How to delineate a watershed with Spatial Analyst Tools

## Add your DEM

## Create a Mask around your watershed. Be generous and stay away from ridges that define the watershed.

## Clip the DEM using the Mask

Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Extraction\Extract by Mask.

Name it “rawdem”.

## Fill the rawdem using

Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Hydrology\Fill

Name it “fil”.

## Create flow direction grid

Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Hydrology\Flow Direction

Name if “fdr”

## Create a flow accumulation grid

Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Hydrology\Flow Accumulation

Name it “fac”

The fac grid will identify where the highest concentrations of flow are.

## Create a point layer for the “Pour Point”

Place a point on the fac layer where you want it and where the flow concentration is highest. You can invert the default symbology so the high flow accumulations are dark and the low are light. Get the point inside a grid cell.

You can also do this with a grid for the pour point. There is a tool “Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Hydrology\Snap Pour Point” that is used to make sure the pour points are on the highest concentration of flow. If you are careful to place your points, this should not be needed.

## Run the watershed tool

Toolboxes\System Toolboxes\Spatial Analyst Tools.tbx\Hydrology\Watershed

This will result in a raster. Name it “watershed”. Check to see if the watershed boundary is “snug” up to the mask polygon. If so, the mask was not “generous enough”.

## Convert the watershed raster to a polygon

Toolboxes\System Toolboxes\Conversion Tools.tbx\From Raster\Raster to Polygon.