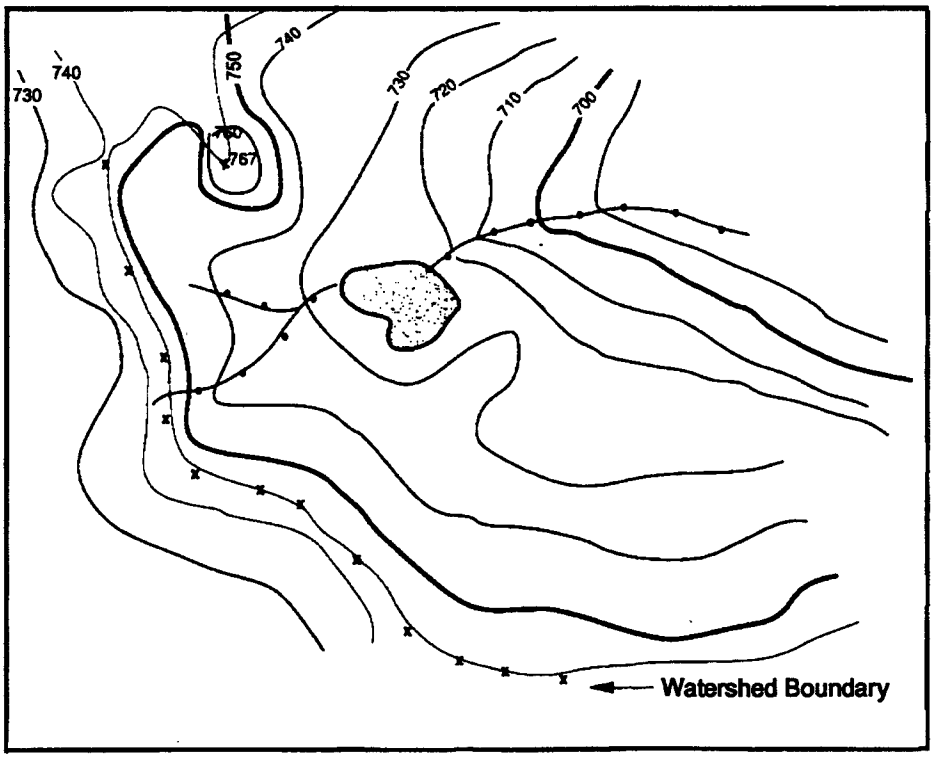
Appendix C: Watershed Delineation Instructions

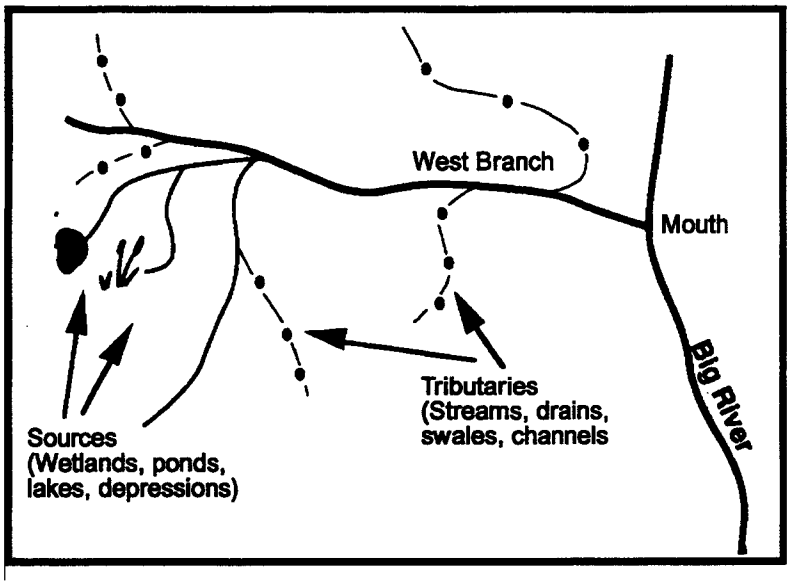
To pinpoint possible sources of CMD, you must first delineate the boundaries of your watershed on a topographic map. Topographic maps display physical features such as hills, valleys, ridges, and channels. Marking off watershed boundaries on a USGS "topo" map is easy once you understand how the contour lines corrpesond to the elevation of the land.

The following instructions outline how to delineate your watershed step-by-step. (Adapted from *Delineating Watersheds—A First Step Towards Effective Management*, U.S. EPA Region 5).

1) Use a topographic map(s) to locate the river, lake, stream, wetland, or other waterbodies of interest.

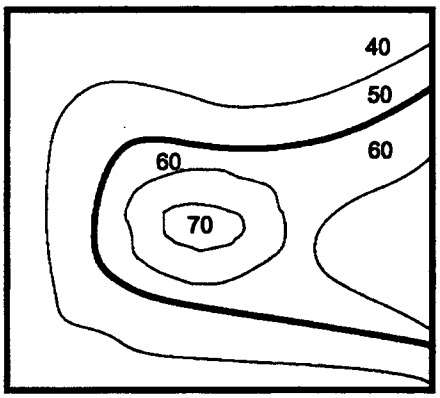


Topographic Map



2. Watershed boundaries

2) Trace the watercourse from its source to its mouth, including the tributaries. This step determines the general beginning and ending boundaries.

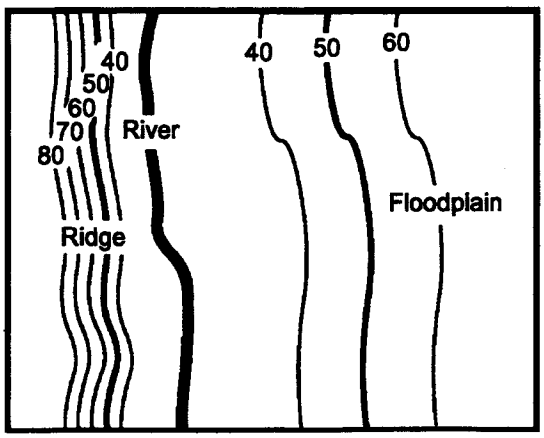


3. Contour Lines

3) Examine the brown lines on the topographic map that are near the watercourse. These are referred to as contour lines. Contour lines connect all points of equal elevation above or below a known reference elevation.

The dark brown contour lines (thick lines) will have a number associated with them, indicating the elevation. The light brown contour lines (thin lines) are usually mapped at 10 foot intervals, and the dark brown (thick) lines are usually mapped at 50 foot intervals. To determine the final elevation of your location, simply add or subtract theappropriate contour interval for every light brown (thin) line, or the appropriate interval for every dark brown (thick) line.

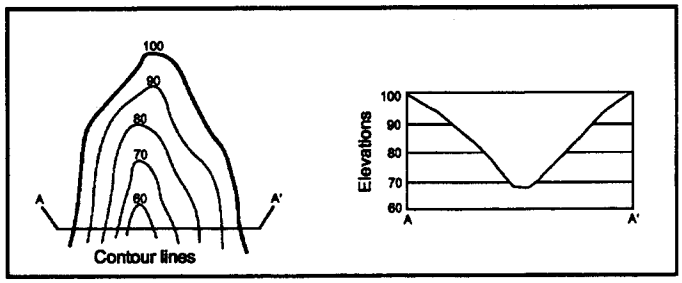
Contour lines spaced far apart indicate that the landscape is more level and gently sloping. Contour lines spaced very close together indicate dramatic changes (rise or fall) in elevation over a short distance.



3. Contour Lines

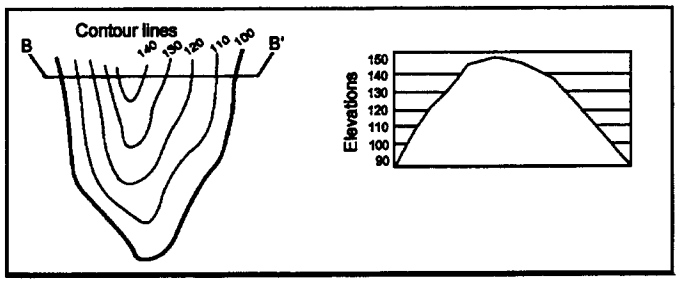
4) Check the slope of the landscape by locating two adjacent contour lines and determine their respective elevations. The slope is calculated as the change in elevation divided by the distance.

A depressed area (valley, ravine, swale) is represented by a series of contour lines "pointing" towards the highest elevation.



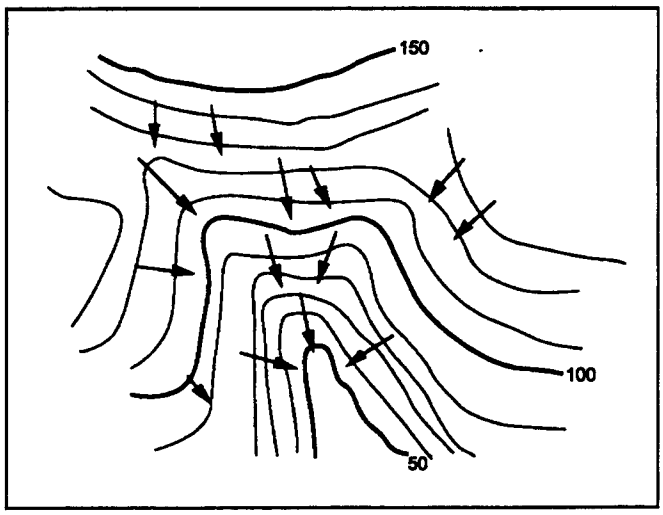
4. A depressed area

A higher area (ridge, hill) is represented by a series of contour lines "pointing" towards the lowest elevation.



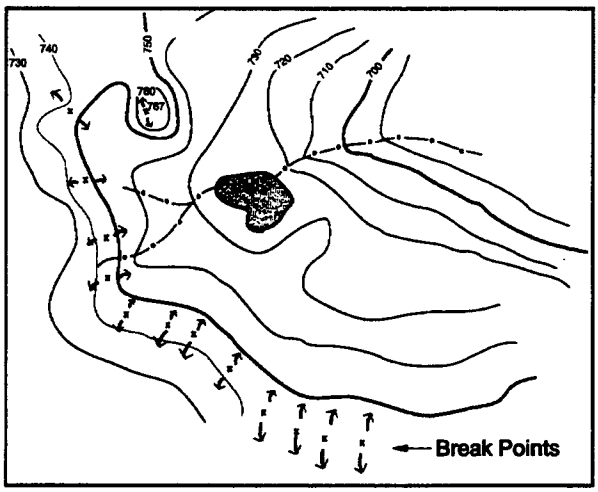
4. A ridge

5) Determine the direction of drainage in the area of the waterbody by drawing arrows perpendicular to a series of contour lines that decrease in elevation. Runoff seeks the path of least resistance as it travels downslope. The "path" is the shortest distance between contours, hence a perpendicular route.



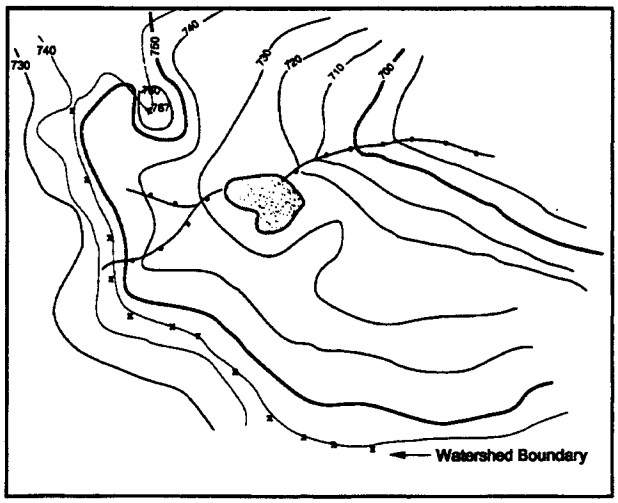
5. Direction of drainage

6) Mark the break points surrounding the waterbody. The "break points" are the highest elevations where half of the runoff would drain towards one body of water, and the other half would drain towards another body of water.



6. Mark break points

7) Connect the break points with a line following the highest elevations in the area. The completed line represents the boundary of the watershed.



7. Connect break points