STREAM DISCHARGE DATA SHEET

Complete this data sheet and keep for your records. (*) fields are required. Submit data online at mostreamteam.org

*Site #:	*State:	*County:	Trib of ☐ *Stream Name:
*Site Description:			
*Data Submitter:		*Stream Team:	
*Sampling Date:		*Time (Military Time):	
Number of Participants:	Rainfall (inches in the last 7 days):		Water Temp in shade (°C):

***Collection Type** (select one)

☐ Gathered using flow ball method. *Proceed to next section.*		
☐ Flow too **low** / **high** to measure (circle one)		
☐ USGS Gaging Station	Stream Discharge (ft^3/sec):	Gage Station (8 digits):
☐ Flow Meter	Stream Discharge (ft^3/sec):	

Determine Stream Cross Sectional Area

*Stream width of flowing water: _____ (ft), measured in tenths of a foot.

*Record depths at appropriate intervals in tenths of a foot, starting at **flowing edge** of water:

1:	6:	11:	16:	21:	26:
2:	7:	12:	17:	22:	27:
3:	8:	13:	18:	23:	28:
4:	9:	14:	19:	24:	29:
5:	10:	15:	20:	25:	30:

Sum of depths ÷ # of intervals = average depth: _____(ft)

Average depth x stream width = cross sectional area (CSA): _____(ft^2)

Quantity of depth intervals needed:

Width ≤ 20': Depth every 1'

20' to 60': Depth every 2'

60' to 90': Depth every 3'

90' to 100': Depth every 4'

Note: If you measure width to be exactly 20', 60', or 90', see note on back

Determine the Average Velocity for the Stream

*Velocity Float Trials: *minimum of 4 trials required. Record time in seconds*

*1:	6:
*2:	7:
*3:	8:
*4:	9:
5:	10:

*Distance Floated (feet): _____

Sum of float times ÷ # of float trials = average float time: _____(sec)

Distance floated ÷ average float time = average surface velocity:_____(ft/sec)

***Correctional Value for Stream Bottom Type:**

☐ Rough, loose rocks, or coarse gravel = **0.8**

☐ Smooth, mud, sand, or bedrock = **0.9**

Average surface velocity x correctional value = corrected average surface velocity (CASV):

=_____(ft/sec)

Calculate Stream Discharge: The Stream Team application will automatically calculate this value as you enter data online.

CSA _____ (ft^2) x CASV _____ (ft/sec) = **Stream Discharge**: _____ (ft^3/sec or CFS)

Cross Sectional Area = CSA, Corrected Average Stream Velocity = CASV

Comments:

Fish present during sampling event? ☐ Yes ☐ No

INSTRUCTIONS FOR MEASURING STREAM DISCHARGE

Because of its effect on water quality, stream discharge is an important characteristic of any stream. It influences water chemistry and aquatic life, helps us to interpret other kinds of data collected at the stream, and can aide in determining the severity and extent of a pollutant entering the stream. Stream discharge data should be collected during each monitoring trip to provide context on the other data collected.

Collection Type:

Gathered - Stream discharge can be gathered by using the floating ball method. This requires measuring stream cross-sectional area and stream velocity.

Flow too low to measure - If there is no observable flow to the stream, it is too low to measure. Test the flow by dropping a leaf or floating ball on the water.

Flow too high to measure - If water is significantly swift and/or deep, it is too high to measure.

USGS Gaging Station - Stream discharge data from a nearby USGS gaging station may be used if the site is located with 0.5 miles of the station and there are no tributaries, losing segments, or point source discharges between your site and the station.

Flow Meter - A flow meter may be used to collect stream discharge data. Please contact program staff for a calculation sheet.

Calculating Gathered Stream Discharge:

Step 1: Determine Stream Cross-Sectional Area

Determine stream width. Select a section of stream that is relatively straight, is free from large objects such as logs or large boulders, has a noticeable current, and has a depth as uniform as possible. Stretch the tape measure provided by the program across the stream. The "0" point should be anchored at the *flowing edge* of the stream. The end of the tape measure should be anchored at the opposite end so that it is taut and even with the *other flowing edge. Do not measure nonflowing water.*

Determine average stream depth. Take stream depth measurements across the width of the stream at appropriate intervals (see reverse side). Sum the total depth measurements taken and then divide by the number of measurements taken. (e.g. For a stream width of 2', depth should be measured every 2' starting at the flowing edge of the stream.) There will be at least 11 total depth measurements. If you measure your stream width to be exactly on the cusp of two ranges (e.g. 20), take depth measurements per the lesser range (e.g. every 1') to ensure a sufficient number of measurements. *Do not measure depth in inches.*

Calculate stream cross-sectional area. Multiply the average stream depth from the previous step with the stream width that was determined in Step 1.

Step 2: Determine the corrected average velocity for the stream

Determine the average velocity for the stream. A minimum of four velocity measurements should be taken from equal intervals across the stream's width. This method of measuring the stream velocity will help ensure that velocity measurements are recorded for the slow and fast portions of the stream. For greater accuracy, more than four measurements are recommended for wider streams. To measure the water's surface velocity, the first step is to select two points located equal distance upstream and downstream from the tape measure you have stretched across the stream. Determine the distance between these two points and record this value (in feet) in the Distance Box on the reverse side of this sheet. A 10-foot total float distance is a recommended starting point. This distance can be lengthened or shortened depending on stream swiftness. Count the number of seconds it takes a neutrally buoyant object (such as a wiffle ball) to float this distance. Record this time (in seconds) in the table for each float trial you complete.

Determine the correctional value for the surface velocity. Water in the stream does not all travel at the same speed. Water near the bottom travels slower than water at the surface because of drag (or friction) on the stream bottom. When calculating stream discharge, the water's velocity for the entire depth (surface to stream bed) needs to be determined. multiply the average surface velocity by a correction factor to make it represent the water velocity of the entire stream depth.

Step 3: Calculate stream discharge

Multiply the corrected average stream velocity by the stream cross-sectional area to obtain the stream discharge in cubic feet per second.

SUBMIT DATA ONLINE:
Mostreamteam.org
Data may be mailed to:
VWQM Coordinator, Water Protection Program, Department of Natural Resources,
P.O. Box 176, Jefferson City, MO 65102
800-781-1989

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