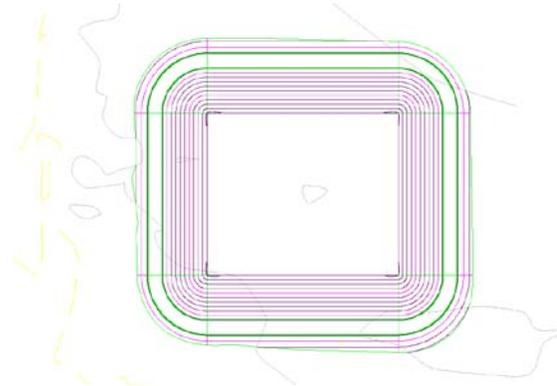


## VOLUMES BETWEEN SURFACES

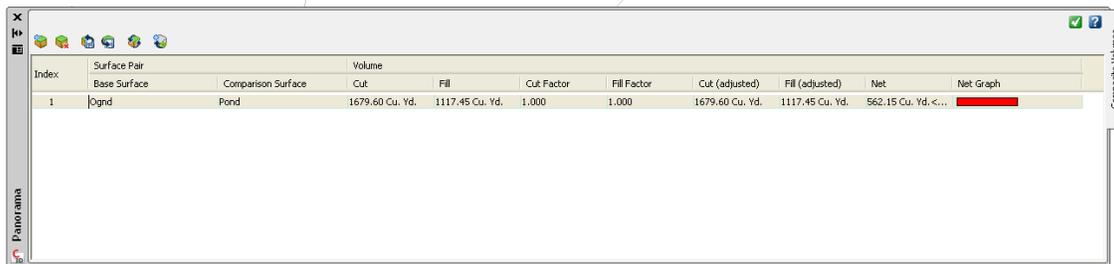
This quick reference guide covers the process of calculating cut and fill volumes between two terrain surfaces. This example assumes that two surfaces have been created in a drawing; one representing the original ground terrain and another which represents a proposed waste storage pond.

1. On the *Surfaces* drop-down menu go to the *Utilities* pull-out menu and select *Volumes*
2. The Panorama window will appear. This is where you will specify the base and comparison surfaces that you want to calculate volumes between. You can also provide cut and fill factors if they are available. The cut factor is used to adjust the volume of excavated material to account for the amount you expect the material to swell when it is excavated. The fill factor is used to account for the additional volume of material that would be required due to the compaction of the soil when it is placed.
3. Click on the *Create new volume entry* icon to add a volume entry to the table in the panorama window. The *Delete volume entry* icon, located next to the *Create new volume entry* icon will allow you to remove a volume entry from the table.



4. Once you have created a new volume entry, you will be able to select the base and comparison surfaces in the table, and to specify the cut and fill factors if necessary.

The base surface will always be the original ground surface. The comparison surface will be the surface that represents the proposed structure, in this case the waste storage pond.



Once you select the base and comparison surface, the cut and fill volumes will be calculated and displayed in the table. If you make changes to the cut or fill factors the volumes in the table will be recalculated.

The Net Graph column will display a red bar if you have more cut than fill, indicating that you will have excess excavated material. The Net Graph column will display a green bar if you have more fill than cut, indicating that you will need additional fill from another source.