With TECHBASE, the volume between any two gridded surfaces can be easily calculated and reported. TECHBASE can also limit the calculated volume to one polygon or a series of polygons, and can report out the results for each area. Several items must be kept in mind when trying to reach reasonable results. If the cell size (in relation to the polygon size) is too big, the results may not have the desired accuracy. If the cell size is too small, it the extra computer time and disk storage may not be justified by the additional precision. (The point of diminishing returns.) A practical consideration is which TECHBASE modules are available to you!

Simple volumes

The following volumetric methods take advantage of the AUTOMATIC class fields created as part of a CELL table definition. To begin, create a CELL table for your model with the following fields:

top	REAL, ACTUAL	
bottom	REAL, ACTUAL	
+c_thick	REAL, CALCULATED	“top bottom -”
+c_volume	REAL, CALCULATED	“c_thick cell_csz * cell_rsz *”

1. Estimate values for the *top* and *bottom* fields in each record of the cell table. The values may be estimated using any of the estimation tools in **TAP-Model**.

> **Note:** the *top* and *bottom* values may be estimated using different techniques, but both fields must be members of the same table.

2. The volume may be reported using the *REPORT* program with the format “c_volume (t)”, to add the total to the bottom of the report file. To suppress the record by record detail, answer “NO” to the “Field values displayed?” parameter in the “Page layout” menu.

Here are two different approaches to getting your volume results reported for a polygonal area of the model:

Method A “Sum of captured cells”

Add to your model table:

poly_id	ANY_TYPE, ACTUAL

1. Make sure that the *poly_id* field is the same type as the polygon id (column 3) in the polygon file.

2. Run *LOCATE* and in the Setup/Assignment menu request “Polygon ID MARKER” to be assigned to the *poly_id* field. This gives the field for each cell the value of the **first** polygon in the polygon file which contains the cell center. In the Setup/Fields menu provide the names of the AUTOMATIC coordinate fields *cell_xc* and *cell_yc*.

3. Run *REPORT* requesting a sort on *poly_id*, and request a break on *poly_id* and a sub-total on *c_volume* with the format “poly_id (b,1) c_volume (ts)”.

Method B "Sum of cell fractions"

Add to your model table:

p_fraction	REAL, ACTUAL	min 0, max 1
+p_volume	REAL, CALCULATED	"c_volume p_fraction *"

1. Make sure that the polygon file contains only one polygon. This method works for only one polygon at a time.

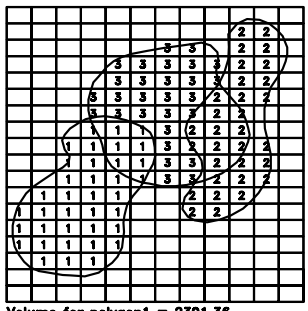
2. Run *LOCATE* and in the Setup/Assignment menu request "Polygon fraction" to be assigned to the *p_fraction* field. This gives the field for each cell the fraction (between 0 and 1) of the cell area inside the polygon.

3. Run *REPORT* requesting the total volume inside with the format "p_volume (t)". As in the first technique, the record by record detail may be suppressed.

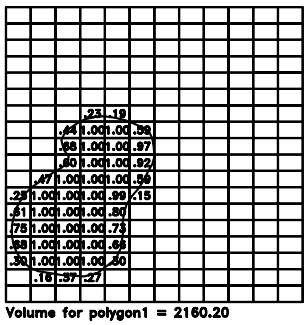
Simple volumes

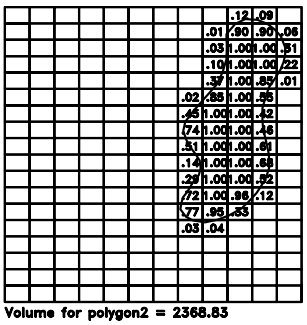
```
Total Volumes for entire area
(No polygons specified)

              c_volume
TOTALS

                  14489.73
```

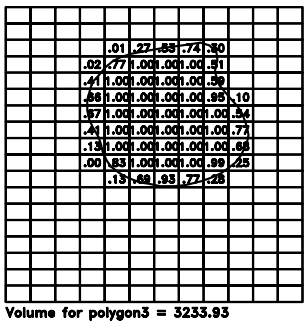
Method A



Method B







For more information on reporting data see "Report - Write database records to a file" on page 1tb-47.. For more information about calculated fields see see "Fields" on page 1tb-23. For more information on calculation parameters see "tbCalc - Database calculator" on page 1tb-55.

