Average Watershed Slope

**Overview:** Determine the average watershed slope of a surface. A surface model that goes beyond the limits of the drainage area is used as the starting point. A boundary along the DA limit is applied.

**Software:** AutoCAD Civil 3D 2012, Civil 3D Workspace, Iowa NRCS C3D 2012 template V1.1 (8/23/2013)

**Notation:** Button to Press Displayed Text Icon Action {Text to Enter} Menu Item...

**Prerequisite**
Create a surface from LiDAR (or survey points) for an area larger than the drainage area.

Create a Watershed Surface model

Create a polyline that represents the watershed limit of the drainage area.
1. Tool Palette>NRCS 11x17B… Click Breaklines and Boundaries…Boundary Line… (Ctrl + 3 to toggle on/off)
2. Click to draw a border along the drainage area limit. (F3 toggles Osnaps on/off.) To close the line cleanly, type {C} and press Enter.

Create a surface model for the watershed drainage area.
3. Toolspace> Prospector… Right click Surfaces…Click Create Surface…
4. Type = TIN surface, Name = {MyWatershed}
5. Pulldown Style = <Grid Magenta 5x5> Click OK
6. Click OK
7. Toolspace> Prospector… Surfaces… MyWatershed …Definitions…Right-Click Edits… Click Paste Surface…
8. Select Ognd LiDAR Click OK

Add the boundary to the surface and lock the surface.
9. Toolspace> Prospector… Surfaces… MyWatershed ... Definition…Right click Boundaries
10. Click Add
11. In the Add Boundaries Box set the Type to Outer and Checkmark Non-destructive breakline.
12. Click Ok and select the previously drawn boundary line.
13. If the surface doesn’t rebuild use Toolspace> Prospector… Surfaces… Right click MyWatershed ... Click Rebuild…

14. Toolspace> Prospector… Surfaces… Right-Click MyWatershed... Click Lock...

View the Average slope property.
15. Toolspace> Prospector… Surfaces... Right-Click MyWatershed... Click Surface Properties ...Statistics... Extended…
   Mean grade/slope gives the average watershed slope
   2D Surface area divided by 43560 is the drainage area (acres)