

Storage Volume Calculation


Overview: Determine the total storage volume of a surface at a specific elevation by comparing the base surface and a flat elevation surface.

Software: AutoCAD Civil 3D 2014, Civil 3D Workspace, NRCS C3D 2014 template V1.1 (1/29/2015)



Prerequisite: Create a base surface for the volume comparison. E.g. Follow the instructions for *Original Ground Contours* or *LiDAR*.

Notation: Button to Press <i>Displayed Text</i> Icon <u>Action</u> {Text to Enter} <u>Menu Item</u> ...

Create a Surface at the Defined Elevation for the Volume Calculation

1. Tool Palette>NRCS 11x17B... Click *Breaklines and Boundaries... Boundary Line...*
 (Ctrl + 3) to toggle on/off
2. Draw a border that will represent an outer limit for the volume calculation area. Typically this would extend downstream to the dam and upstream around the entire contours. To close the line cleanly, type {C} and press Enter.
3. Select this boundary and Right-click *Properties...*
4. In the Properties box input the elevation of the storage computation and press Enter
5. Toolspace> Prospector... Right-click *Surfaces... Create Surface...*
6. Input a name for the TIN surface. E.g. {Storage Elevation} Click Ok
7. Toolspace> Prospector... *Surfaces... Storage Elevation ... Definition...* Right-click *Breaklines...*
8. Click *Add...*
9. In the Add Breaklines Box set the Type = *Standard*, Uncheck *Weeding factors*, Uncheck *Supplementing: Distance*
10. Click Ok and select the previously drawn boundary line object.

Calculate the Storage Volume at the Defined Elevation


11. Click *Analyze... Volumes and Materials... Volumes Dashboard* 
12. In Panorama click **Create new Volume Entry** 
13. Input Name E.g. {V Storage Volume}
14. Set the Style = *_<off>* Click Ok
15. Set the Base Surface = *Ognd*
16. Set the Comparison Surface = *Storage Elevation*
17. Click Ok
18. A volume surface gets created and the Fill Volume column will be the total storage at your defined elevation.

Storage Volume Only

Modify the Storage Elevation Surface and Recompute

19. Select the boundary drawn for the Storage Elev surface and Right-click *Properties...*
(Use Shift + Space to help find overlapping objects)
20. In Properties, input an updated elevation for storage computation and press
21. Toolspace> Prospector... *Surfaces...* Right-click *Storage Elevation ... Rebuild...* (2x)
22. In Panorama click **Recompute Volumes** 

Create a Volume Report

23. To create a report click Generate Cut/Fill Report 
24. When done click the Checkmark to dismiss the Composite Volumes panorama.