

Average Watershed Slope

Overview: Determine the average watershed slope of a surface. A surface model that is 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: <u>Button to Press</u> <i>Displayed Text</i> Icon <u>Action</u> {Text to Enter} <u>Menu Item</u> ...
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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.

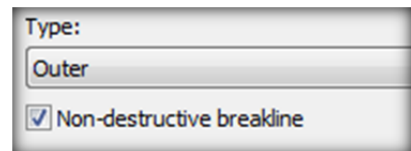
1. Tool Palette>NRCS 11x17B... Click *Breaklines and Boundaries...* Boundary Line...
 Boundary Line (Ctrl + 3 to toggle on/off)
2. Click to draw a border along the drainage area limit. (F3 toggles Osnaps on/off.) To close the line cleanly, type {C} and press Enter.

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)