

## **TTS Conditions**

**Revised: 10/30/2002**

### **Baseflow**

This condition occurs when the stage is less than the minimum stage (*min\_stg*). Minimum stage is the lowest stage where both the turbidity probe and sampler intake are adequately submerged and functional. No pump sampling takes place in this mode.

### **Rising Turbidity**

A start-up sample is collected at the first interval above minimum stage, if the turbidity is also above the first threshold, and no rising thresholds have been sampled within the past 3 hours. The turbidity condition becomes rising at the first interval above baseflow. For sampling to occur when turbidity is rising, the current turbidity must be equal to, or greater than, the next rising threshold for 2 (*stay*) intervals.

### **Turbidity Reversal**

A turbidity reversal occurs when the turbidity has changed direction for 2 intervals, and has dropped 10% (*revpct1*) from the prior peak or risen 20% (*revpct2*) from the prior trough, and changed least 5 NTUs (*rev\_val*) in both cases. A sample is collected if a threshold has been crossed since the previous peak or trough.

### **Falling Turbidity**

For sampling to occur when turbidity is falling, the current turbidity must be less than, or equal to, the next falling threshold for 2 intervals.

### **Repeat Sampling**

When sampling conditions for a threshold are otherwise met, a sample will not be collected if that same threshold was sampled within the past 8 (*rep\_wait*) intervals.

### **Overflow**

Turbidity sensor output exceeds the data logger's millivolt limit setting (*mv\_limit*) for the OBS-3 or NTU limit (*ntu\_limit*) for the DTS-12. In this mode, 2 (*lim\_skip*) intervals will be skipped between each sampled interval.

## **TTS Definitions**

### **Threshold count** (*thr\_count*):

- 0      Awaiting next threshold
- 1      First interval above next threshold
- 2      Second interval above next threshold, sample is collected if other threshold conditions are met

### **Reversal count** (*rev\_count*)

- 0      Awaiting change in turbidity condition
- 1      First interval after a change in turbidity magnitude
- 2      Sample is collected if other reversal conditions are met

**Threshold code (thr\_code)**

- 0 Baseflow
- 1 Rising turbidity
- 2 Falling turbidity
- 3 Unknown turbidity, not yet defined as rising or falling

**Sampling code (smp\_code)**

- 0 No sample collected
- 1 Threshold sample
- 2 Depth-integrated sample (DI)
- 3 Auxiliary sample (AUX)
- 4 Start-up sample
- 5 Overflow sample, turbidity above maximum; samples every third interval

To determine that a sample will not be collected during a wakeup (if the data dump flag has been set and the sampler base will be removed) make sure that in the numeric window both the thr\_count = 0 and rev\_count = 0, and that the stage is not about to emerge from baseflow.

**TTS data logger record example:**

201,2002,352,1040,6,2,1,1,1.56,283,7.67,7.68,12.22,0.03

site id, year, julian day, time, dump number, bottle number, threshold code, sample code, stage, turbidity, *DTS-12 temperature*, *water temperature*, *air temperature*, *rainfall* (optional sensor connections)

**TTS Default Turbidity Thresholds**

Rising Thresholds	Falling Thresholds
0	1900
20	1698
77	1507
170	1328
300	1160
467	1004
910	858
820	724
1187	602
1500	491
1850	391
9999 (over-range)	302
	225
	159
	105
	62
	30