Discrete Water Quality – Turbidity Grab Sampling

1. Overview:

The primary purpose of Environmental Data (ED) installed turbidity sensors is to provide either a continuous record of water turbidity or a surrogate measurement to generate a continuous record of suspended sediment concentration. This data can subsequently be used to calculate sediment load. Additional laboratory analysed sediment samples can be used to validate said sensors and to build a relationship with continuous turbidity to generate the continuous suspended sediment results.

Horizons turbidity sensor equipped ED sites are also all located at SOE sampling sites in which the full suite of sediment parameter are taken as part of the monthly sampling regime. It should however be noted that the SOE sampling sites do not necessarily correspond to samples taken by the turbidity sensor as this is not their primary function, but can serve as providing additional validation data.

This document shall outline turbidity grab sample procedures and provide a link to the existing turbidity validation sampling procedures within one location. Autosampler use is covered in a separate SOP: Sampling Procedures - Autosampler whilst Depth Integrated Sampling is also covered in its own SOP: Sediment Gauging.

Further information can be found within the: ELS Bottle Guide; Parameter Guide and Sampling Procedures – Surface Water Grab Sampling

2. Turbidity Grab Samples:

During high flow events additional turbidity grab samples are of value to the ED Turbidity Programme. Samples should be collected as safely and as closely to the turbidity sensor as possible. If the sample site has no turbidity sensor the sample should be taken from a safe, representative section of the flow. It is recognised that in many cases this will be difficult to achieve at high flows, and that staff safety is the priority. Staff are expected to use appropriate PPE and sample poles.

When collecting the sample:

- Be aware and avoid turbidity gradients between the sampling location and the in-situ sensor (if possible).
- Record the sampling location/date/time
- Take a photo of the conditions and record any comments*

** Good record keeping to explain any unexpected or dubious results is of significant importance, particularly in higher flow events.*

Turbidity Grab Samples: Bottle Set

	
1L Chemistry bottle	**500ml Chemistry Bottle**

Turbidity Grab Samples: Test Suite

IR Turb - FNU
IR Turb - NTU
Turbidity NTU
Total Suspended Solids [TSS]
Volatile Suspended Solids [VSS]
Suspended Sediment Concentration [SSC]

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The turbidity grab sample requires a 1Litre and a 500ml sample bottle, both needing to be filled directly (and therefore independently). Fill the one litre sample bottle first followed by the 500ml bottle with as little time between each as possible. In lieu of sample labels record the sample location, date and time directly on the bottles with a sharpie. Pay particular attention to ensuring homogeneity for both bottles as the results between each bottle are closely related. Always have spare bottles to hand to cover any loss during sampling.

3. Turbidity Validation Samples:

The rationale and requirements for validation samples are fully covered here: Cleaning Turbidity Sensor: Validation Sample

4. Hilltop Sampler and Paperwork:

Typically when taking turbidity samples the number of samples to be collected may not be known before leaving the office. As such the sample run in Hilltop Sampler can be created upon your return to the office.

Upon return to the office:

- Retrospectively create a run in sampler as per this SOP: Hilltop Sampler - How to make a run. Note that further training from the Discrete WQ Portfolio Holder is available.
- Complete the paperwork as normal and label the samples.
- Follow courier procedures as per: Sample Delivery Procedures
- Follow paperwork procedures as per: Paperwork Procedures