



# Missouri Streams Fact Sheet



## OUTLINING A SURFACE WATERSHED



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Outlining your watershed on a topographic map can be a great visual aid in understanding the shape of the watershed and how much area the watershed covers. A topographic map also helps narrow down what natural or geographic features have an affect on the watershed and, ultimately, your local stream.

Once you have obtained a topographic map of your area, complete the following exercise to outline your surface watershed:

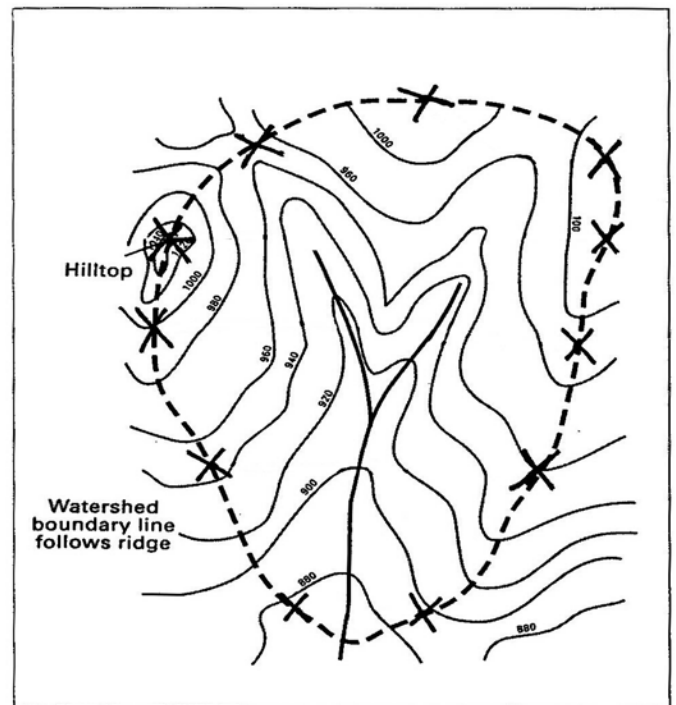
1. Start by using a highlighter to trace your stream and all of its tributaries.
2. Use a pencil to mark the highest points of elevation around your watershed.
3. Connect these marks to show the boundary of your watershed.

Figure 1 shows the boundary of a small watershed.

After you have drawn the boundary of your surface watershed, you can calculate its size, or surface area. There are specialized tools, such as planimeters and digitizers, to measure the area of the watershed, but a transparent overlay of graph paper or a grid of dots both work well for small watersheds.

Once you have the overlay, you will need to calculate the area represented by a single square of the grid.

1. Measure the side of a square and use the scale of the map to determine the ground distance it represents.
2. Place the transparent graph paper overlay on the map and count the number of squares or dots



*Idealized Watershed Boundary. Adapted from Method for the Comparative Evaluation of Nontidal Wetlands in New Hampshire.*

within the boundary of the watershed. For boundary areas, count each square or dot that is more than halfway within the boundary. If less than half of a square is inside the boundary, or dots are along the boundary, count every other one.

### **HOW THE CALCULATIONS WORK:**

For a 1:24,000 scale 7.5 minute topographic map, 1 inch on the map equals 24,000 inches in the real world. So, the ground distance represented by a 0.1 inch side of a square is 0.1 inch times 24,000, which equals 2,400 inches. Because there are twelve inches in one foot, dividing 2,400 inches by 12 gives a distance of 200 feet represented by the 0.1 x 0.1 inch square. Therefore, the area represented by a 0.1 x 0.1 inch square equals 200 feet times 200 feet, or 40,000 square feet. One acre equals 43,560 square feet, so the acreage represented by one 0.1 x 0.1 inch square equals 40,000 square feet divided by 43,560 square feet, or 0.918 acres.

Maps help monitors identify land use and potential pollution sources in the watershed of their stream. Information on many kinds of pollution sources such as permitted wastewater discharges, landfills, mining areas, confined animal feeding operations and hazardous waste sites can be obtained from the Department of Natural Resources.

The first step in choosing a monitoring site is to determine if there are any obvious water pollution problems on the stream. Floating the stream or walking along the stream bank is an excellent way to locate problems and to characterize the stream. *Missouri Streams Fact Sheet: Monitoring Stream Conditions* explains how to find these stream problems and can jumpstart your efforts to protecting your local stream.