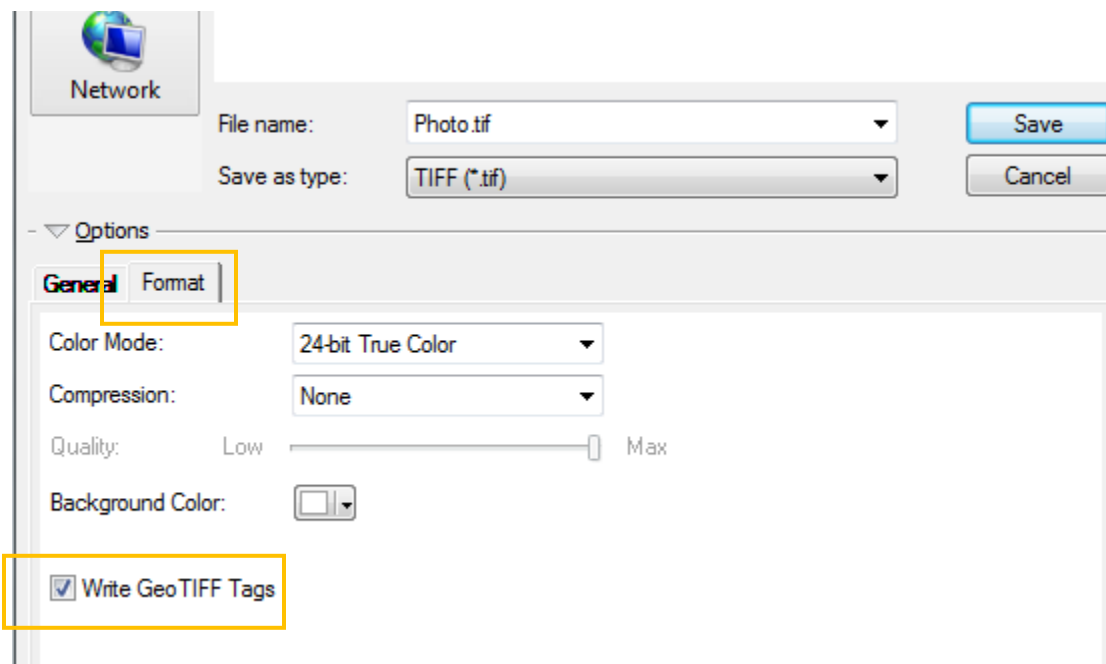


Create Background Image

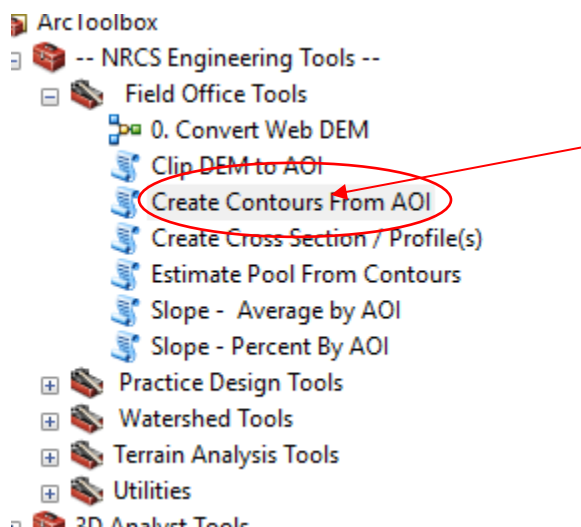
In ArcMap

- a. Zoom into the area that you would like to display as a background image (your entire screen's viewable extents will be exported, including any visible layers.)
- b. Click "File" menu – Export Map
- c. Specify Save Location
- d. Enter File Name
- e. Save as type: TIFF (*.tif)
- f. Under "Options":
 - i. Click the Format tab
 - ii. Select 'Write Geo TIFF Tags'
- g. Select Save



This reference guide covers the method for exporting a DEM from ArcMap for use in Engineering Field Tools. This ground surface can be used in preliminary planning of conservation practices including waterways, terraces as well as water and sediment control basins.

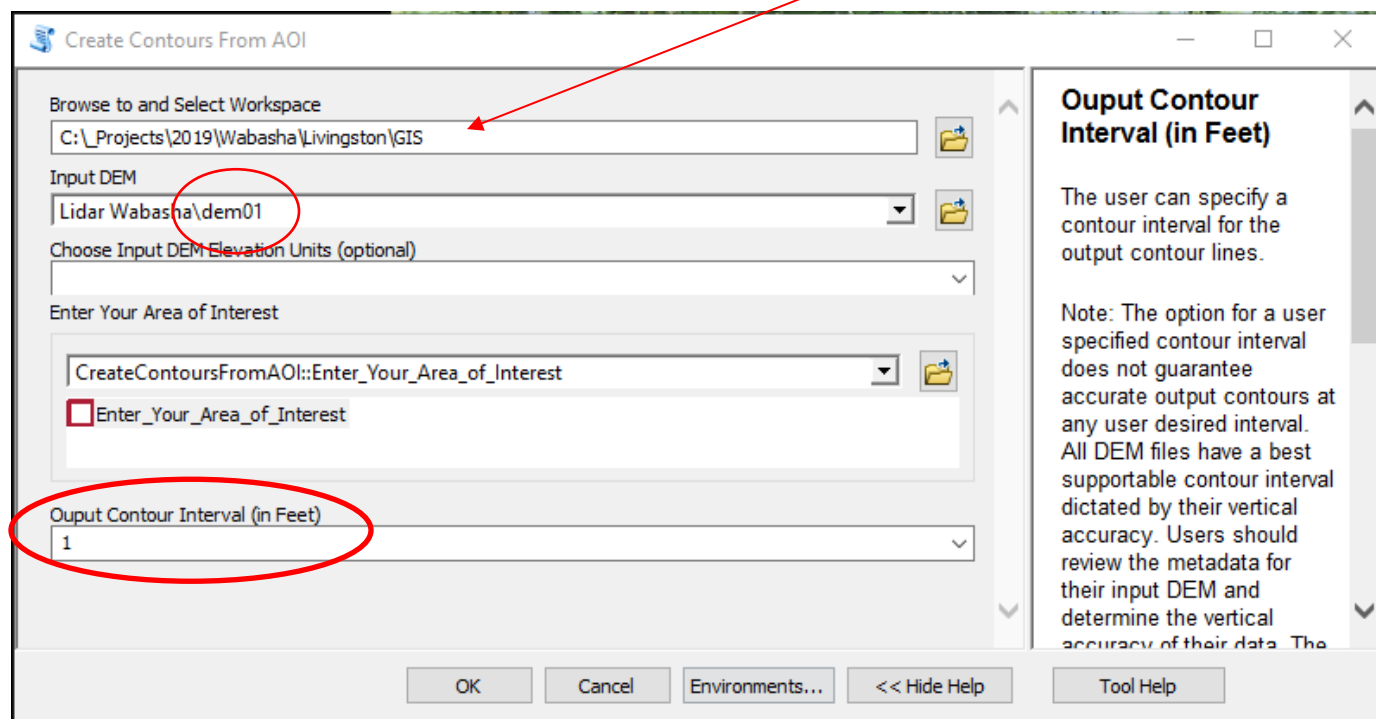
Creating a GIS DEM for EFT



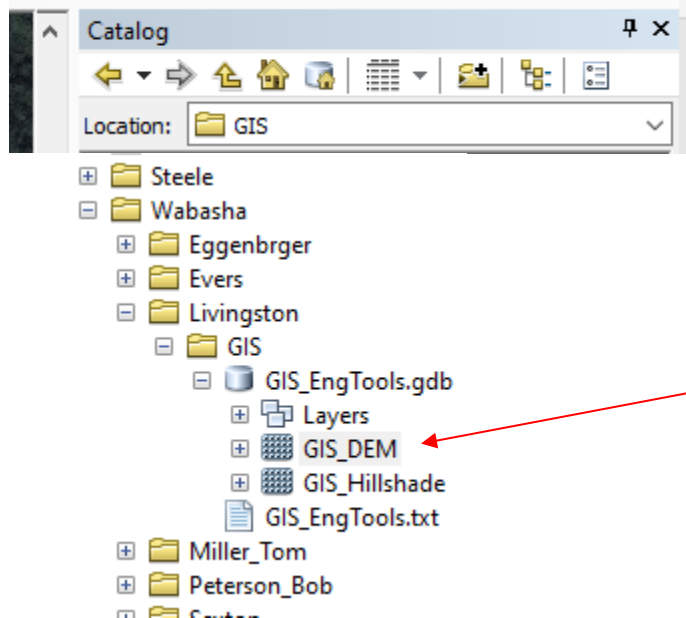
When in ArcMap access the NRCS Engineering Tools toolbox and double click on the Create Contours from AOI.

Below is an screenshot with the information completed to complete the tool. ****Pay special attention to the red circled areas. Note: **Use a 1m DEM** for the Input DEM.

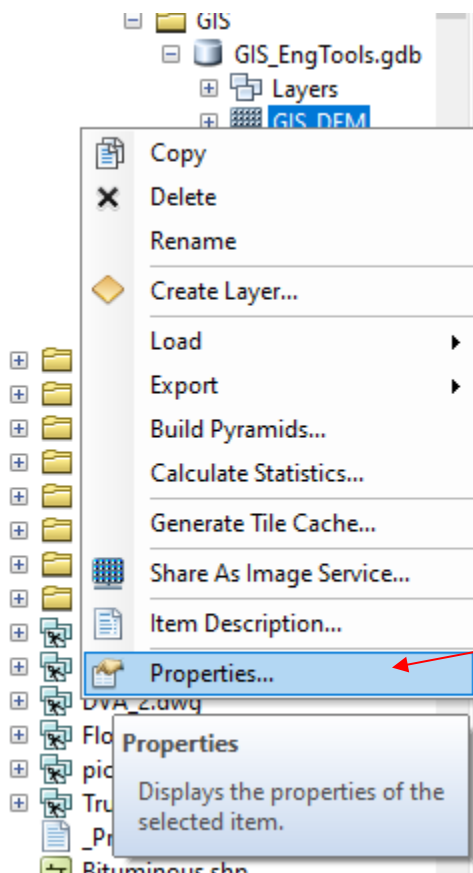
Folder to save files



In ArcCatalog, browse to the newly created geodatabase:



This tool creates a GIS_DEM that may need to have some adjustments done for units.



Right click on the GIS_DEM and select properties.

Scroll down in the resulting dialogue box on the **General** tab. Left click the Edit button in the **Spatial Reference** row.

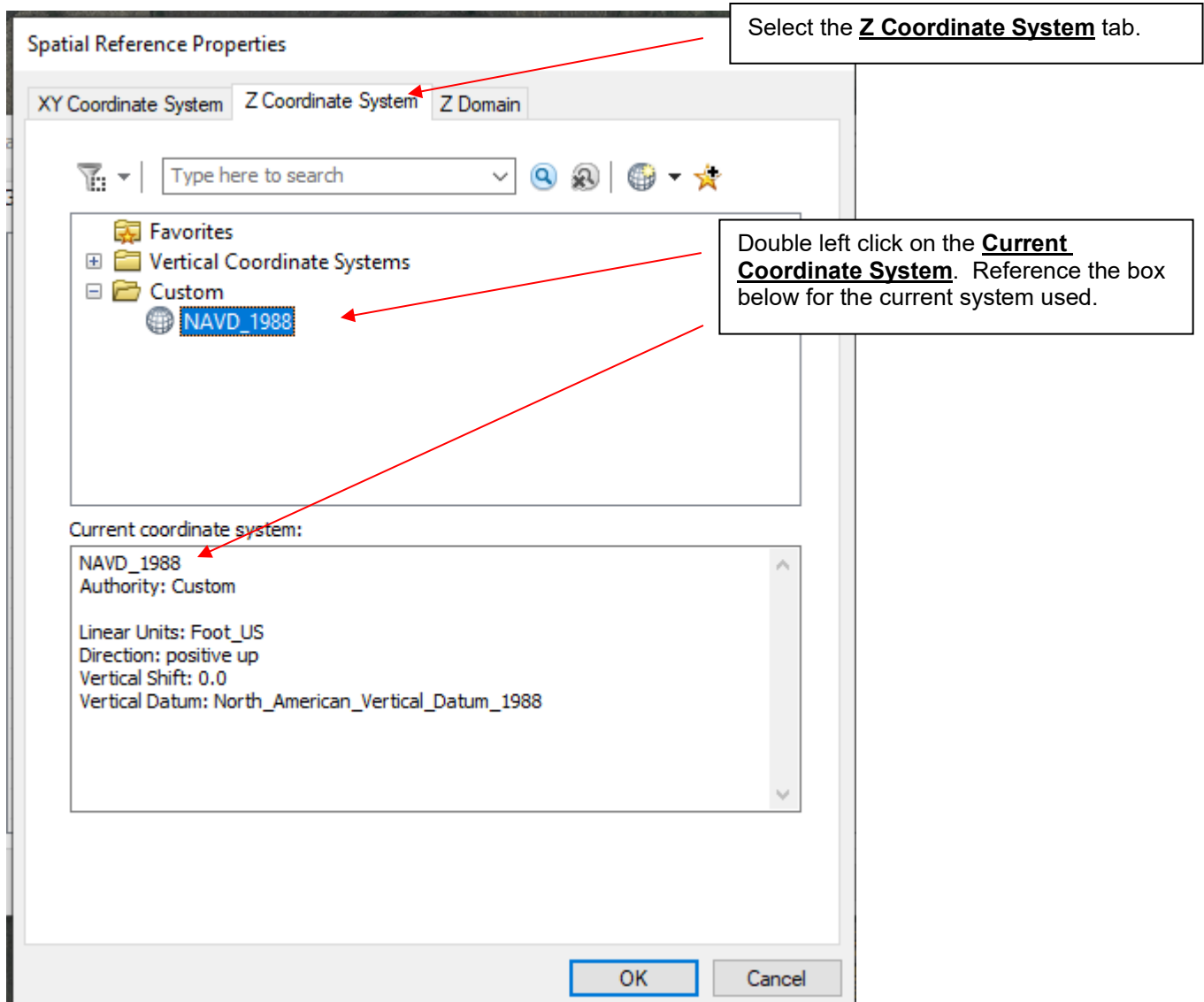
Raster Dataset Properties

General Key Metadata

Property	Value
Left	555753.732276
Right	556366.732276
Bottom	4895930.23583
<input checked="" type="checkbox"/> Spatial Reference	<input type="button" value="Edit..."/>
XY Coordinate System	NAD_1983_UTM_Zone_15N
Linear Unit	Meter (1.000000)
Angular Unit	Degree (0.0174532925199433)
False_Easting	500000
False_Northing	0
Central_Meridian	-93
Scale_Factor	0.9996
Latitude_Of_Origin	0
Datum	D_North_American_1983
Vertical Coordinate S...	NAVD_1988
Linear Unit	Foot_US (0.304801)
Vertical_Shift	0
Direction	positive up
Datum	North_American_Vertical_Datum_1988

OK Cancel Apply

Check Vertical Coordinate System. This needs to say **Meters**. If not, complete next two steps.



Vertical Coordinate System Properties

General

Name: NAVD_1988

Datum

☒ Geoid-based

Name: North_American_Vertical_Datum_1988

☐ Spheroid/Ellipsoid-based

Name: 1_Ceres_2015

Spheroid

Name: 1_Ceres_2015

Semimajor Axis: 470000

☒ Semiminor Axis: 470000

☐ Inverse Flattening: 0

Linear Unit

Name: Foot_US

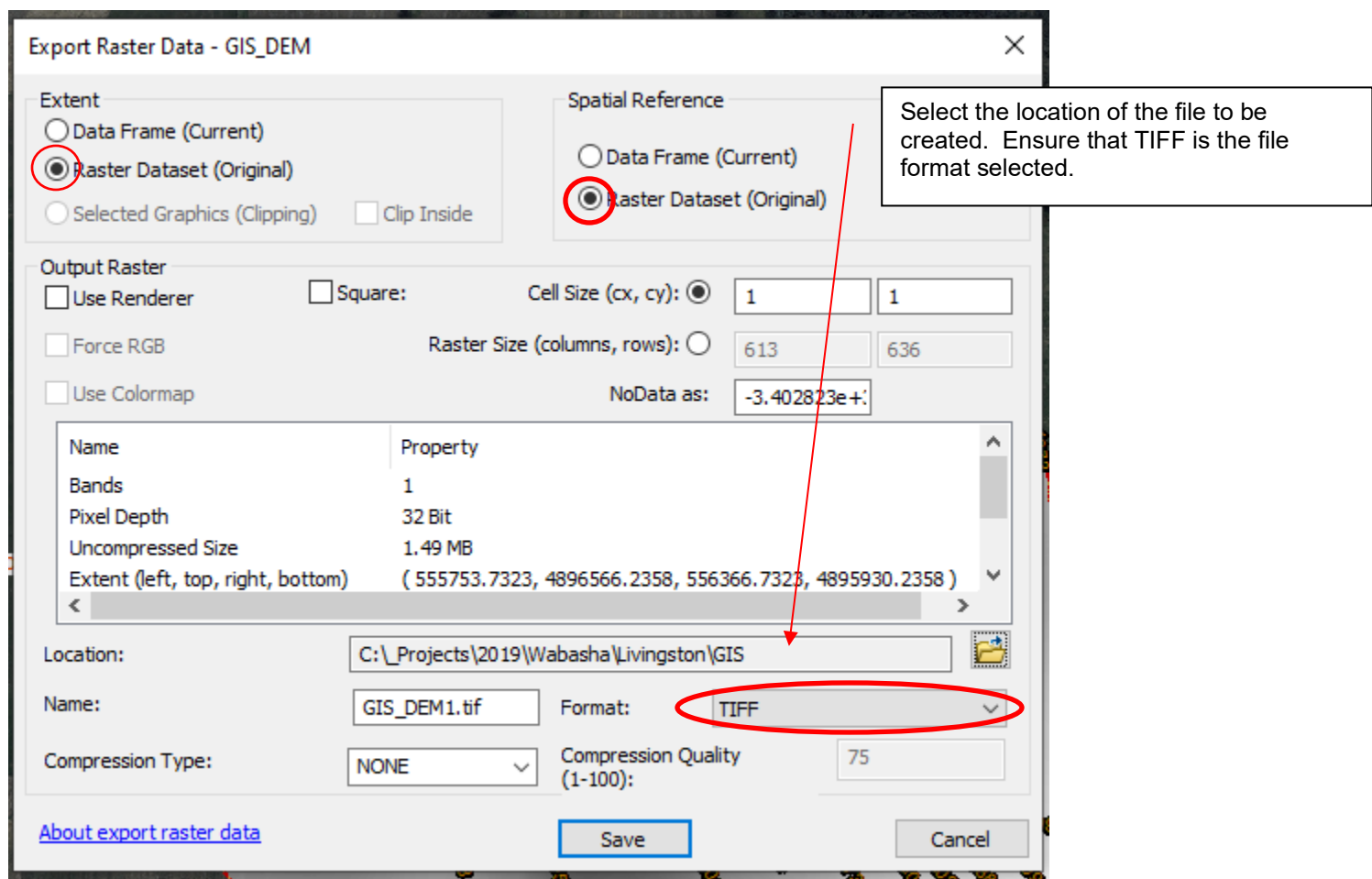
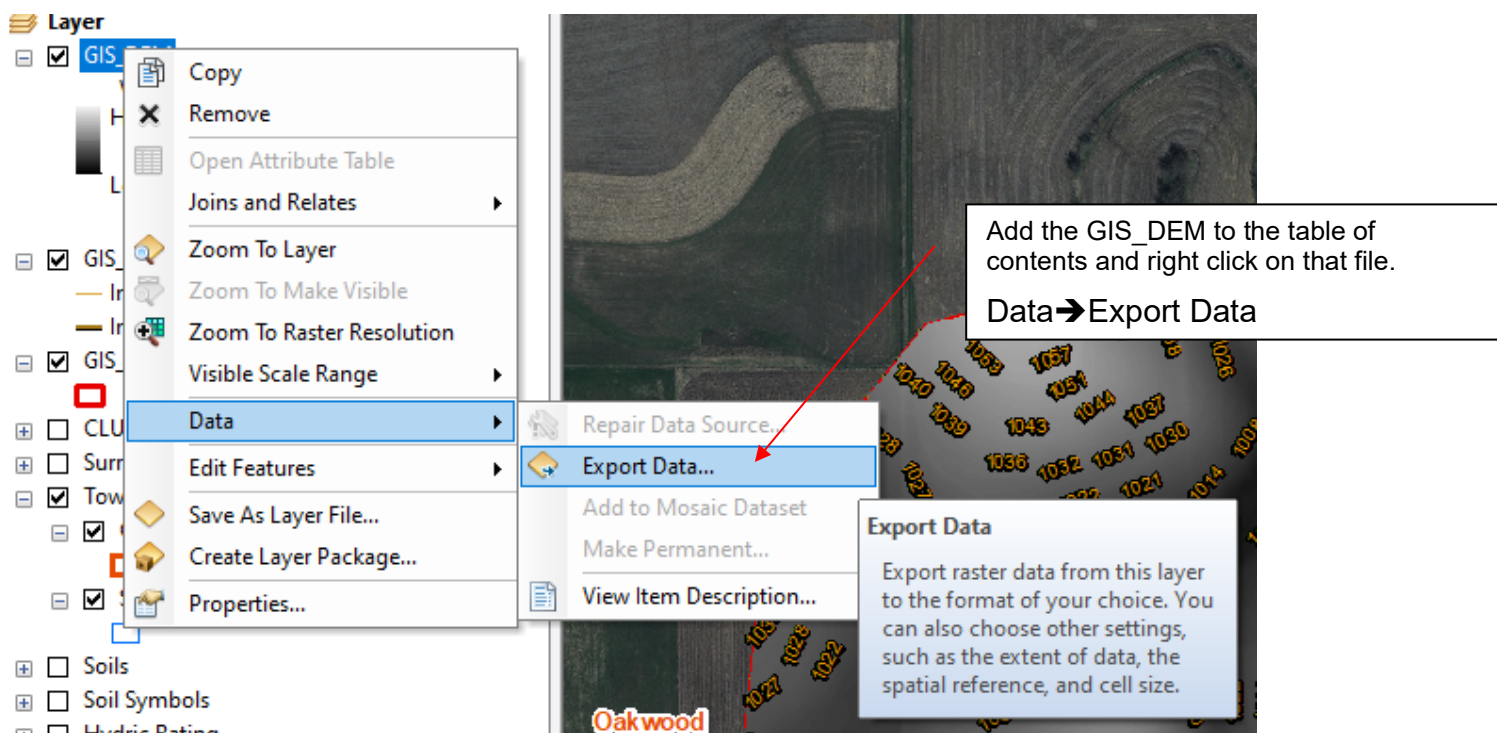
Meters per unit:

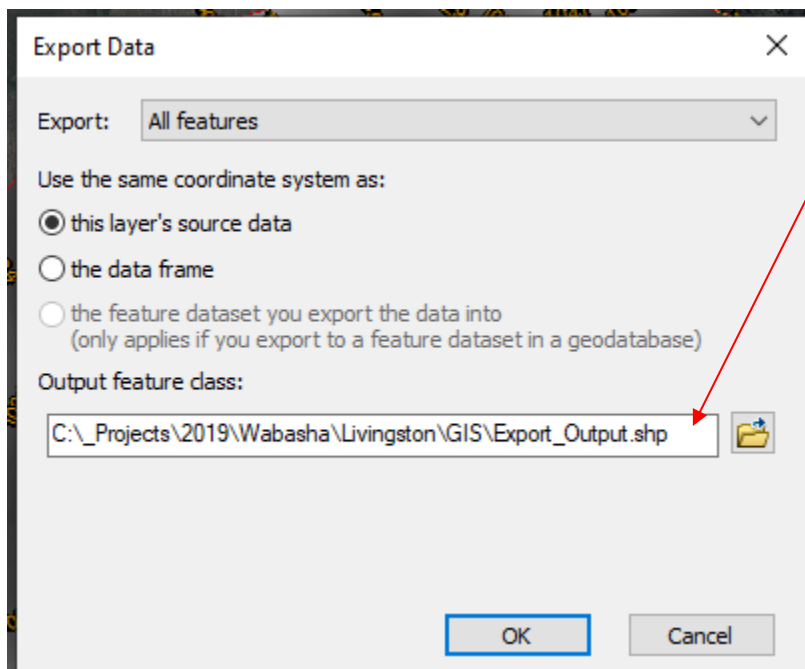
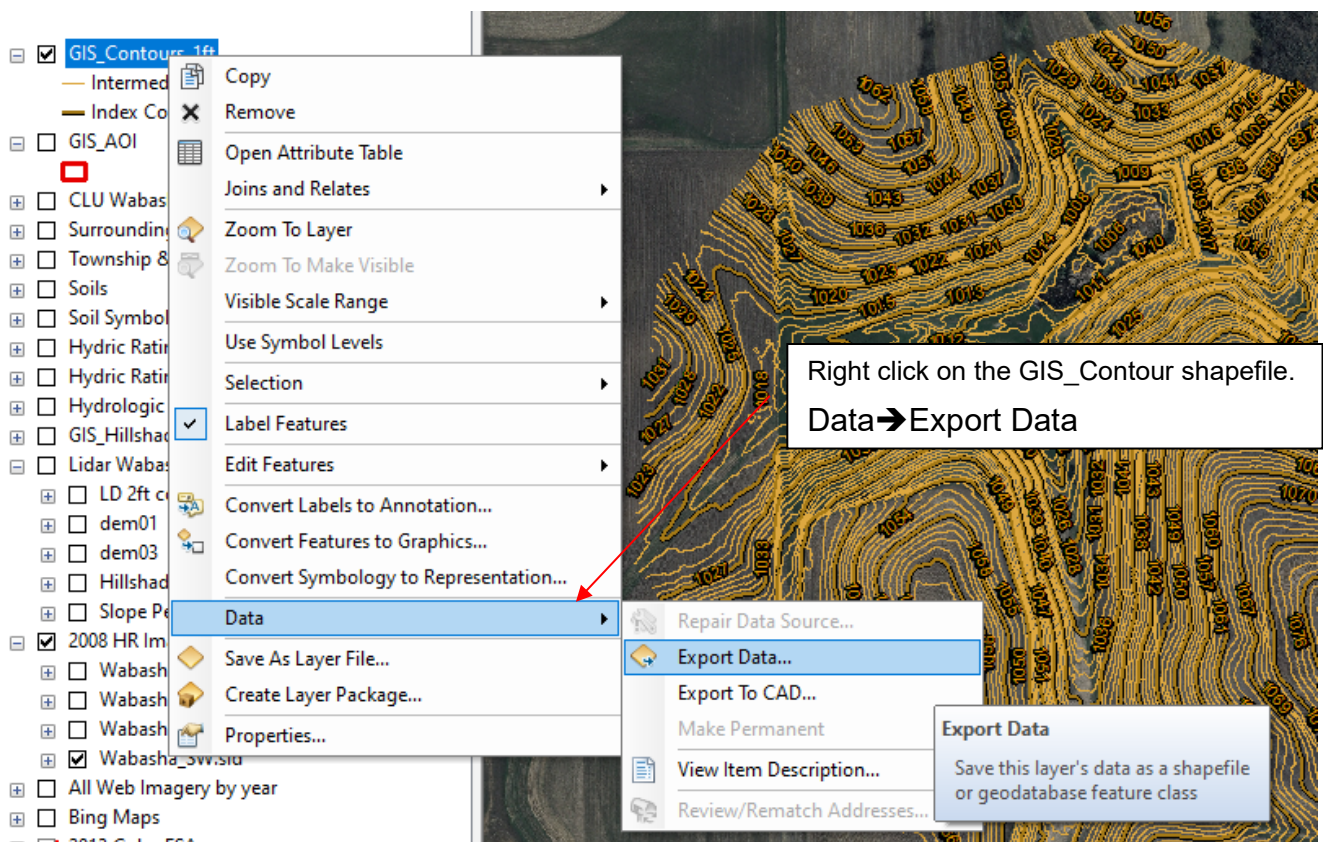
Parameters

Parameter	Value
Vertical_Shift	Link_Benoit_1895_A
Direction	Link_Benoit_1895_B
	Link_Clarke
	Link_Sears
	Link_Sears_1922_Truncated
	Link_US
	Meter
	Meter_German
	Micrometer
	Mile_US
	Millimeter
	Nanometer
	Nautical_Mile
	Nautical_Mile_US

Apply

This Linear Unit may need to be changed to Meters. ****If this unit is already meters nothing needs to be completed at this level.

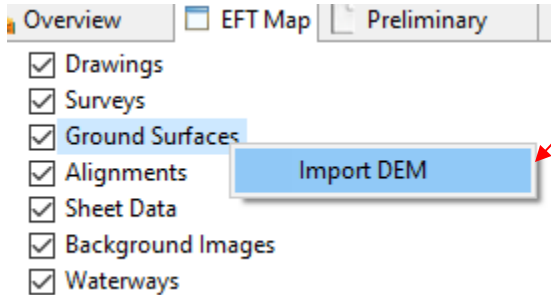




Choose the location to place the resulting .shp file.

Importing DEM into Engineering Field Tools

Create a new survey, terrace or waterway design in a selected customer/project folder.

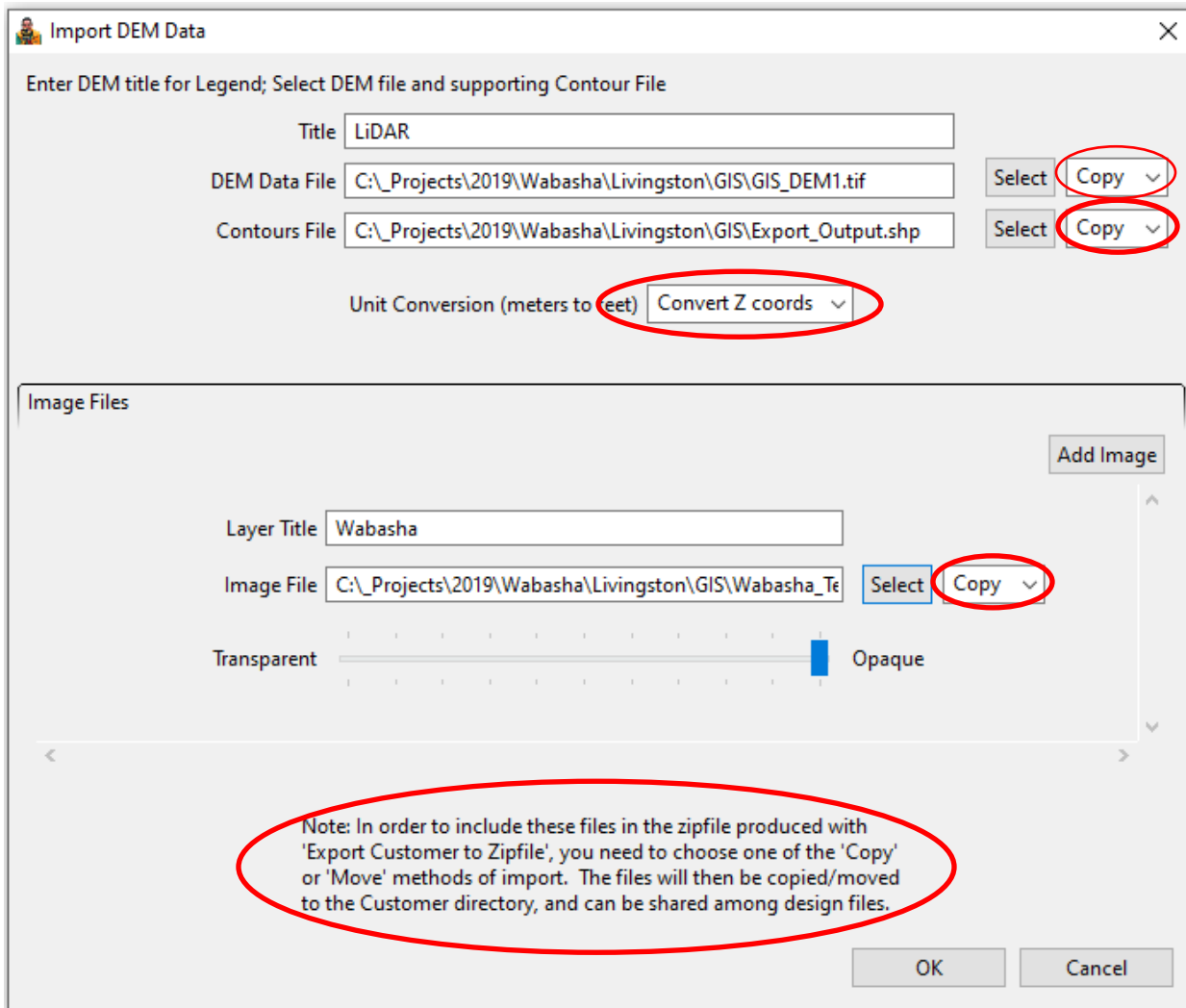


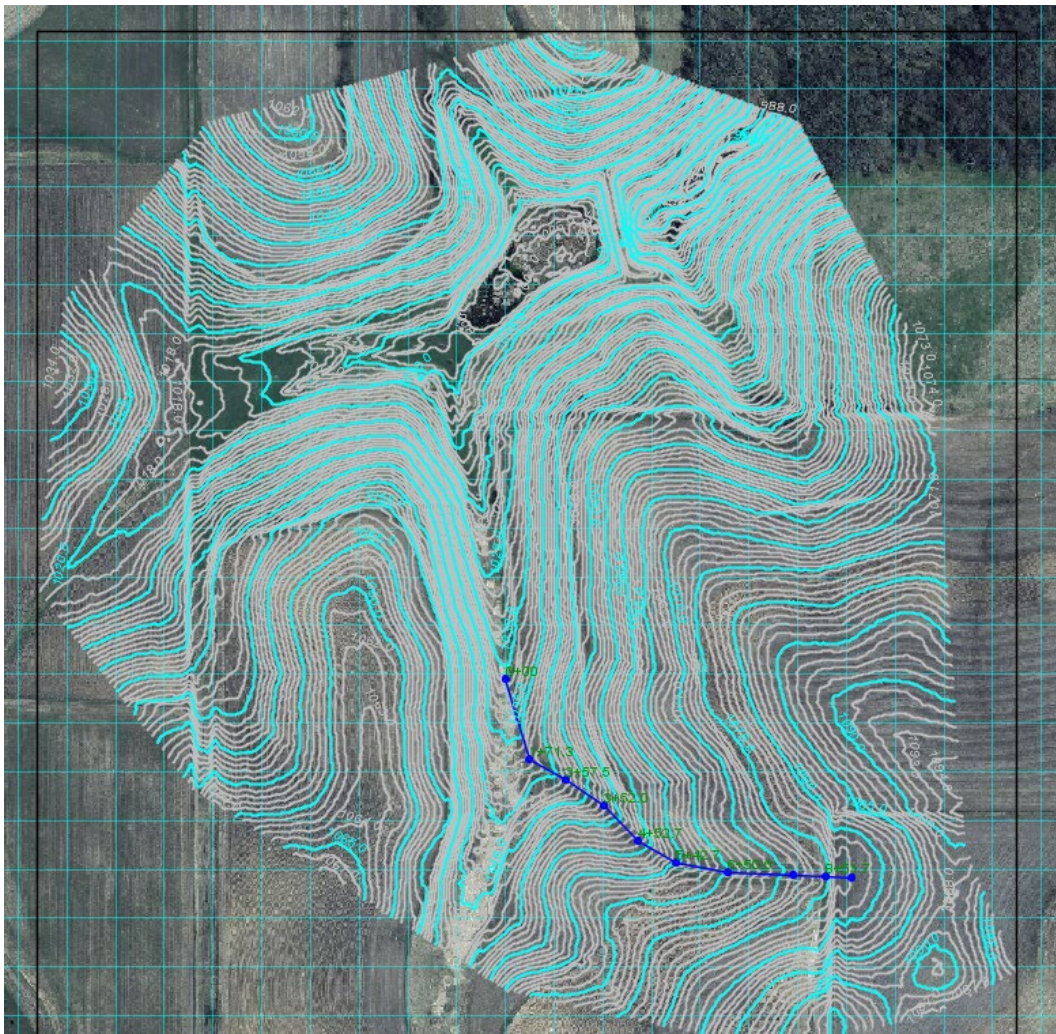
Right click on Ground Surfaces.

Select **Import DEM**

Below is a screenshot of the window and fields completed for importing the DEM, Contour shapefile and imagery (if needed).

****Pay special attention to the red circled options.



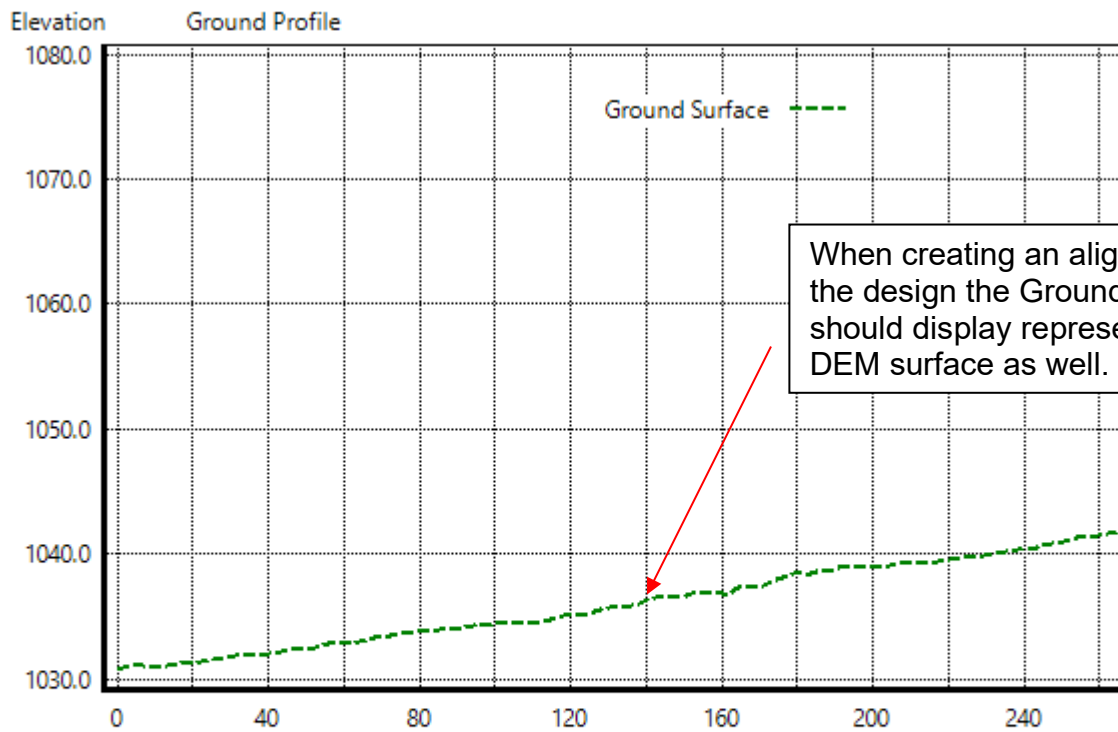


If done correctly, when the cursor hovers over the DEM/Contour Area, the elevation should be displayed in US Survey Feet.

US Survey feet
UTM_15N

X (Easting): 1,823,938.07 Y (Northing): 16,063,298.48
Elev. from DEM LiDAR

Z (Elevation): 1,059.61



Map Edit Operations



Sketch Alignment



Insert Station



Move Points

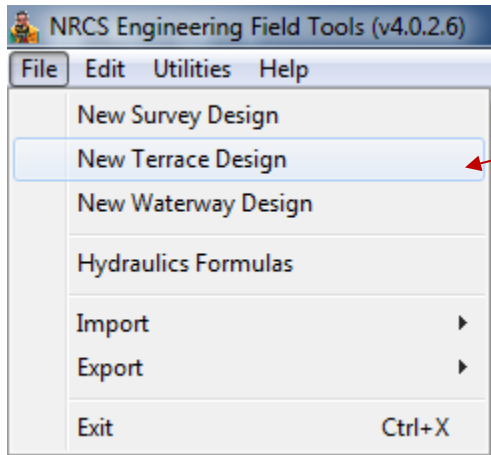


Apply Curves

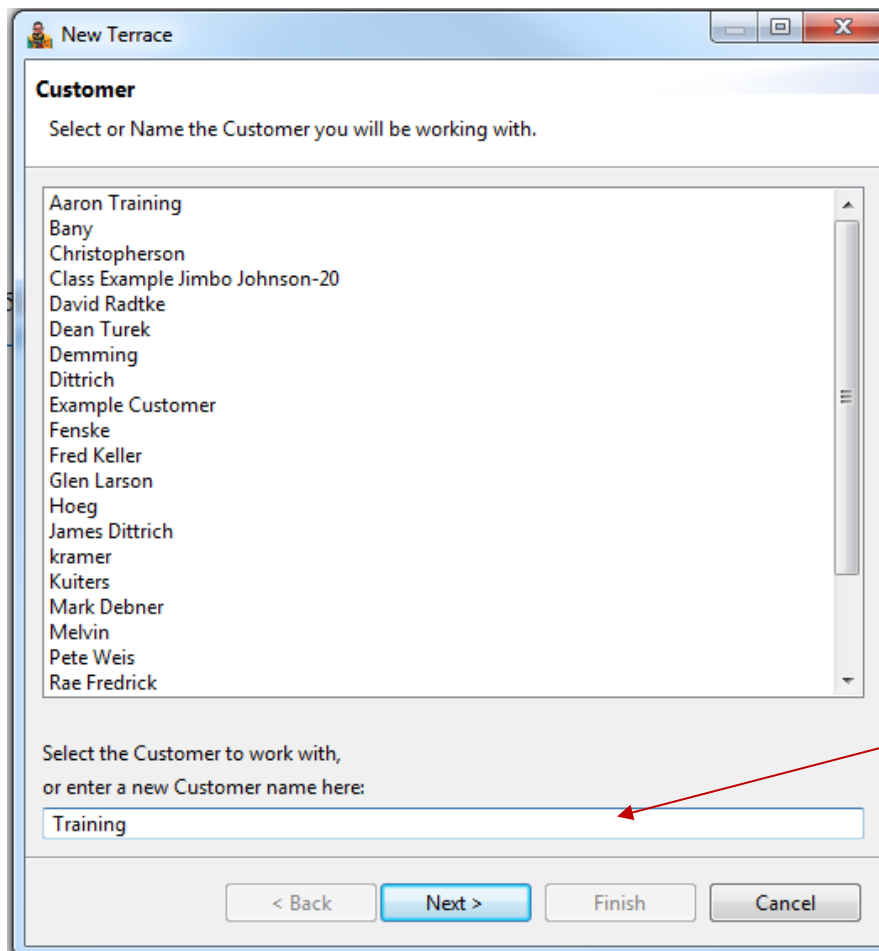
▼ Alignment Data

This reference guide covers the design of a simple water and sediment control basin using the Engineering Field Tools program as provided by the Natural Resources Conservation Service.

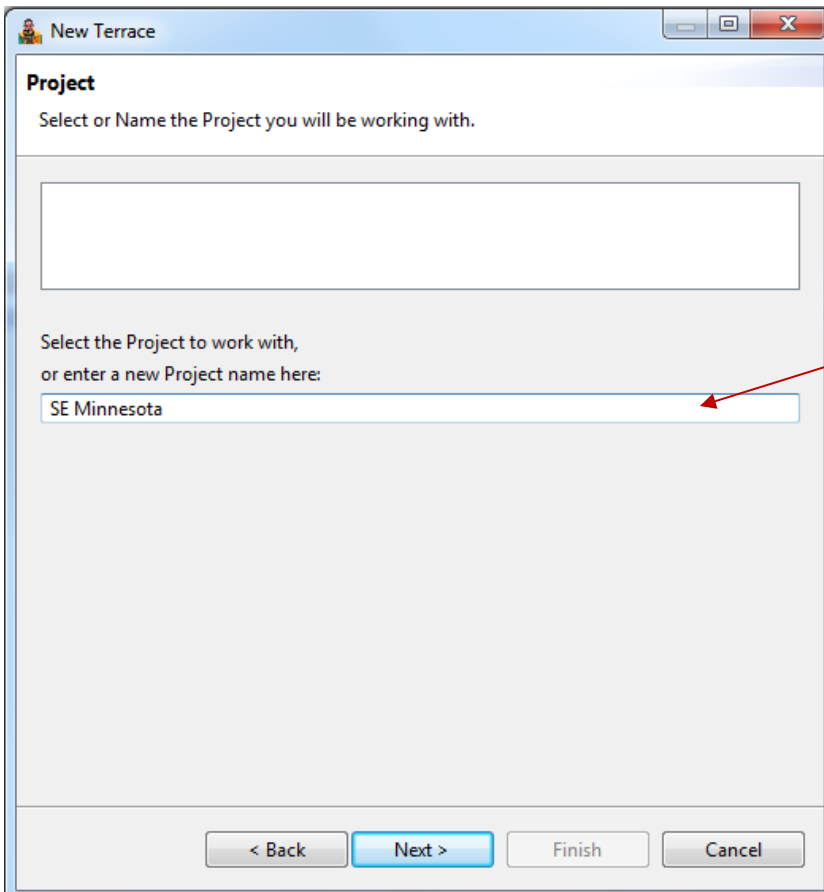
Creating a New Design



Under the File menu Select "New Terrace Design"



Create a new customer or select an existing customer (Landowner)



New Terrace

Project

Select or Name the Project you will be working with.

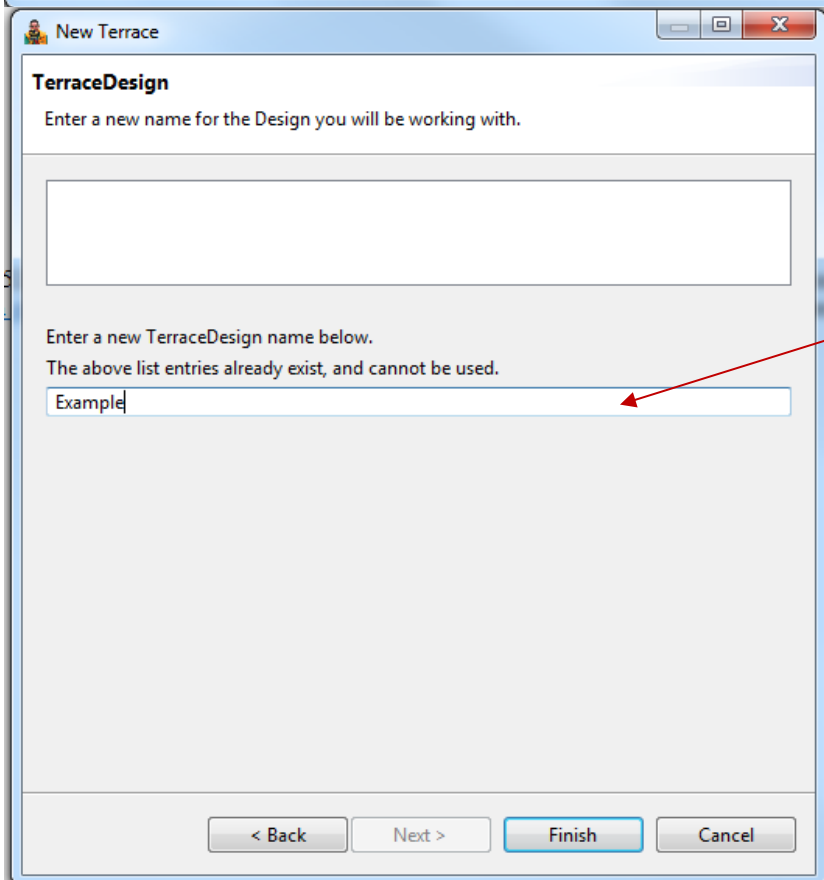
[Empty text box]

Select the Project to work with,
or enter a new Project name here:

SE Minnesota

< Back Next > Finish Cancel

Select a project from the list to work with if you have an existing customer or create a new project. Ex: Location (Township/Section)



New Terrace

TerraceDesign

Enter a new name for the Design you will be working with.

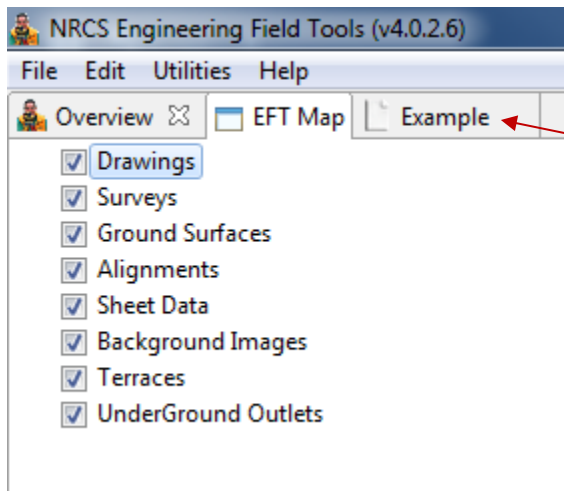
[Empty text box]

Enter a new TerraceDesign name below.
The above list entries already exist, and cannot be used.

Example

< Back Next > Finish Cancel

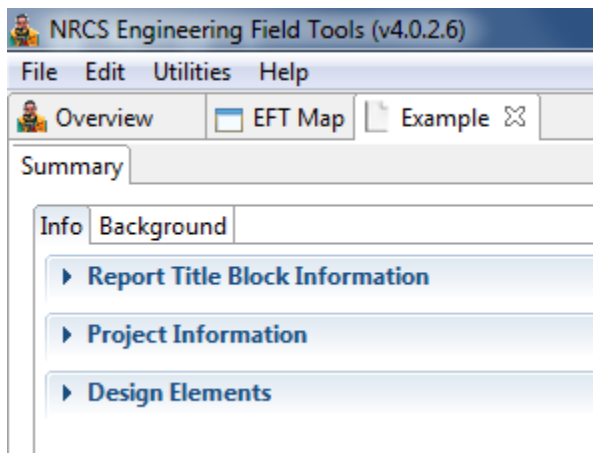
Enter the name of the design.
(Type: Basin/Waterway)



You will now have three tabs located near the top of the page.

Overview
EFT Map
Example (Project Name)

Highlight the project name to begin the design.



The project tab will have a Summary tab that includes an Info tab and Background Tab. (Expand both of these tabs to see the input information)

Info

Report Title Block Information – Project name, designed, drawn, checked, approved, applicable dates, location of project

Project Information – Description of the project, benchmark description and elevation

Design Elements – *The majority of the work will be done here.*
Surveys, Alignments, Terrace, UGO, Forms

Background

Landowner Preferences – Equipment width, Crops, Tillage, type of structure, type of outlet

Site Characteristics – Soils, Soil loss, Landscape Characteristics, Assumptions

Importing a Survey

Design Elements

Surveys

New
Open
Delete
Rename
Redraw

Under the Survey Window select New.

Create New Survey

Select a Name for your Survey:
Design Survey

Please select which type of Survey to create:

XYZ
Radial
XYZ
Station/Offset

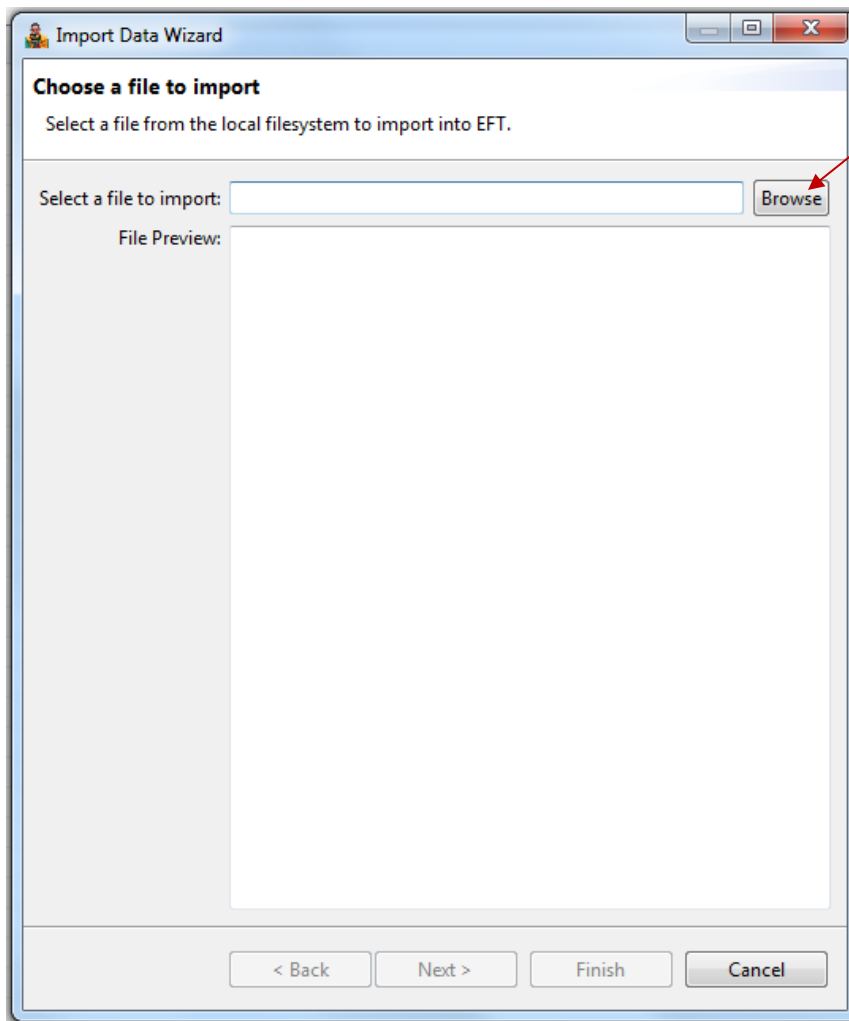
OK Cancel

-Name the survey that you would like to import.
-Make sure that the XYZ option is selected to import **electronic survey points**
-Click OK

Select "Import Data"

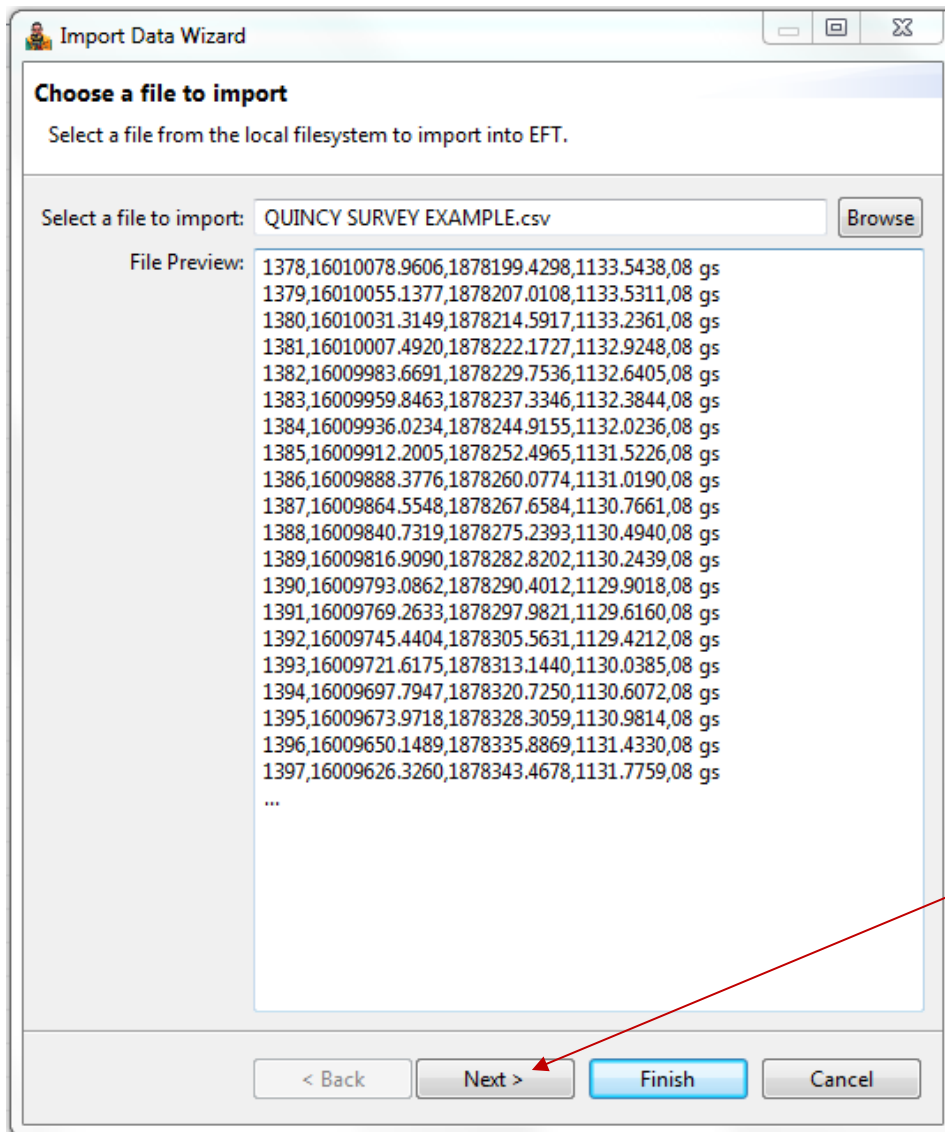
Import Data

Import Data



Click Browse to locate .csv file from desired folder.

(make sure that the file type is set to .csv)



The file preview will show an example of the points that you are importing. This is *just an example* and not the full list of points

-Click Next

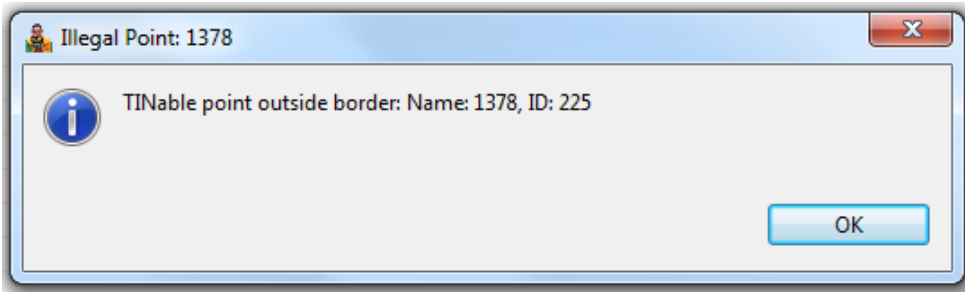
Select a conversion format. You should be selecting **"PNEZD"** as this is the standard format used with most of the electronic survey equipment. (this can be preset in the preferences)
-***No conversion

-Click "Finish"

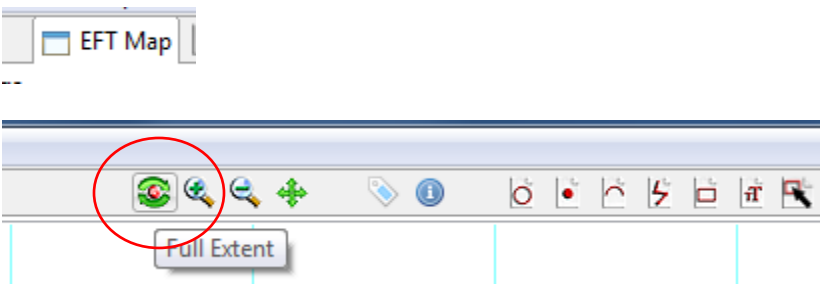
Name	X (Easting)	Y (Northing)	Z (Elevation)	Visible	Tinable	Description
1378	1878199.430	16010078.961	1133.544	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	08 gs
1379	1878207.011	16010055.138	1133.531	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	08 gs
1380	1878214.592	16010031.315	1133.236	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	08 gs
1381	1878222.173	16010007.492	1132.925	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	08 gs
1382	1878229.754	16009983.669	1132.641	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	08 gs
1383	1878237.235	16009959.846	1132.384	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	08 gs

Points will be added to the list in the survey. There are options to make each point visible and tinable. All points that would be included in a surface should be tinable. Benchmarks and survey points on pipes, walls or other structures that do not represent the landscape should **not be** tinable.

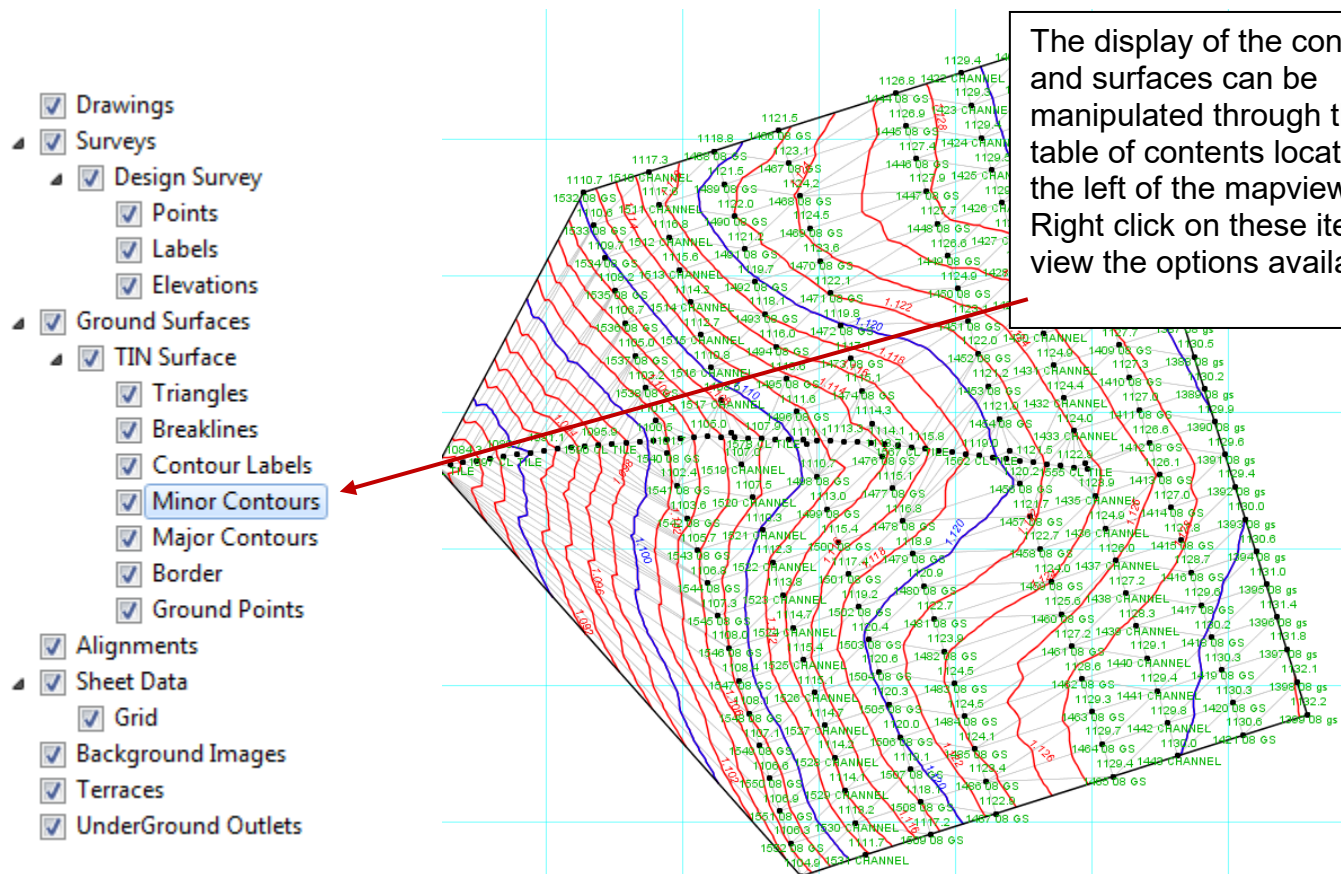
Select Accept Edit to confirm and close this window.



You may see this warning box indicating that certain points are outside the border. Click **OK** and go back into the survey and find the name of the point (1378) and uncheck the Tinable box for that point. At times there has been more than one point to be modified.

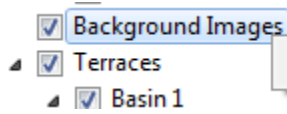


Go to the EFT Map tab. This is where your survey should show up. You will have to click the full extent button to zoom to the surveyed area.



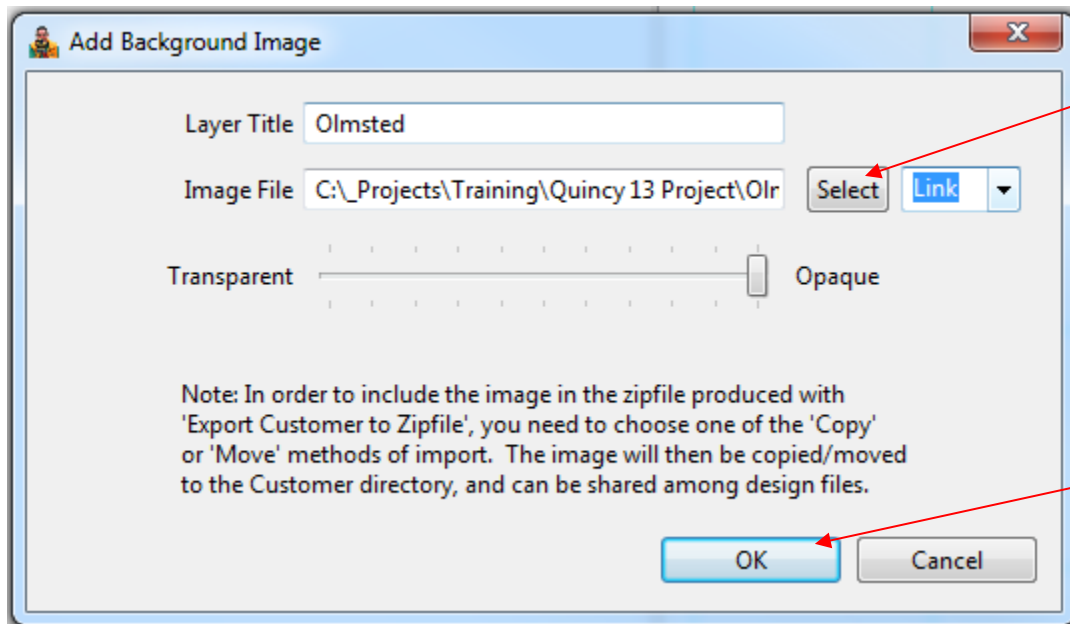
The display of the contours and surfaces can be manipulated through the table of contents located to the left of the mapview. Right click on these items to view the options available.

Adding an image to the map



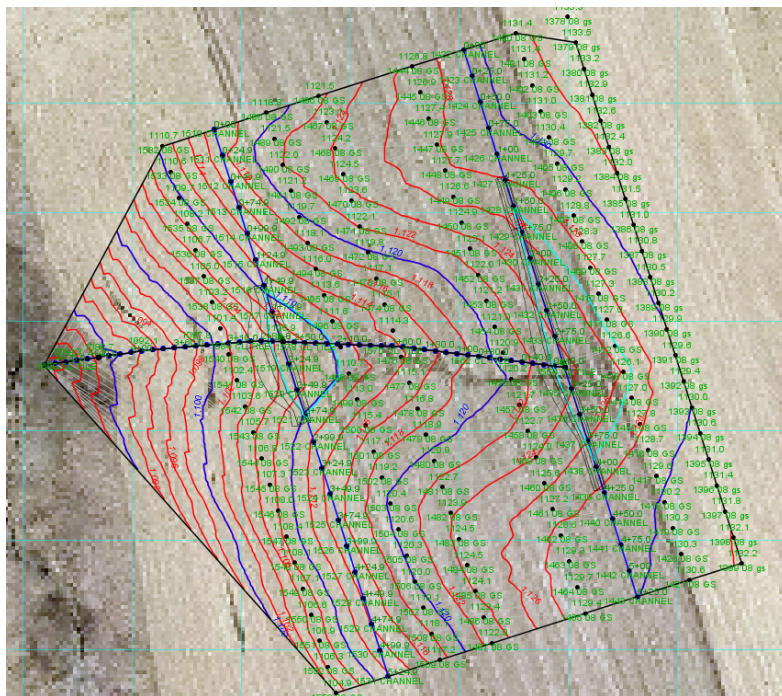
Add Background Image

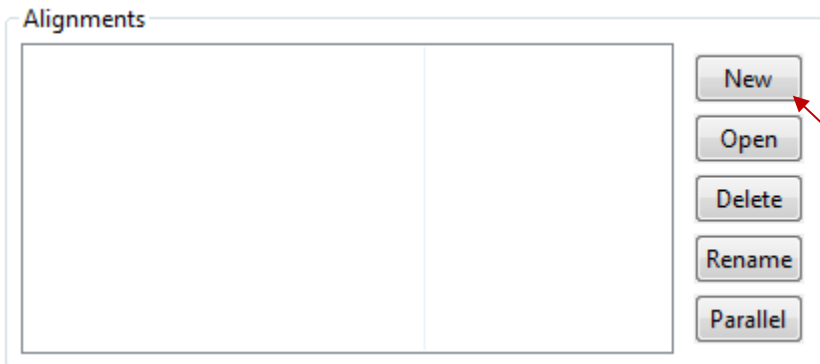
Right Click on Background Images.



Browse to image file. May need to change file type to view needed file.

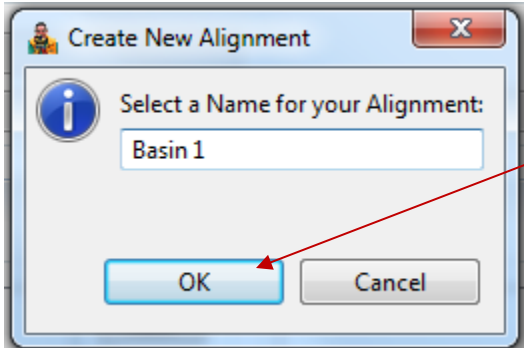
Select OK



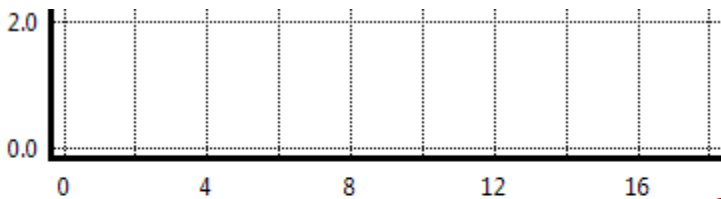


After the survey has been imported Alignments will need to be created. These are the channel alignments for the basins and tile.

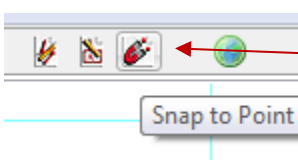
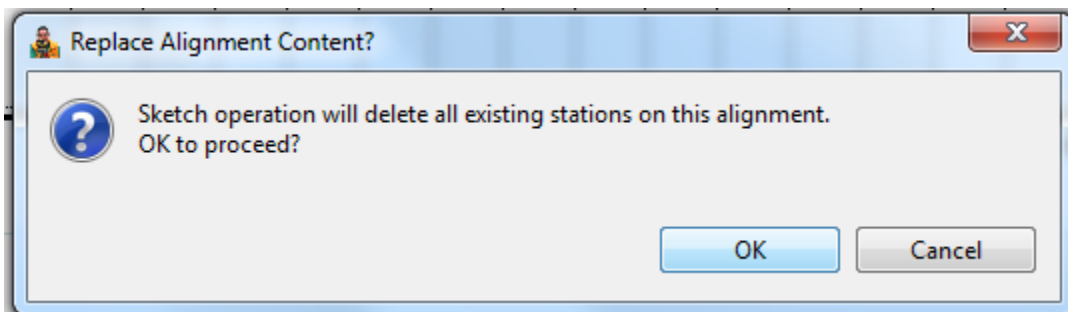
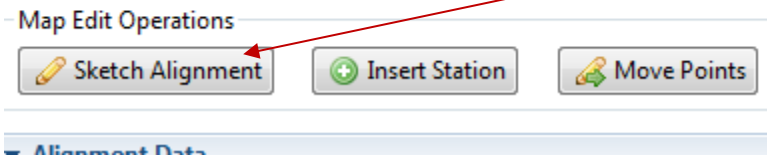
-Select New



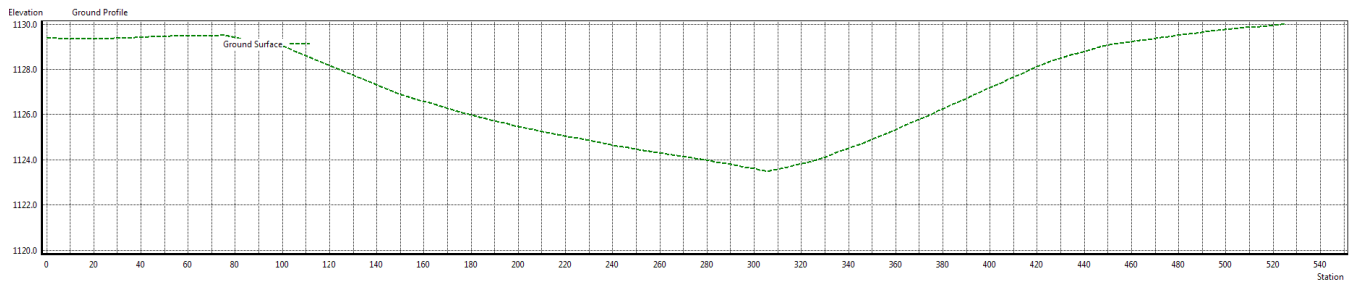
Name the alignment and click **OK**.



Click **Sketch Alignment**
-a window appears reminding the user that this operation will overwrite any existing alignment that has been created. Click **OK**



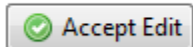
Selecting "Snap to Point" will allow you to create an alignment exactly where you surveyed the channel.



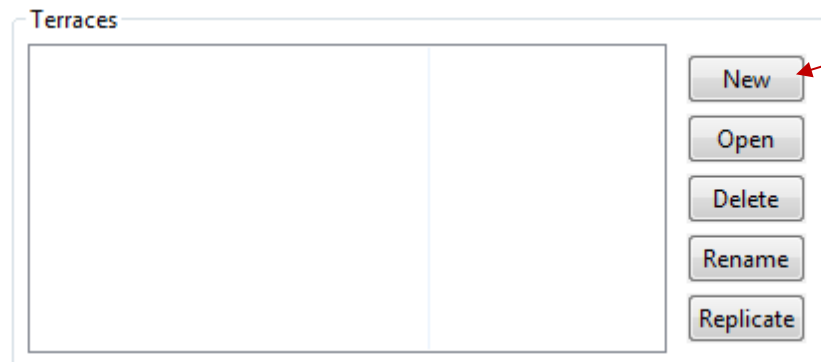
Map Edit Operations

A profile of the existing ground surface will be generated from the alignment that is drawn by “snapping” to the channel’s surveyed points.

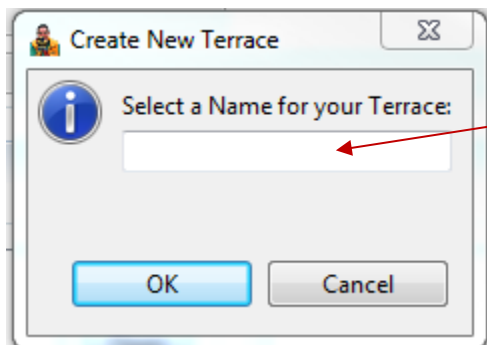
***If there are corners in the alignment, it is suggested to click Apply Curves for the alignment. This aids in the drawing of the embankment surface.**

Accept Edit

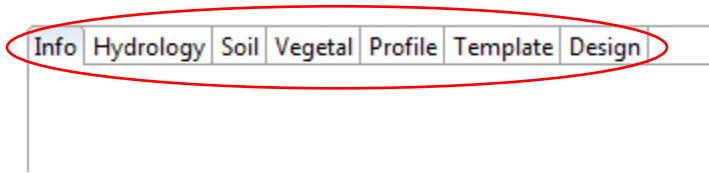
Select “Accept Edit” when completed.



Select “New” to create a new terrace design.



Name the new terrace/basin and select “OK”. (Eg. Basin 1)



Info tab

The design will open with multiple tabs available.

The Info tab requires us to choose an alignment from the menu.

Terrace Name

Terrace Type

Alignment  

Stripping Depth (in)

Construction Benchmark

☐ Set Terrace Benchmark

Elevation

Description

Select "Set Terrace Benchmark" to be able to fill out an Elevation and Description of the location.

Hydrology tab

This is self explanatory but make sure the Drainage Area is filled out in acres, the Precipitation in inches and a Curve Number is defined. The watershed length and slope can be documented but are not needed for determining the runoff volume. Ensure that the correct sedimentation rate is chosen. Lastly make sure that the Caldwell Method is the Flood Routing Model selected and start the first design with a Flood Duration of 24 hours (recommended). **The flood duration can be adjusted by the hour if the MN Preferences were set prior to beginning the project.

Drained Area (ac)	1.90	
-------------------	------	--

Runoff Model:	EFH2 Hydrology	
Precipitation (in)	4.50	
Storm Type	MSE3	
Curve Number	74	
Watershed Length (ft)	1000.0	
Watershed Slope (%)	3.0000	

Model Outputs

Design Life (yr)	10	
Erosion Model:	Simple Erosion	
Erosion Rate (T/ac-yr)	5.00	
Trap Efficiency	0.900	
Sediment Density (T/cy)	1.00	

Model Outputs

Flood Routing Model	Caldwell Method	
Flood Duration (hr)	24.0	

Model Outputs

Run Simulation Models	<p>Select Run Simulation Models to calculate the runoff storage volumes.</p> <p>Runoff Storage (cu ft): 8551.79 Equiv. runoff depth (in): 1.24 Required Discharge (cfs): 0.16</p>
-----------------------	---

Soils Tab

The erodibility class has to be chosen based on the soil type classification from the soil survey. This is intended to determine the tractive stress properties of the soils in the channel. Below is a decision tree for deciding which erodibility class one should use for their respective soils which is derived from the MN Engineering Field Handbook Part 650 Chapter 7 (MN 7-13.8)

https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_021665.pdf

Info Hydrology **Soil** Vegetal Profile Template Design

Allowable Soil Stress

☐ Direct entry
 Allowable Stress (lb/sq.ft)
 Soil Grain Roughness

☒ Erodibility class
 Erodibility **ERODIBLE**
 Soil Grain Roughness

Erodibility	Allowable Stress	Soil Type
Easily Eroded	0.020	Weak/sandy materials
Erodible	0.030	CL with plasticity on order of 10
Erosion Resistant	0.050	CL with plasticity on order of 15
Very Erosion Resistant	0.070	Slightly < maximum base value CL and SC material

☐ Soil parameters
 Soil Type
 Void Ratio (optional)

Plasticity Index
 d75 (in)

Decision Tree

If the soil textural class is	And the reference PI is	the erodibility class is
CL	Any value	Erosion resistant (ER)
CH	Any value	Very erosion resistant (VER)
CL-ML	PI <= 16	Erodible (E)
CL-ML	PI > 16	Erosion resistant (ER)
ML	PI < 5	Easily erodible (EE)
ML	5 <= PI < 19	Erodible (E)
ML	PI >= 19	Erosion resistant (ER)
MH (elastic silts)	PI <= 15	Erodible (E)
MH (elastic silts)	PI > 15	Erosion resistant (ER)
SC, SC-SM, SM	PI < 5	Easily Erodible (EE)
SC, SC-SM, SM	PI >= 5	Erodible (E)
SP, SP-SM, PT, organics	Any value (typically PI < 5)	Easily erodible (EE)

Vegetal Tab

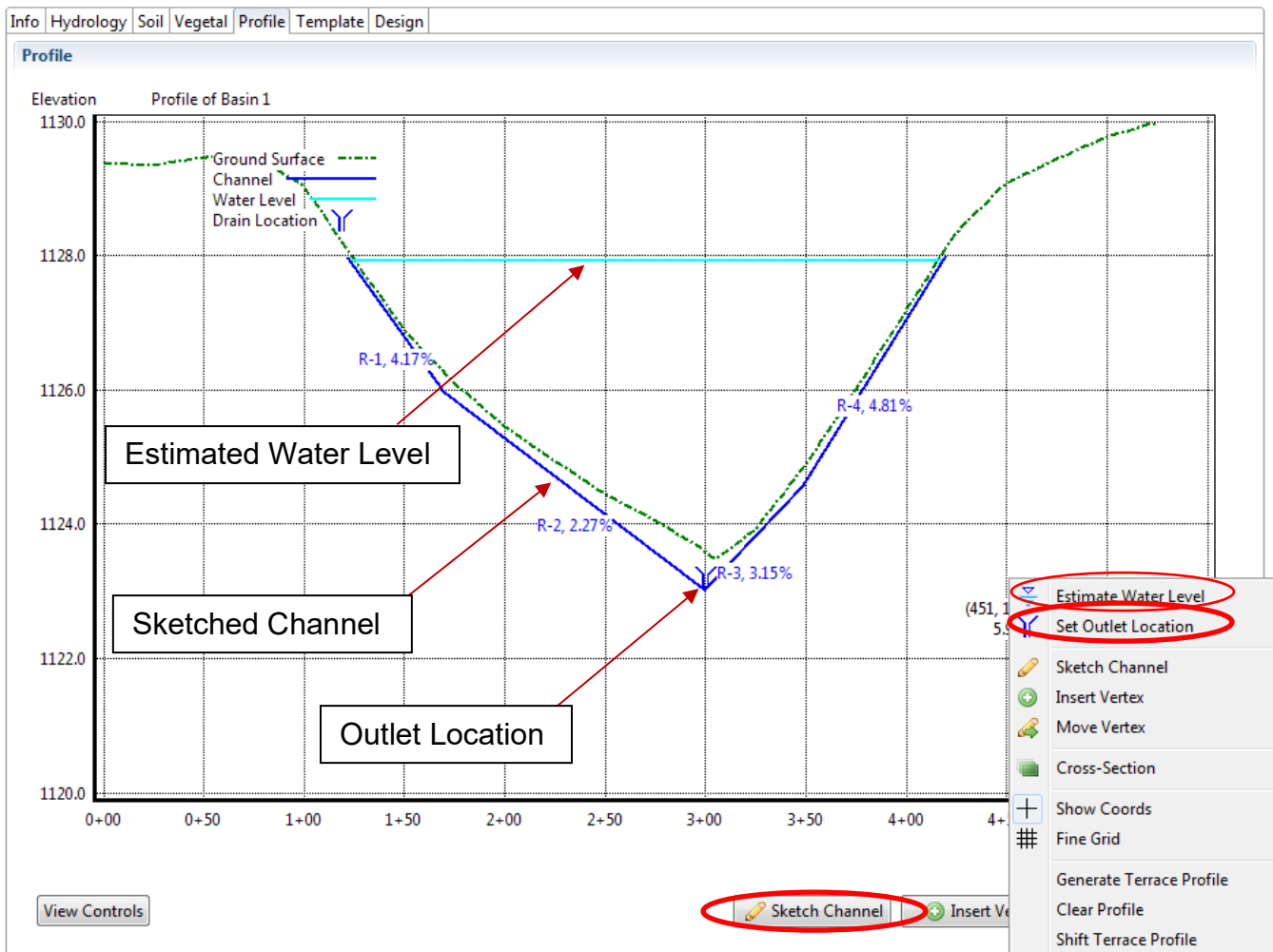
This tab defines the vegetation that is to be used in the channel of the basin/terrace. In most cases there is not any vegetation in the channel. For this reason the Mannings n values for both Stability and Capacity should be set to 0.035, the value for bare earth. The vegetal cover should be set to None (bare, 0.0) indicating there is no vegetation.

Info	Hydrology	Soil	Vegetal	Profile	Template	Design
Stability Retardance						
<input checked="" type="radio"/> Manning's n		<input type="text" value="0.035"/>				
<input type="radio"/> Retardance Curve Index		<input type="text" value="0.04"/>				
<input type="radio"/> Stem Length/Density		Length (ft) <input type="text" value="0.10"/>	Density (#/sq.ft) <input type="text" value="11.0"/>			
<input type="radio"/> Retardance Class		<input type="text" value="C"/>				
Vegetal Cover (select or enter numeric value)		<input type="text" value="None (bare, 0.0)"/>				
Capacity Retardance						
<input checked="" type="radio"/> Manning's n		<input type="text" value="0.035"/>				
<input type="radio"/> Retardance Curve Index		<input type="text" value="0.04"/>				
<input type="radio"/> Stem Length/Density		Length (ft) <input type="text" value="0.10"/>	Density (#/sq.ft) <input type="text" value="11.0"/>			
<input type="radio"/> Retardance Class		<input type="text" value="B"/>				

Profile Tab

This tab is where the planned channel grades will be determined. Follow the steps below to draft a final gradeline for the basin channel. Tip: When hovering on the profile view the station and elevation can be displayed by turning this option on from the **View Controls** button.

1. Select **Sketch Channel** to begin drawing final channel.
 - a. Pick an elevation along the ground line above what you estimate the height needed. ***Make sure the planned channel is slightly below the original ground.
2. Right click on the profile view and select **Set Outlet Location**. Then click on the profile at the location where you would like to place the intake (station and elevation). A window will appear where you can define the Drain, Drain Fraction, Offset and connect it to an underground outlet. ***You will not have an underground outlet to connect to as it has not been defined yet.
3. Right click on the profile view and select **Estimate Water Level**. Then click on the profile at the elevation which you would estimate the maximum water level for this structure. This aids in the initial design run of the structure.



Template Tab

This tab will define the cross section of the planned basin dimensions. Follow these steps to accurately define the desired dimensions for your project.

1. **Orientation:** Choose the direction of the cross-section. When looking along the channel alignment in a direction of increasing stations what direction is uphill from the flagline location. The **UPSTREAM_TOE** should be selected.
2. **Cross-Section Controls:** These options control the shape. **Select from DB** to choose narrow base, grassed-backed, or broadbase. The dimensions of each can be modified by double clicking on an item in the **Default Template**. Make sure you **Apply Defaults** if changes are made. **The **Front Height** refers to the minimum height to be built. This will have an effect on the ends of the basin.
3. **Optional Shape Controls:** These control the overfill amounts and reactions of the berm at the ends of the structures.

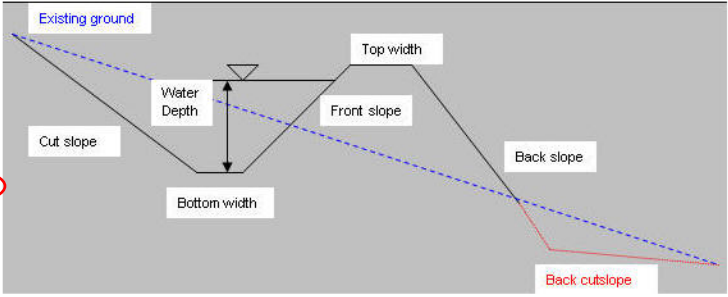
Info Hydrology Soil Vegetal Profile Template Design

Orientation

Uphill Direction
Uphill is to ☒ Left ☐ Right
when looking along the Alignment

Flag Line Location: **UPSTREAM_TOE**

Offset from Alignment (ft): 0.0



Cross-Section Controls

Default Template

Name	Cut Slope	Front Slope	Back Slope	Btm. Width	Front Height	Top Width
NarrowBase	5.00 : 1	3.00 : 1	2.00 : 1	2.00	1.00	3.00

Select from DB
Apply Defaults

Vertex Templates

Station	Name	Cut Slope	Front Slope	Back Slope	Btm. Width	Front Height	Top Width
1+22.2	NarrowBase	5.00 : 1	3.00 : 1	2.00 : 1	2.00	1.00	3.00
1+70.4	NarrowBase	5.00 : 1	3.00 : 1	2.00 : 1	2.00	1.00	3.00
3+00.1	NarrowBase	5.00 : 1	3.00 : 1	2.00 : 1	2.00	1.00	3.00
3+49.0	NarrowBase	5.00 : 1	3.00 : 1	2.00 : 1	2.00	1.00	3.00
4+20.3	NarrowBase	5.00 : 1	3.00 : 1	2.00 : 1	2.00	1.00	3.00

Select from DB
Copy
Paste
Slope Limits

Optional Shape Controls

Overfill Mode: **PERCENT**
Overfill Amount (%) 10.0
Freeboard Mode: **NONE**
Freeboard (ft) 0.0

Back Cut
☐ Enable back cut
Minimum slope width (ft) 5.0
Back Cut-Slope Grade (%) 1.0

Bank Start Slope
Mode: **RATIO_BASED**
Value (ft/ft) 1.0
Limit (feet) 5.0
☒ Grade Channel/Bank at Start

Bank End Slope
Mode: **RATIO_BASED**
Value (ft/ft) 1.0
Limit (feet) 5.0
☒ Grade Channel/Bank at End

Design Tab

This tab will run the design parameters against the hydrology requirements to develop a required height. Follow the steps below to complete the design.

1. **Simulate Runoff** to ensure you have an up to date storage volume requirement.
2. **Compute Storage** at the estimated water level. This may give you a warning on fill height as it is running the design at whatever you picked.
3. **Design Terrace** to run the design and calculate the actual height and elevation of the top of the berm.

The model outputs section displays the required elevation as well as quantities of earthfill/excavation. Also included are the Flooded Area acres and Computed Storage volume in cubic feet.

The channel section displays the channel profile and cross-section templates. You may need to make some modifications, in both the profile and cross-section tabs like channel elevations and topwidths.

Info
Hydrology
Soil
Vegetal
Profile
Template
Design

Terrace Design

Simulate Runoff
Compute Storage
Design Terrace
Balance Cut/Fill
Edit Balance Params

Water Elevation (ft) 1126.70
Req. Storage (cu ft): 10860.29
Target Cut/Fill Ratio 1.00

Model Outputs

For water elevation 1126.70 ft:
Total Cut (cy): 111.7
Total Fill (cy): 335.9
Cut/Fill Balance (cy): -224.2
Cut/Fill Ratio: 0.33
Stripping Volume (cy): 100.2
Flood Area (ac): 0.21
Computed Storage (cu ft) 10934.23

Channel

Profile Points
Cross-Section Templates

Station	Ground	Channel	Length	Grade	Flow Q	Flow Velocity	Flow Depth	Front Height	Design Height	Drain	Block
1+22.2	1128.06	1127.97	48.20	4.17%	0.00	0.00	0.00	1.00	1.10		
1+70.4	1126.24	1125.96	129.70	2.27%	0.64	1.95	0.13	1.00	1.10		
3+00.1	1123.59	1123.02	48.90	3.15%	2.36	2.63	0.29	1.00	4.07	Basin 1 Intake	
3+49.0	1124.83	1124.56	71.30	4.81%	0.95	2.32	0.16	1.00	2.36		
4+20.3	1128.11	1127.99	0.00	0.00%	0.00	0.00	0.00	1.00	1.10		

Design Status

No errors or warnings

***This completes the design for Basin 1. Select **Accept Edit** to close the window and return to the Summary page. Use the previous pages to design additional basins. Once completed an Underground Outlet Design will be built.

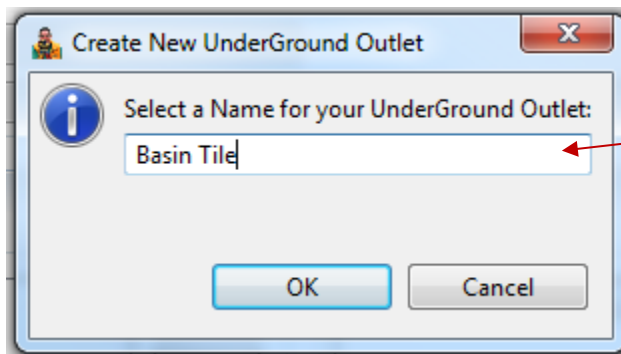
Design of Tile Outlet

UnderGround Outlets

New
Open
Delete
Rename
Simulate

Select New in the Underground Outlets box.

*The alignment for this needs to be already drawn.



Name the tile line and select **OK**.

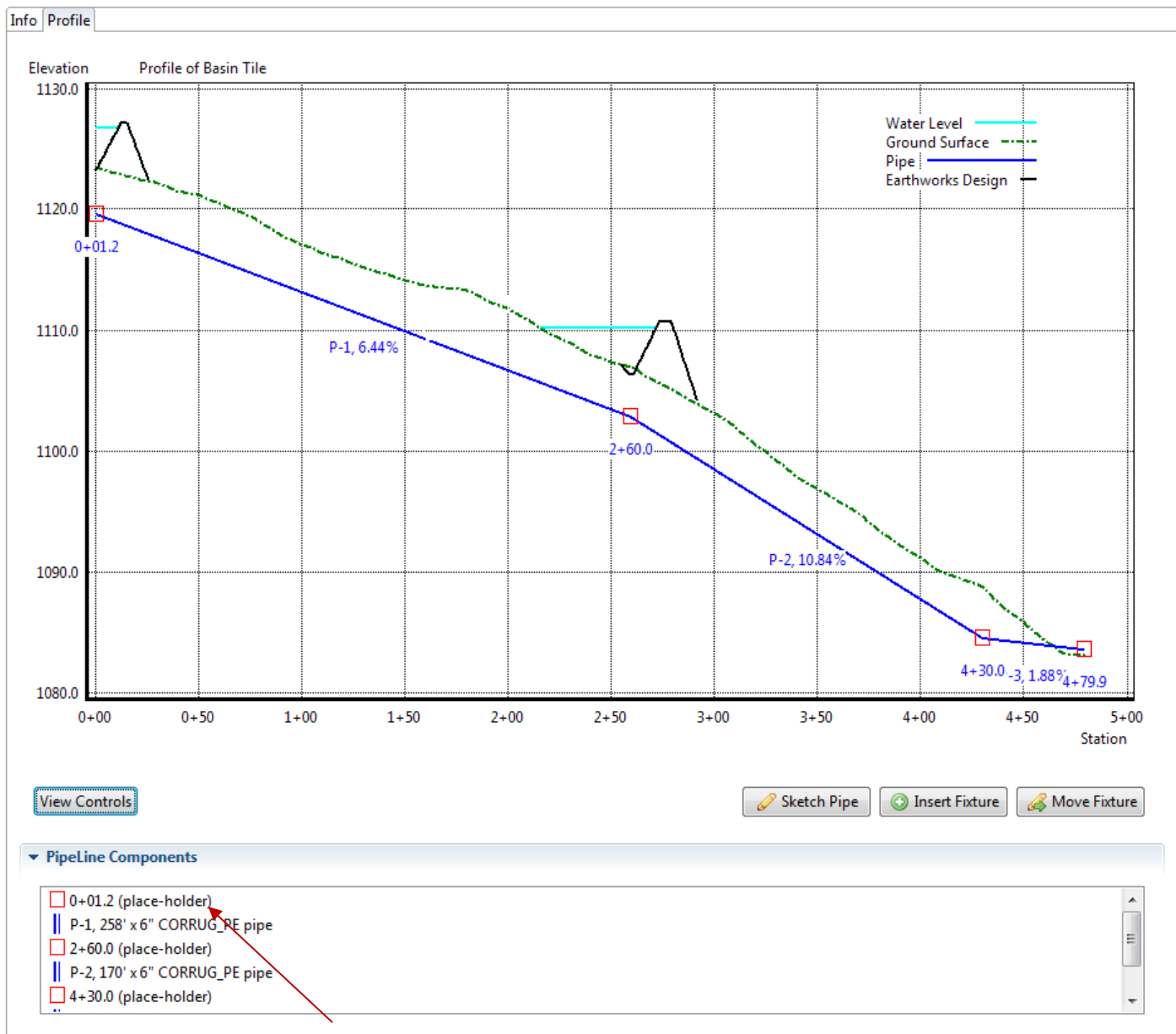
Ensure that the alignment for the tile is selected. Also make sure the soil type along the tile route is correct to check allowable velocities


Info Tab

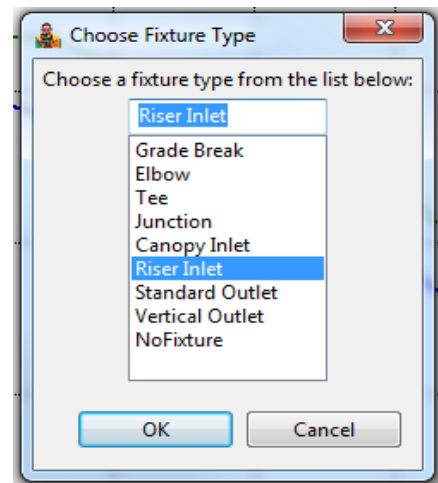
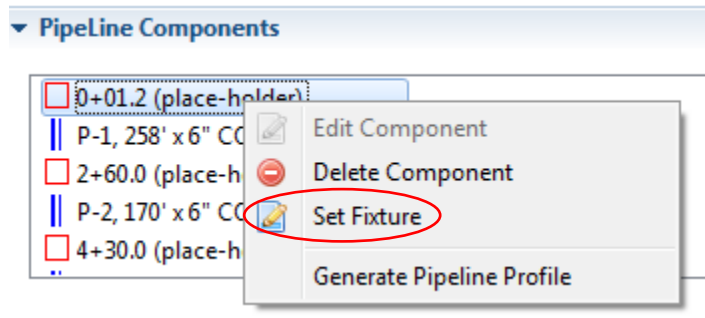
Profile Tab

This is where you will draw the profile, insert grade breaks and inlets. Use the steps below to design the underground outlet for the basins. (Graphics on next pages)

1. Select Sketch Pipe to begin drawing the profile. I start with the left side. Some assumptions can be made to the starting station and elevation but if the Cursor Coordinates are on (View Controls) you will see this information. You will see the table populate below showing the grade breaks and associated slopes. A predetermine pipe size has been assumed from previous settings.



- Right click on one of the (place holders) in the pipeline components to **Set the Fixture**. The intakes should be pretty evident by the stationing on where they are. Then choose the correct fixture type. Each one of these components indicated with a red box  needs to be set in order for the design to work correctly. The blue pipelines can be left alone for the time being. Accept these edits when completed.



Riser Inlet Inputs

Id: Basin 1 Intake Station (ft): 0.0 Intake Stations

Flow Q (cfs): 0.52 Pipe Elevation (ft): 1119.48 Tile elev

Material: CORRUG_PE_PERF ☒ Perforated

Pipe Size (in): 6.0 ☐ Pressurizable

Manning's N: 0.015

☐ Pressure Flow

☒ Use Manufactured Riser: HICKENBOTTOM_6 Select... Select Intake

Inlet Top

Guard: CAPPED

Top Opening (in): 1.00

Plugged Fraction: 0.50 Qtop = 0.00 cfs

Perforated Riser

Holes per ft: 40 Height (ft): 3.0

☒ Round Perf: 1.00 Perf. diam., in

☐ Rectangular Perf: 0.00 Perf. width x 0.00 height, in

Plugged Perf Fraction: 0.5 Qperf = 0.52 cfs

Water Source

Terrace and Outlet: No Connection
 Basin 1: Basin 1 Intake (4.9')
 Basin 2: Basin2 (262.3')

Terrace Conditions:
 Required Q: 0.158 cfs
 Flood Elevation: 1126.7 ft
 Channel Elevation: 1123.0 ft
 Pipe Depth below Channel: 3.5 ft

Average Flood Depth Factor: 0.8
 UGO-Sizing Flood Depth Factor: 1.0

Orifice Plate
☒ Use Orifice
☒ User-Defined Size
 Orifice Depth (in): 6.00
 Diameter (in): 3.00
 Qorifice = 0.52 cfs

Offset Pipe
☐ Use Offset
 Offset Length (ft): 0.0
 Elbow Elevation (ft): 0.0
 Material: CORRUG_PE_PERF
☒ Perforated
☐ Pressurizable
 Pipe Size (in): 6.0
 Manning's N: 0.015

Design Controls
 Compute Inlet Q
 Average Flow: 0.47 cfs
 Release Time: 8.1 hrs
 UGO-Sizing Flow: 0.52 cfs
 Qperf + Qtop = 0.47, Qorifice = 0.47
 Qperf + Qtop = 0.53, Qorifice = 0.52

Connect to basin

Based on drawdown time selected in hydrology (i.e. Flood Duration = 24 hr)

Choose Orifice Size

Compute Capacities
 Note actual release time!!

3. The designed underground outlet needs to be Simulated. Click on **Simulate** when the desired tile line design is selected. This simulation will adjust the tile sizes based on volume of water delivered.

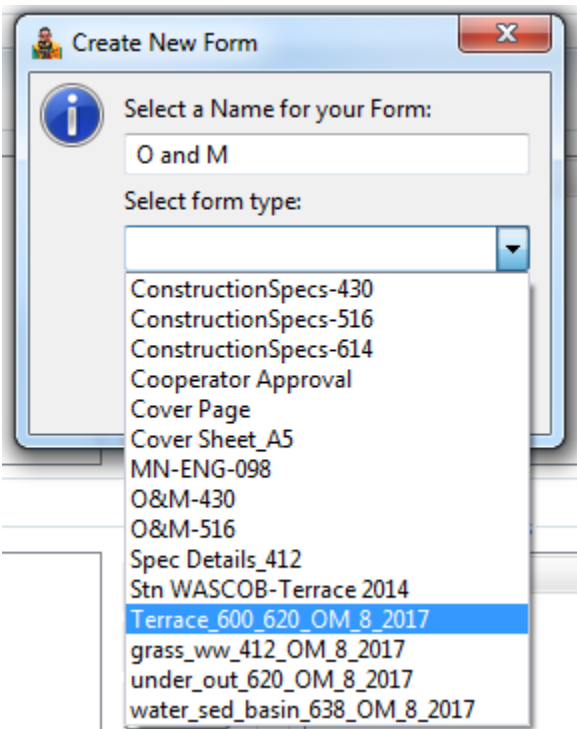
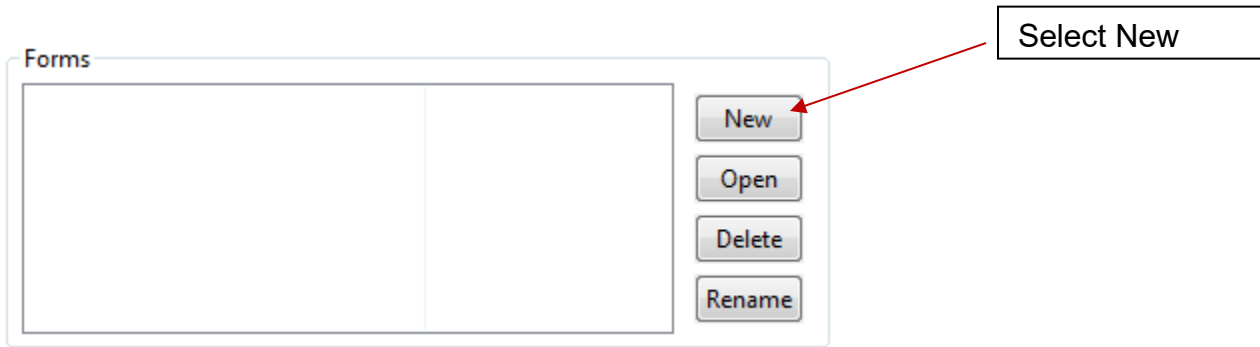
UnderGround Outlets

Basin Tile

New
 Open
 Delete
 Rename
 Simulate

Select Simulate

Standard Forms



Standard forms can be incorporated into the design so they will automatically print with the design.

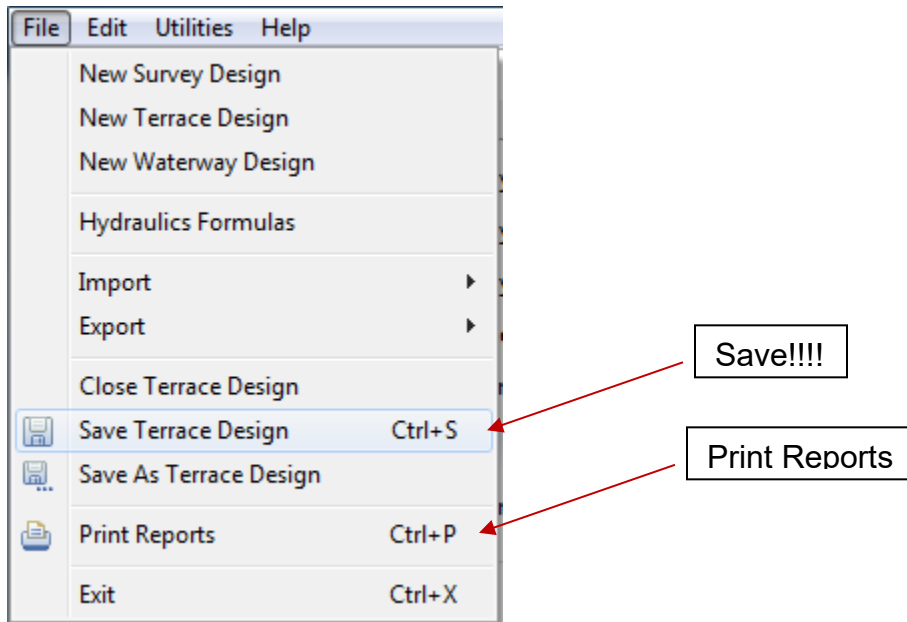
These forms need to be placed in the following location.

C:\Users*your user name*\AppData\Local\EFT\eft\workspace\formTemplates

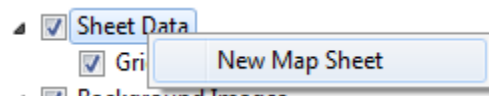
- Seeding Sheets
- GSOC
- O&M
- Specifications

Print Reports

***Make sure you save your design before Printing Reports to ensure it has the most up to date information.



***Before we print the reports we should develop a Map Sheet (Cover Sheet). This is located on the Map tab in the table of contents.



Edit Map Sheet

Edit Map Sheet parameters below:

Drawing Name

Sheet Title

Sheet Size

Sheet Layout

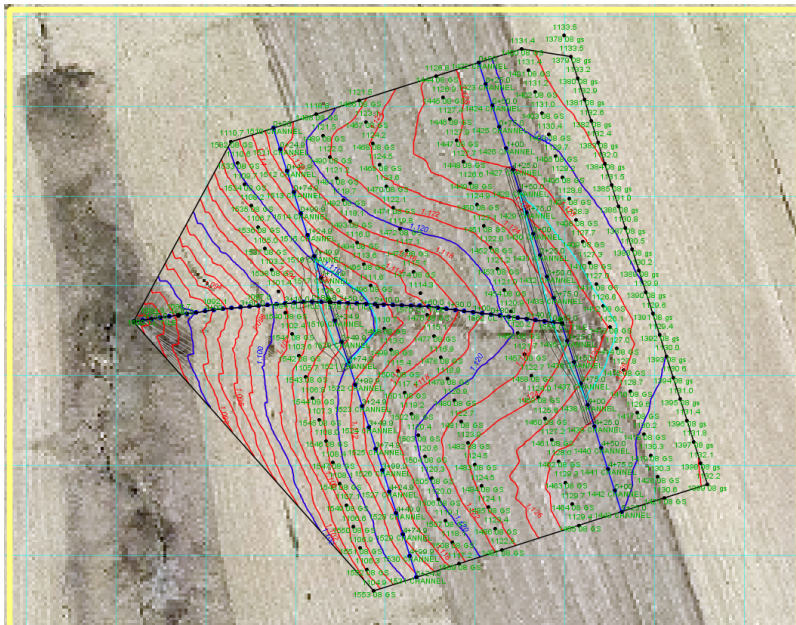
Print Scale, ft/in

Optional Symbols

☒ North Arrow ☒ Scale Bar ☒ Legend Key

Sheet Size

A – 8.5x11
B – 11x17
D – 22x34



Boundary of created sheet (Color can be changed)

Layer Properties

Preview Sheet

Edit Params

Move Sheet

Delete Sheet

Save Map-Layer Config

Restore Map-Layer Config

Select **Preview Sheet** or move sheet to encompass the area to be displayed.

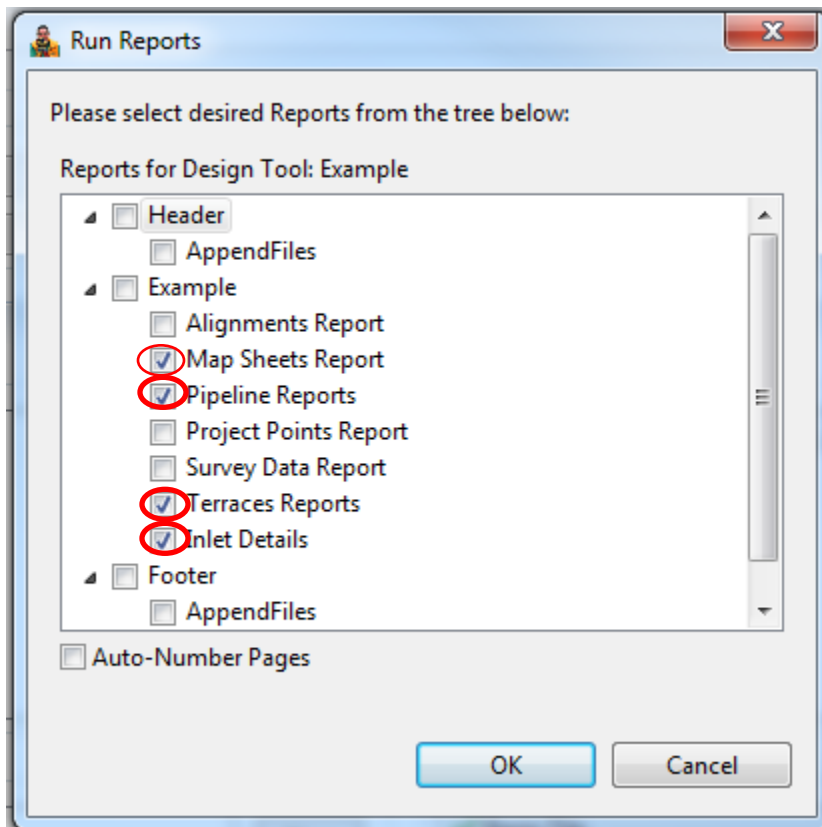


Too much showing?

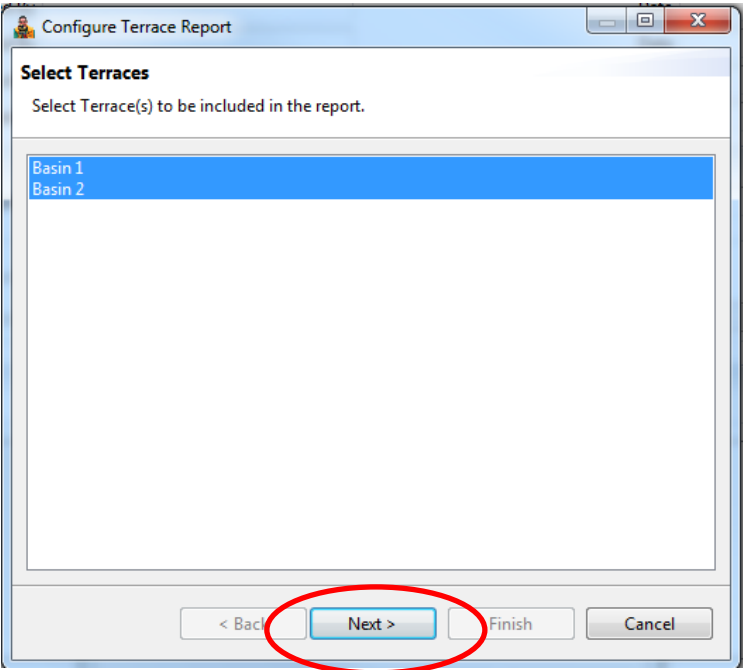
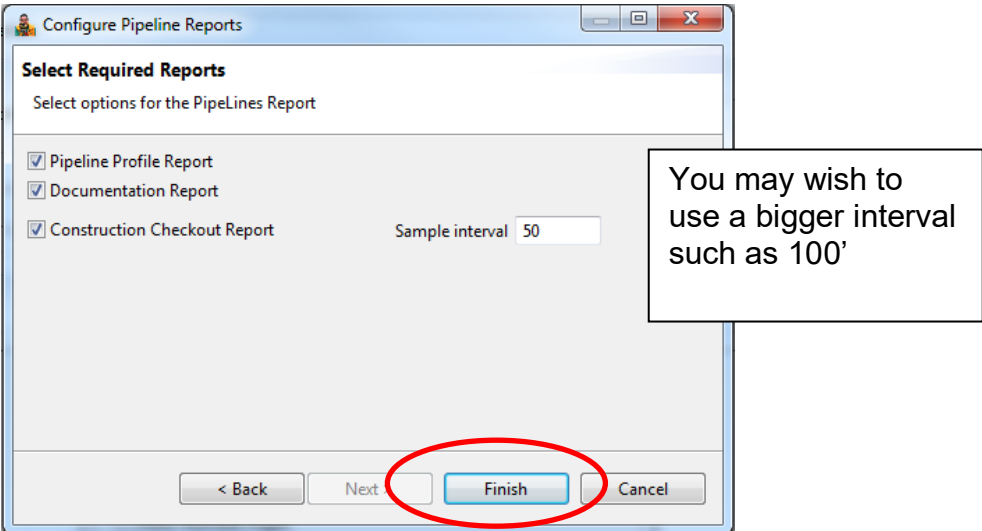
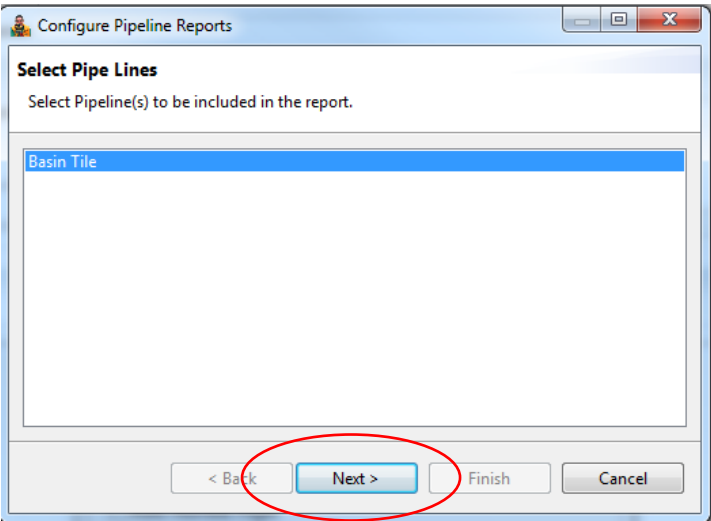
Suggestions:

- turn off layers in table of contents to reduce legend items.
- shut off points
- change colors of contours....
- change colors of alignments

--Go back to File>>Print Reports



Upon checking each box, you will be asked to configure each report.



Configure Terrace Report

Select options for Terrace Reports

Design Reports (one per package)

- ☒ Terraces Summary Report
 - ☐ Include control points, desc. starting with
 - ☐ Include signature block
- ☒ Typical Cross-Section Sheet

Terrace Reports (one per terrace)

- ☒ Terrace Profile Report
- ☒ Cross-Section Report
- ☒ Cross-Section Checkout Sheet
- ☒ Documentation Report
- ☒ Construction Checkout Report

Scale Factor

Sample interval

< Back Next > **Finish** Cancel

Configure Inlet Details Report

Select options for the PipeLines Report

Select Inlets

Select options for the PipeLines Report

Basin Title:Basin 1 Intake
Basin Title:Basin 2

Finish Cancel

Run Reports

Please select desired Reports from the tree below:

Reports for Design Tool: Example

- ☐ Header
 - ☐ AppendFiles
- ☐ Example
 - ☐ Alignments Report
 - ☒ Map Sheets Report
 - ☒ Pipeline Reports
 - ☐ Project Points Report
 - ☐ Survey Data Report
 - ☒ Terraces Reports
 - ☒ Inlet Details
- ☐ Footer
 - ☐ AppendFiles

☐ Auto-Number Pages

OK Cancel