



TRAINING CARD: WATER CLARITY



A participatory approach to water quality monitoring Measuring water clarity using the OPALOMETER

Water quality monitoring – appreciating the physical, chemical and biological characteristics of our ditches, streams, rivers and lakes.



What do you mean by water clarity?

Water clarity is one way of describing the physical properties of a water body. **It is essentially a measure of how much light can pass through water**, therefore it is used to describe the cloudiness of a water body. It is usually affected by how much suspended or dissolved substances are in the water. This may include small sediment particles such as silt and clay, algae (green organisms) and bits of vegetation which will change the colour of the water. Water clarity is also closely associated with ‘turbidity’ measurements too.



Why monitor water clarity?

Low water clarity values mean that low levels of light will pass through the water. In turn, this affects plants and animals. If we monitor water clarity across the catchment and on a regular basis, we can:

- Identify pollution sources and pathways;
- Assume that other parameters are also low or high e.g. temperature or dissolved oxygen levels;
- See how levels vary following periods or prolonged or heavy rainfall;
- Monitor before, during and after the implementation of catchment management measures which are designed to increase water clarity levels.



What equipment do I need?

You will need to **visually observe** water clarity using an **OPALOMETER** which you can make yourself. Please refer to the next page of this training card for further instructions.



How often should I observe water clarity?

It is desirable to make an observation at least once a week or once a month at each location you are monitoring. Make a note of the date and time on your monitoring sheet. Extra observations before, during and after rainfall events are also extremely useful too!



Did you know that the OPALOMETER was created and is currently used by the OPAL citizen science project. There are many different OPAL surveys which members of the public can get involved with. For more information, visit <http://www.opalexplornature.org/surveys>

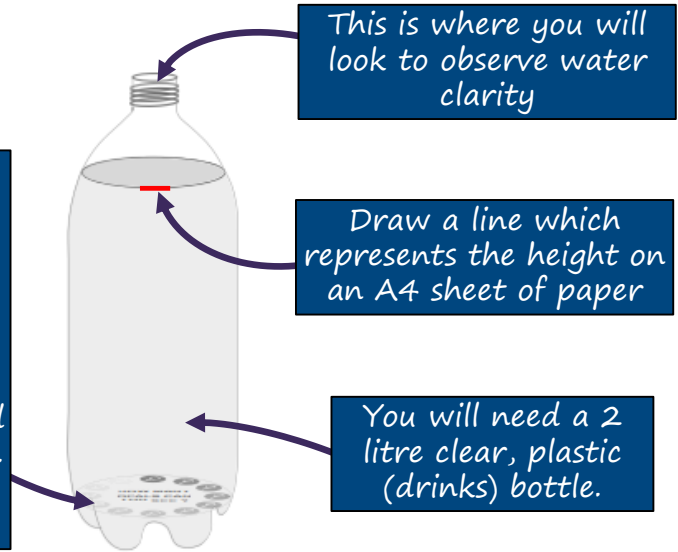


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How do I make an OPALOMETER?

Print out the OPALOMETER disks provided on the last page of this training card. Cut one disk out, laminate it (or cover in clear tape), tape a 1p coin to the back of the disk, roll it up and push it through the bottle. Ensure it is the right way up! The OPAL logos are shaded to represent the water clarity scale. They have been calibrated to help interpret your results.



OPALOMETER source: www.OPALexploreNature.org

How do I use the OPALOMETER?

Find a suitable location along the watercourse or lake where you can easily access the water from the bank. Fill the OPALOMETER bottle with water from the ditch, stream, river or lake you are monitoring to the height of an A4 sheet of paper (the line you have marked on the bottle). Look in through the top of the bottle and count the number of OPAL logos you can see around the outside the disk (there are 12 in total). Log this down on your monitoring sheet, along with the date, time, location and any other visual observations (e.g. water colour and weather conditions). It is important to look through the top of the bottle as you will get different results if you look from the bottom.

Tips – before sampling, rinse the bottle with stream water. When trying to find a suitable location to take sample, ensure it is a ‘representable location’ i.e. it represents that particular stretch or location of the water body. You can also repeat your observation three times and record an average value to increase the accuracy and precision of your results.

Do I need to maintain my OPALOMETER?

Just ensure that the OPALOMETER disk is clear / clean and it is still waterproof. The simple and low cost design of the OPALOMETER means that you can replace it when ever you feel you need to.



Important Please take care when sampling water, especially if the stream or river is fast flowing. You do not need to stand in the water to take a sample – take it from the bankside. Do not put yourself in any danger! If possible, work in pairs.



Where should I monitor water clarity?

There are no specific monitoring locations – it depends on your own ability to reach the same location each time you are observing water clarity. Think about what your normal walking route would be – can you tie it in with this? Please also remember that you need to be able to access the burns easily and from a footpath. Two suggestions include:



Red Burn Culvert area:
downstream of the trash screens but upstream of the road culverts, near Crossbank View.



Birkey Burn Allotments:
by the footbridge which leads to the allotment gardens, at the bottom of Garden House Bank.

Click on the coloured dots to view exact locations on Google Maps (internet required)



How do I submit my results and how often?

It is suggested that you record your weekly/monthly observations each time and submit a monitoring sheet at the end of each month to the shared Dropbox folder. You could also try using Twitter or the Android app to submit your data as soon as you have taken a reading so the community can benefit from this information. You can also submit your observations using the ‘Red Burn Citizen Science’ webpage here: <http://bit.do/redburn-submit> if you prefer. Remember... Your observation should always be accompanied by a date, time and location.


#WaterQuality
@RedBurnAcomb

Why not also take a picture of yourself monitoring and tweet it to [@RedBurnAcomb](https://twitter.com/RedBurnAcomb) with the hashtags #WaterQuality and #RedBurn or #BirkeyBurn.



An example and suggested water clarity monitoring sheet..

OBSERVERS NAME: J. HALL				
LOCATION: Birkey Burn Allotment Footbridge, Garden House Bank, Acomb.			GRID REFERENCE: (http://gridreferencefinder.com/) 392928 565946	
OBSERVATION DATE (DD/MM/YYYY)	TIME OF OBSERVATION (24HR CLOCK)	HOW MANY OPALS CAN YOU SEE (AVERAGE OF 3 TESTS)?	BRIEF WEATHER DESCRIPTION (PAST 24 HRS)	NOTES (VISUAL OBSERVATION)
01/04/2015	15:00	5	Heavy rain over night	Opaque – dark brown
08/04/2015	15:00	9	Reasonably dry, mild	Clear – very good light penetration

For further support and guidance please contact Action 4 Acomb – contact details can be found on the website: <http://www.action4acomb.co.uk/>

Spare OPALOMETER
Disks

