Creating a Wetland or Pond with a 1-3 Sided Berm

The following instructions will guide you through drawing a 3 sided wetland/pond and creating the cut/fill pads. Volumes for cut and fill will also be determined for your proposed surfaces. These instructions assume that the 3D grid file for the site has been created and that your existing ground contours have been drawn. Carlson modules are displayed as {**Civil - Design**}, main menus are displayed as [**Grading**], and submenus and menu commands are displayed as <**Design Valley Pond**>.

1) In Carlson, open the drawing that has the existing grid you want add the valley pond to.
2) Make sure the grid is created. If not, create it.
3) Draw a 2D polyline to represent the centerline of the berm to be created. The polyline can be any shape desired. You must draw the polyline beyond the elevation that you are trying to tie into (try for a minimum of one contour past).
4) To smooth out the polyline to a more natural shape do the following (optional, skip this step if not desired):
    a. Type "**PE**" and press "**Enter**"
    b. Click on the polyline you drew above that represents the centerline
    c. Type "**S**" and press "**Enter**"
    d. Press "**Esc**"
5) Create valley pond: {**Civil - Design**} ⟹ [**Grading**] ⟹ <**Design Valley Pond>**
6) The command line asks for the source of the source of the surface model. Type "**F**" for file and press "**Enter**"
7) Click on the **polyline** that represents the C/L of the dam
8) In the "**Select Existing Surface**" dialog box that appears, navigate to and **double-click** the grid file to use (your existing grid)
9) **Click** anywhere **inside** of the proposed pond
10) Type "**R**" to enter the side slopes of the pond as a ratio and press "**Enter**"
11) Enter the outside slope ratio of the pond: **ratio** (ex. **3**:1, **4**:1…)
12) Enter the interior slope ratio of the pond: **ratio** (ex. **2**:1, **3**:1…)
13) Enter the top width of the dam: **width** (ex. **10**, **12**, …)
14) Enter the top of dam elevation: **elevation**
    a. Remember, the C/L polyline must extend past this proposed elevation

15) Press "**Enter**" to not cut the pond interior. See the end of this instruction sheet for options on cutting the interior.
16) Press or "**Y**" then "**Enter**" to calculate stage-storage values
17) Type "**I**" for the interval method and press "**Enter**"
18) SurvCADD will return the lowest elevation in the pond. Press "**Enter**" to accept it or type in a new low elevation for the starting point of the calculations.
19) Type in the interval to use for the calculations: **interval** (ex. 0.5, 1, 2 …)
20) Type "**Y**" and then press "**Enter**" to output the final surface to a grid
21) Navigate to your drawing folder and save the grid with a recognizable name such as "**Final Surface – Pond**"
22) The "**Valley Pond Report**" displays
    a. Save it to file by hitting the "**Save**" button
    b. Print for your records using the "**Print**" button
23) Press "**Exit**" when done
24) Type "**Y**" or "**N**" and then press "**Enter**" to save the stage storage data
25) Press "**Enter**" to not adjust the design parameters unless needed.
26) Press "**Y**" and then "**Enter**" to trim existing contours inside of the pad
27) Press "**Y**" and then "**Enter**" to save the trimmed sections
28) Press "**Enter**" to leave the trimmed sections on their current layers
29) Press "**Enter**" to contour the pad. Press "**N**" then "**Enter**" to not contour
    a. For contouring, select the options desired in the same way as using the main contouring function.
    b. Change the layer name (i.e. **CTR – Proposed**)
    c. Click "**OK**" once options are set
30) Inspect the drawing and redo if necessary

Cut Pond Interior – Trace Methodology

31) If you selected "**Y**" when asked during the design function, the following sequence is initiated:
32) Cut by closed polyline or trace method: Type "**T**" for trace and hit "**Enter**"
33) Pick points in a counterclockwise manner around the interior bottom of the pond. These points will be used to create a lower bottom in the pond.
    a. Select the first point: **pick a point**
    b. The elevation that is displayed is the surface elevation. Enter a **new elevation** to cut down to.
    c. **Repeat** around the interior of the pond
34) Continue the main instructions from **step 16**

Cut Pond Interior – Polyline Methodology

35) This option uses a pre-drawn polyline as the base for cutting the interior of the pond. You must draw the polyline before running the "Design Valley Pond" function. If you selected "**Y**" when asked to cut the pond interior during the design function, the following sequence is initiated:

36) Cut by closed polyline or trace method: Type "**P**" for polyline and hit "**Enter**"

    a. Select the **pre-drawn polyline**
    b. Enter the cut **depth**
    c. Enter the **cut slope** to use to cut down to the depth specified

37) Continue the main instructions from **step 16**