kingfishers.
- Sustain aquatic plants and bankside herbaceous plants and trees
- Create wild life corridors
- Cater for our health and well being
- Healthy rivers reflect a healthy landscape
- With decreasing frequency of statutory sampling, it is becoming more important for us to look out for our rivers.

How healthy is our river?

A group of volunteers are finding out, supported by the West Country Rivers Trust [WRT], who organise this citizen science project across the SW Region. <https://wrt.org.uk>



Sid catchment sampling sites

- 1 Plyford**
- 2 Roncombe Stream**
- 3 Lincombe Stream**
- 4 Sid at Sidbury**
- 5 Snod Brook Harcombe**
- 6 Snod Brook Sidford**
- 7 Burscombe Brook**
- 8 Sid at Sidford bridge**
- 9 Woolbrook at Stowford**
- 10 Woolbrook at Lymebourne**
- 11 Sid at school weir**
- 12 Bickwell Brook at Broadway**
- 13 Bickwell Brook at Glen Goyle**
- 14 Fortescue**

9 volunteers monitor monthly in over 13 locations across the valley.

We will also survey Salcombe Regis Mouth and Weston Mouth, streams to the east of the Sid Valley, but within the Sidmouth political area.

What do we record?

- General characteristics of the river channel: width, water depth,
- Rate of river flow,
- Character of the river bottom
- Land use on the adjacent banks
- Invasive species such as Himalayan balsam and Japanese Knotweed.
- Visible wild life present in and around the water e.g. wagtails, dippers, kingfishers, water measurers, fish perhaps even otters.

We carry out 4 water tests

1. Water Temperature

- Changes with the seasons. Sid catchment range is 6C – 16C approximately.
- Temperature affects growth rate and speed of movement of invertebrates
- Colder water holds more oxygen River Sid water flows over uneven stony ground and weirs so air mixes with the water regardless of temperature.
- Toxic chemicals e.g. cadmium zinc and lead dissolve more easily in warmer water
- Aquatic creatures are less able to withstand the effect of poisons if the water temperature is higher.
- In the long term our data may reveal the effect of climate change

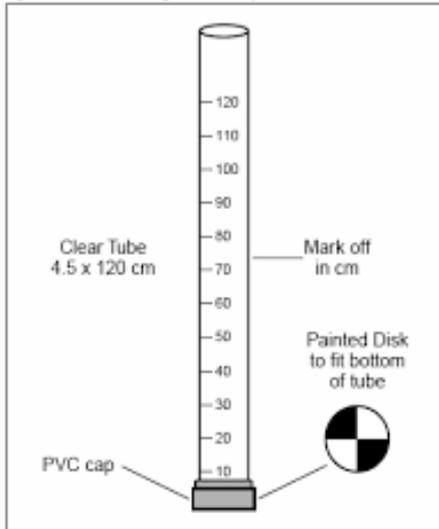
2. Water clarity [Turbidity] A measure of mud in the water

- In good weather the Sid is very clear
- After rainfall brown soil muddies the water
- After heavy rainfall, red soil from our hillsides flows into the river and on to the sea. Our life's blood, the soil which sustains us, is draining away. This is not sustainable
- Mud in the water - less light reaches aquatic plants
- Mud on the river bottom smothers the gravel, which is home to many aquatic insects and where fish lay their eggs.

How do we test?

We look down through the water sample in a measuring cylinder at a secchi disc [20 cm disc with alternating black and white quadrants] placed at the bottom. The muddier the water the lower the volume of water needed to hide the disc.

Figure HYD-P-2: Making the Turbidity Tube



3. Dissolved chemicals [Total Dissolved Solids - TDS]

Natural sources: calcium, magnesium and potassium from rocks & soil through which water has flowed to reach the river.

Man made sources:

farm run off from fertilisers, pesticides, herbicides

urban run off - pollutants from vehicles, [oil, fuel, brakes, tyres and road abrasion], garden chemicals and corroded metals

How do we test? With a TDS meter which also measures temperature



Water is a poor conductor of electricity but the majority of particles dissolved in water carry a positive or negative charge and enable the water to conduct an electric current. This is measured in ppm [parts per million] giving an approximate value [to an accuracy within 10%.]

The TDS in rainwater falling on 28/9/21 was 12ppm. Sid Lane tap water is 220ppm [150 - 250ppm is rated as good drinking water]

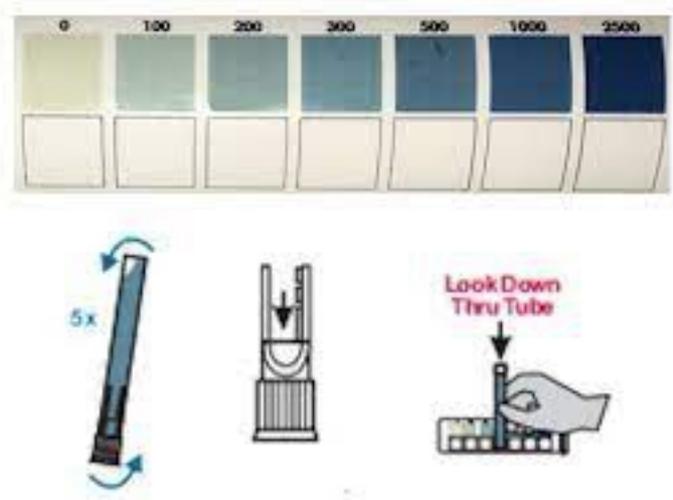
Readings for the Sid catchment vary from 55ppm at Plyford, [Sampling site 1 see p1], to up to 280ppm in the lower Sid and its tributaries.

4. Phosphates

- Essential for plant and animal growth
- Human activities can add unwelcome amounts to the environment.
- Algae respond with rapid growth and in still water areas this prevents light reaching aquatic plants.
- Oxygen levels are lowered - bad news for fish and most aquatic invertebrates.
- One of the main sources in the Sid Valley is fertilisers and slurry run off from farms. Good land management can make a difference.

How to we test?

Using a phosphate indicator strip and a colour chart. The indicator strip is put into a tiny test tube with the water sample and turned up and down 5 times. The indicator strip turns blue. The shade will vary according to the amount of phosphates present.



To date, Phosphate values range from 0 to 300 ppb [parts per billion].
0 - 100ppb OK, 200 - 300ppb high, 500ppb - 2500ppb too high

If water is very polluted the WRT can provide further tests for ammonia and nitrates.

For more on the River Sid and other projects visit :

<https://sidvalleybiodiversity.org.uk/category/rivers/>