

Taking Measurements of a Maturing Stream

Purposes Identify changes in a stream, make important measurements needed to understand streams better, determine riparian uses based on stream changes.

Supplies

Data table (Hubbard Scientific, Chart 3, Page 7)

Yardstick & Ruler (with markings starting and ending at the edges)

String & Styrofoam pieces

Protractor (plastic with markings on the bottom/flat edge)

Triangle markers or six-inch ruler

Stopwatch

1. Start with a dry level sand table (2-3 inches thick) then crank it up to a low slope ($\frac{1}{2}$ " - $\frac{3}{4}$ " probably about a 1% slope).
2. Cut an "old" stream with a meandering pattern and one bend curving upstream.
3. Measure its length with a string and ruler/tape measure. Draw the shape.
4. Find two cross-sections to measure—avoid first bend; use triangle markers lengthwise as benchmark. Measure depth, width and the right bank angle.
5. Turn on moderate flow (1/2 way) and when the water reaches the end of the channel, start the 2-minute time interval.
6. Unplug pump at 2 minutes & take the same measurements as before. Draw the shape.
7. Run another 5 minutes maximum or until the meander breaks through. Measure and draw its shape.
8. Take a velocity measurement using the stopwatch, string (measures length of channel), yardstick (measures string) and a piece of Styrofoam. $D/T=V$

Based on your observations and measurements, answer the following questions:

- a) What is a good indication that the originally carved channel was too narrow/too wide?
- b) Rivers are often used as political boundaries. Why is this not a good idea, esp. in the case of a fully mature stream?
- c) If you were going to buy property and two identical lots were offered, one on the inside of a meander and one on the outside, which would you invest your money in? Why?
- d) What land uses are best suited adjacent streams and stream corridors? Why?
- e) What careers are *involved* in taking flow, channel movement and similar measurements? What careers *use* this type of information?

HIGH
END

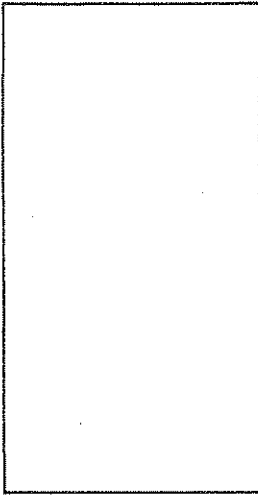


DIAGRAM 3.1

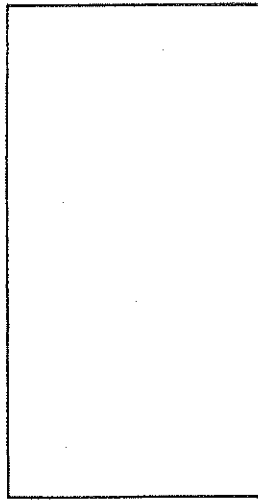


DIAGRAM 3.2

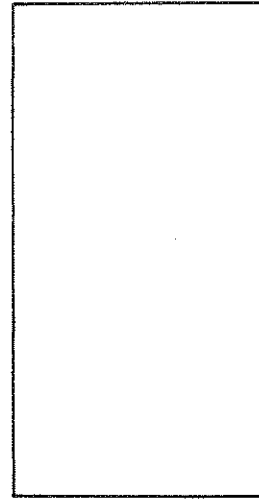


DIAGRAM 3.3

LOW
END

	SEC. REQ. FOR CORK TO GO 1 M.	STREAM VELOCITY CM./SEC.		WIDTH (CM.)	DEPTH (CM.)	LENGTH (CM.)	VALLEY SIDE ANGLE
READING NO. 1			BEFORE STARTING				
READING NO. 2			AFTER 2 MINUTES				
READING NO. 3			AFTER CUTOFF				
AVERAGE READING							

CHART 3

Questions

1. From your observation of the stream table, what is a good indication that the valley width, as originally carved, was too narrow?

2. Occasionally, small eddies may be found in the bends of a meandering stream. Why don't these develop potholes in the stream channel?

