

St. Louis River - River Watch Discharge Calculations

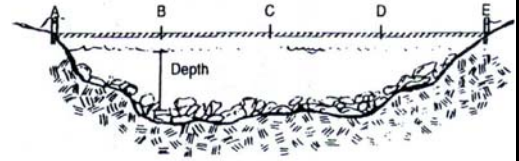
Fall 2003

School Name _____ Site Name _____ Date _____

Where

$$\text{DISCHARGE} = \frac{A L C}{T}$$

A = Avg. cross sectional area of stream **C** = Coefficient or correction factor
L = Length of stream reach measured **T** = Time for float to travel length L



"A" AVERAGE CROSS-SECTIONAL AREA

Transect #1 (upstream)

Stream width (ft):

Interval Depth (inches)

A to B _____ (at B)

B to C _____ (at C)

C to D _____ (at D)

D to E 0 (at shoreline)

Total _____ ÷ 4 = _____ ÷ 12 = Average depth (ft)
Convert to ft.

Transect #2 (downstream)

Stream width (ft):

Interval Depth (inches)

A to B _____ (at B)

B to C _____ (at C)

C to D _____ (at D)

D to E 0 (at shoreline)

Total _____ ÷ 4 = _____ ÷ 12 = Average depth (ft)
Convert to ft.

Cross-sectional area of Transect #1:

x = ft²
Width (ft) Avg. depth (ft) (a)

Cross-sectional area of Transect #2:

x = ft²
Width (ft) Avg. depth (ft) (b)

Average Cross-sectional Area:

(a) + (b) = _____ ÷ 2 = (A) ft²

"L" LENGTH OF STREAM REACH (usually 20 ft.)

ft
(L)

"T" TRAVEL TIME FROM TRANSECT #1 TO #2

travel time of float

Trial #1 _____ sec.

Trial #2 _____ sec.

Trial #3 _____ sec.

Total _____ ÷ 3 = Avg. time (sec.)
(T)

"C" COEFFICIENT

0.8 for rocky-bottom streams

0.9 for soft-bottom streams

(C)

Discharge =
$$\frac{\text{[A]} \times \text{[L]} \times \text{[C]}}{\text{[T]}} = \text{[Discharge]} \text{ ft}^3/\text{sec}$$