

CSI Survey Form Guide

SURVEY DETAILS

It is important to know where you are! Make sure you have a national grid reference (NGR) a stream/river name and location (e.g. River Strat at Helebridge) which stays the same every time you survey at that point. Take advantage of the 'copy survey' button at the top of your old survey in Cartographer to save you inputting the same information every time.

Type of waterbody

There is no clear definition between a river and a stream, or lake and pond, except that rivers and lakes are the larger of the two! Unless otherwise known, use your judgement.

Pictures

It's great to have pictures to illustrate your survey. One of them should be a fixed-point photograph. The other pictures could be of unusual or unknown qualities, pollution or wildlife. If you do see something you are not sure of, whether that be physical or biological, please let us know and we can help you identify it.

GENERAL ECOSYSTEM OBSERVATIONS

Dominant land use within ~50m

You can select multiple land use if it is different for each bank.



Woodland



Moorland/Heath



Urban/Residential



Industrial/Commercial



Parklands/Gardens



Grassland/Pasture



Agriculture (Crops)



Tilled Land (Ploughed)

Dominant Bankside Vegetation

You can check multiple types. If not on this list, check 'other' and write a note.



Trees/Shrubs



Grass



None (impermeable surface)



None (bare earth)

Problem Plant Species

You can check multiple species. If not on this list, check 'other' and write a note.



Himalayan Balsam



Japanese Knotweed



Giant Hogweed



Curly Waterweed



American Skunk Cabbage



Floating Pennywort

Wildlife Spotted

These are just some of the potential wildlife you could spot along your watercourse. You can check multiple species. If you see anything not on the list, please select 'other' and write a note.



Otter



Mink



Water Vole



Kingfisher



Grey Wagtail



Heron



Damselflies/Dragonflies



Fish



Dipper

Pictures courtesy of Cornwall Wildlife Trust <https://www.cornwallwildlifetrust.org.uk/wildlife-explorer>

EVIDENCE OF POLLUTION

Pollution Sources

Please only tick if you can see pollution at the time of the survey. If you see anything not on the list, please select 'other' and write a note.



Active outfall(s)



Inactive outfall(s)



Outfall causing discolouration



Outfall causing odour



Farm run-off (slurry/silage)



Grey water (misconnection)



Cattle/stock access to river



Collapsed river bank



Soil runoff



Road runoff

The pictures represent the more obvious depiction of these pollution sources. You may see evidence that is less clear. Please take a picture and use the notes section at the end of the form if you are unsure of anything you see.

Evidence of Recent Pollution

You may not witness pollution running into the river directly, but generally it does leave behind evidence which can be noted in this section.



Sewage fungus



Oily sheen



Sewage-related litter



Smothering algae



Unpleasant odour



Litter/fly-tipping



Foam

RIVER CHANNEL OBSERVATIONS

Channel Dimensions

Estimating the width and depth of your watercourse can be done by eye (this is the safe option particularly if it is wide and/or fast flowing).

To get an accurate depth measurement, divide the channel into thirds and take an estimated measurement from each section which you can then average for the whole channel. Channel dimensions and flow help us to contextualise the water quality results.



Flow Conditions

The more surveys you do, the better you will get to know your watercourse and its different flow conditions. You can estimate flow by walking alongside the watercourse checking to see if it is running faster, slower or at the same speed as your walk. Here are examples of larger rivers in different states, it may be very different conditions at your site.



Surging



Steady



Slow



Still

Obstacles to fish or flow

These should be noted if they are within 50m of the sample site.



Weir



Fallen/submerged tree



Debris Dam



Bridge/Culvert (with Step)

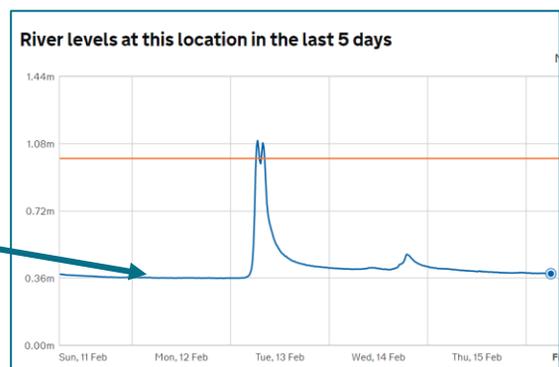
Water Level

Once again, the more surveys you do on your watercourse the better you will understand the different levels. Have a look at the debris line to get an idea of how high the river/stream gets too. Have a look to see if the Environment Agency river level data covers your sample point.



Debris line

Base flow



Predominant Substrate

Tick one that dominates the waterbody bed. If you can't see the bottom, tick not visible.



Boulders >25 cm



Stones 25 cm- 6 cm



Gravel 4 mm – 6 cm



Sand up to 2 mm



Bedrock



Artificial



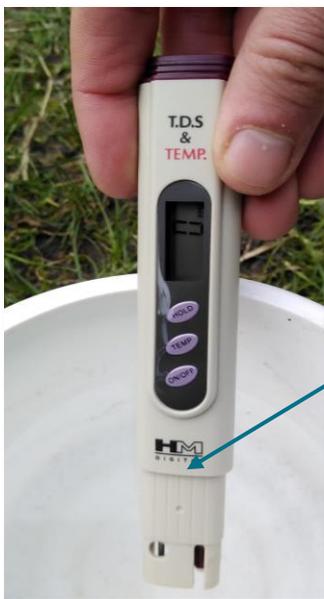
Not visible

Water Quality Observations

Temperature is a vital parameter within the river ecosystem. It controls many of the aquatic species life cycles. Temperature fluctuates with the seasons; however, you do get variation within that, particularly in small rivers and streams. Another important reason to measure temperature is to track the impact of our warming climate on our waterbodies.

Total Dissolved Solids (TDS) is directly related to the conductivity of the water. The more minerals, salts and metals that are dissolved in the water the more conductive it gets.

Low levels of dissolved solids in waters such as those on Dartmoor near to the source of the river, are a result of very low levels of input from the surrounding landscape. As the river runs down to the sea it collects material from many different inputs, some natural and some man-made such as farms, sewage plants, factories and residential areas. This typically increases the amount of solids dissolved in the water leading to a higher reading. Harmful pollution from things like sewage, slurry and factory discharge will usually elevate your TDS reading. However, some pollutants such as oil can lower conductivity, therefore it should be used as a general indicator of water quality - not a specific measure of toxicity. Geology will influence the normal level of conductivity in a watercourse (e.g. Areas dominated by granite generally give a lower conductivity than those with limestone). Regular monitoring will allow the detection of changes in conductivity which can indicate pollution.



The TDS meter measures both temperature and dissolved solids. Ensure you are measuring in ppm and °C. This can be changed by pressing the shift button until it matches up.

Hold the meter in your sample (ensuring the water does not go above the lid line) until it has stabilised, then copy the readings onto the form. You can use the hold button if you are struggling to read off the meter and keep it in the water.

Turbidity tube is a measure of the optical clarity of the water. The more suspended particles in the water the lower the clarity and the higher the turbidity. You will often find your waterbody gets more turbid after heavy rainfall due to soil running off the fields and sediment being mixed into the water column. This loss of topsoil is both a problem for farmer and river. It can often contain chemicals from the fertiliser and pesticides used on the land. An increase in sediment level on the substrate of the river can cause smothering of habitat by removing light and oxygen.

Aquatic wildlife such as the less mobile invertebrates and fish eggs struggle to survive in low oxygen conditions and without light, plants are unable to grow. It is a good idea to sample your river after different weather conditions to understand how it responds to rainfall or drought.



Fill the turbidity tube (slowly to avoid bubbles) until you can no longer see the secchi disc (the black and white disc at the bottom of the tube).

Read off the number from the side of the tube. That will give you your turbidity in NTU (Nephelometric Turbidity Units).

If it is clear to the top enter the value as <math><12</math>. If the sample is very turbid and does not reach the values, record it as >240.



Phosphate occurs naturally within the river ecosystem, but in very low levels under 0.05 mg/l. Therefore, higher levels may indicate anthropogenic input. Phosphate is found in animal and human waste, cleaning chemicals, industrial runoff and fertiliser so this can be a good indicator of pollution. Having raised levels of phosphate can lead to increases in plant growth within the watercourse. This leads to a depletion of oxygen due to the plant's aerobic respiration during the night. Without oxygen aquatic species cannot survive and the river ecosystem collapses. (It is important to note that phosphate is taken up by plants. You may get a low reading but high plant growth, indicating eutrophication.)



Remove a phosphate strip, taking care not to get the other strips wet or allow moisture into the tube.

Hold the strip where the pads are absent and fold it so it can be inserted into the lid of the test tube.

Fill the test tube with 10ml of water from the syringe. Insert the cap with the strip and invert 5 times.

Look down the test tube to compare colours from the chart.

