TractBuilder Tools Guidebook

Tutorials on the TractBuilder Quartering and Metes & Bounds Tools for ArcGIS

Introduction

This document will cover the use of the TractBuilder *Tools for ArcView*. We designed our tools to be easy to use, yet feature-full, so that everyone, from the GIS student to the experienced GIS professional, can benefit from using our tools. Many people successfully begin using our tools without training or tutorials; but by reading this document you have decided not to be one of many, but to be someone who can tap the full potential of the amazing resource provided to them here. I encourage you to read this entire guide, work along with the tutorials, and practice your skills with the optional exercises found in the Appendices. Whether you purchased a single tool or our entire suite you can benefit from knowing what is available from TractBuilder and how to use it.

The format for these tutorials is very consistent; they are designed to flow naturally, stimulate the mind and encourage you as you learn. You can master every aspect of these tools using the tutorials provided here. Tutorial Format:

Introduction
Process
Summary

Some tutorials may have words or phrases you are unfamiliar with, especially if you are new to the industry. You can find definitions for words that are **bold** located in the glossary at the end of this guidebook.

We value each of our users and hope that you will let us know your experiences with these tutorials and of your successes afterward.

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Tutorial 1: Installation and Registration

Introduction

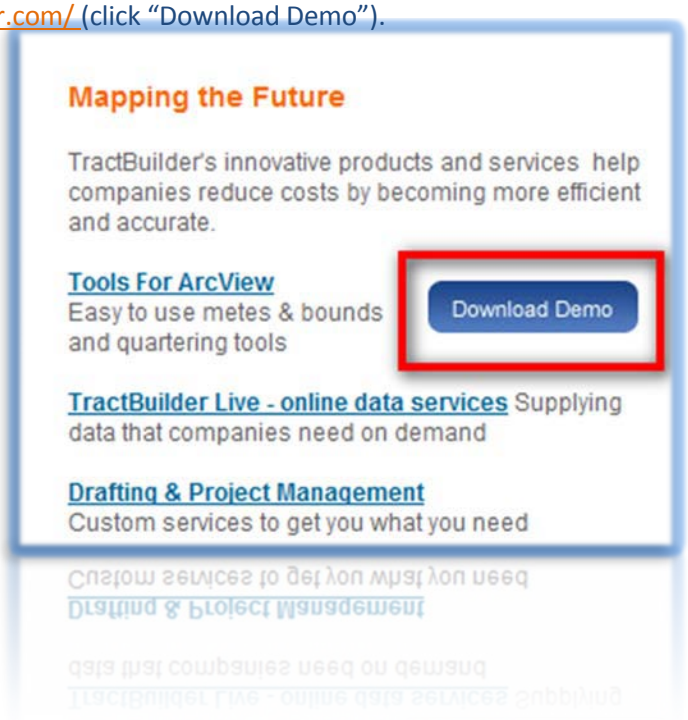
Before you can begin using the tools you have to install them. Each purchase comes with a registration key, that key may be used only once. A key will need to be purchased for each individual computer you wish to install it on, or in the case of multiple people using a single machine simultaneously (such as with a *terminal server*) a key will be need for each user. ArcMap 9.3 or 10.0 and above is required to run the tools. If your machine can run ArcMap the hardware requirements for the TractBuilder tools are met.

Process

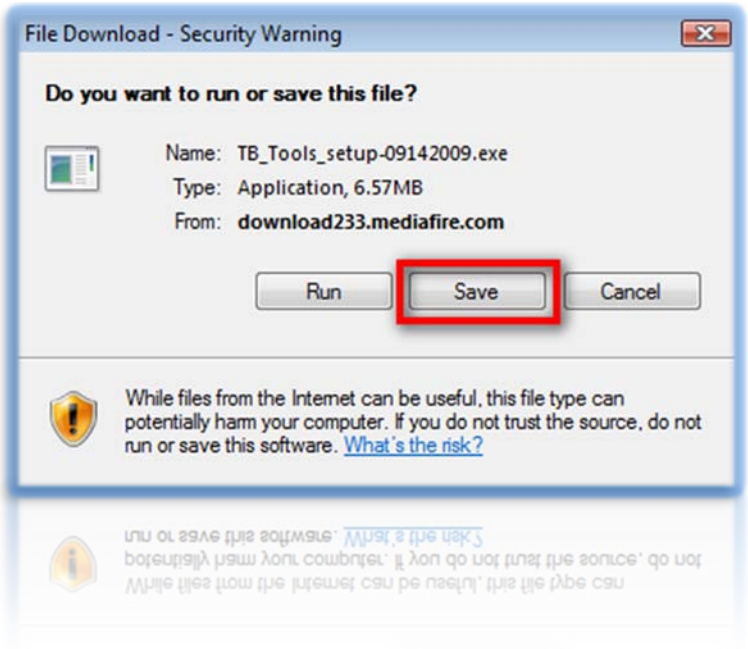
Download

Step 1: You can download the latest version of our tools from our website. Make sure to download the appropriate version for your edition of ArcGIS.

http://www.tractbuilder.com/ (click "Download Demo").

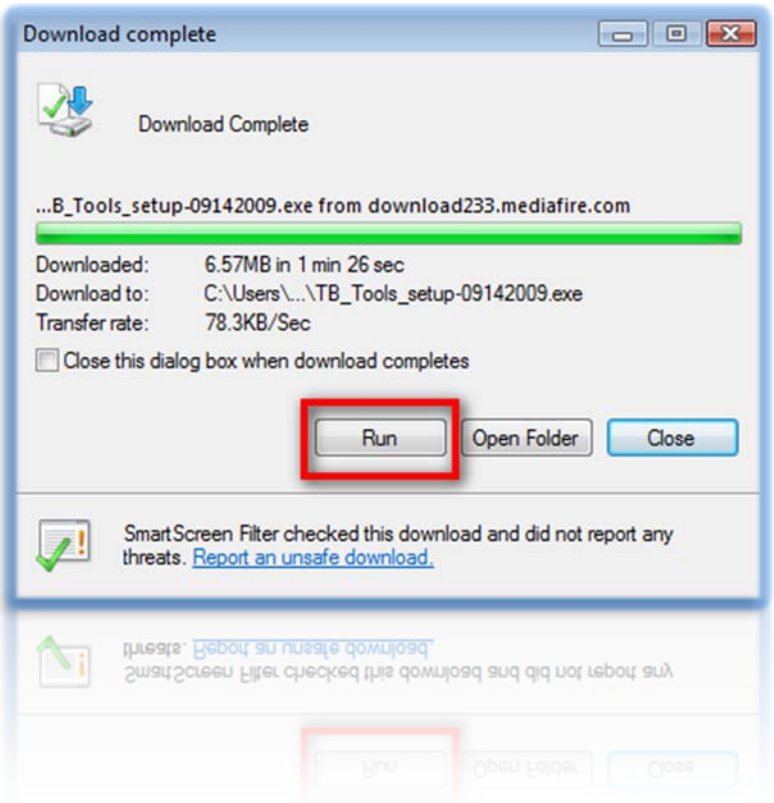


Step 2: Click "Save" and decide where on your computer you want the installer file to be stored.

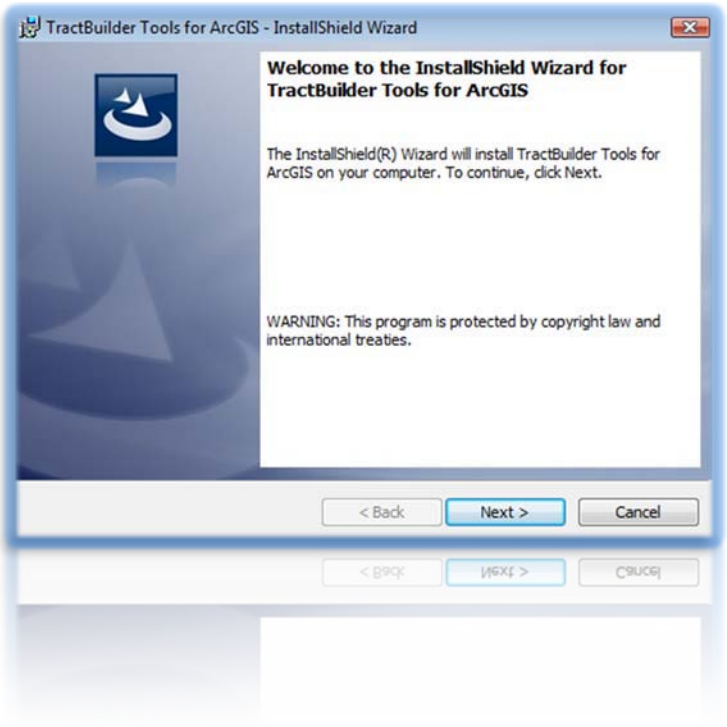


Install

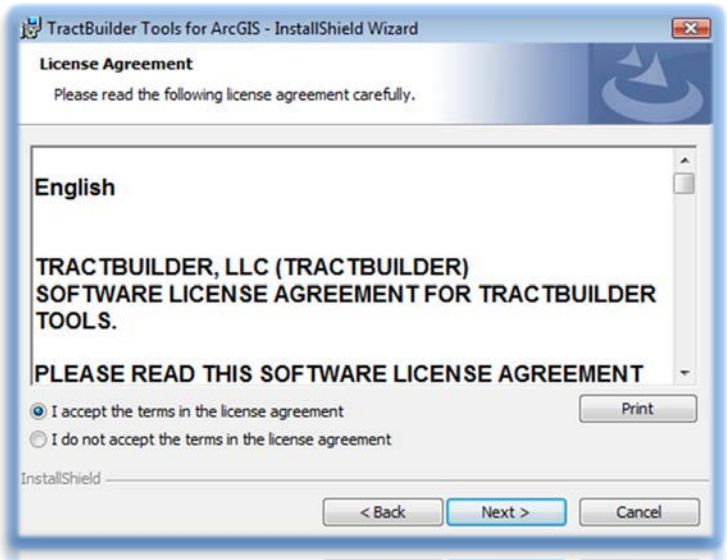
Step 3: Click "Run" to begin installation. Note: You will need to click "Run" on a second pop-up box, and on Vista with the UAC "on" you will need to "Allow" the program.



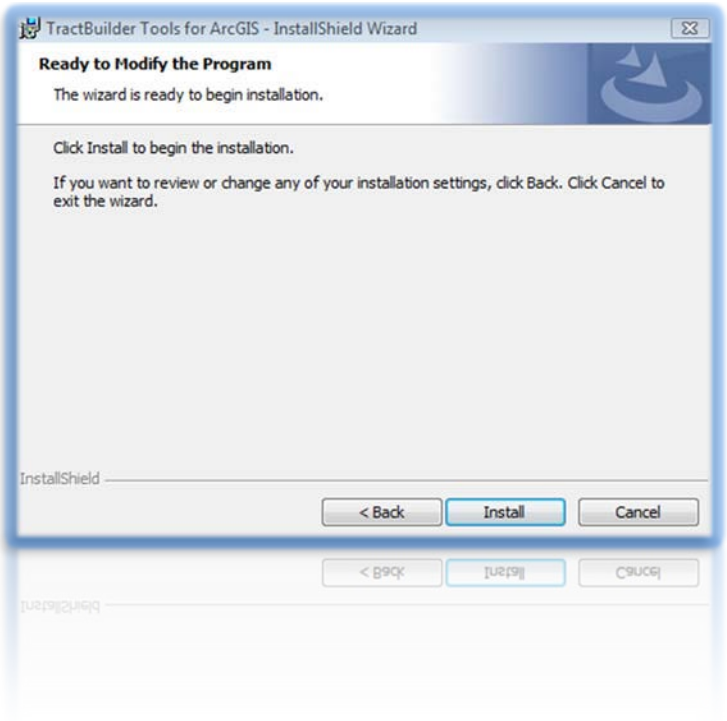
Step 4: Click "Next".



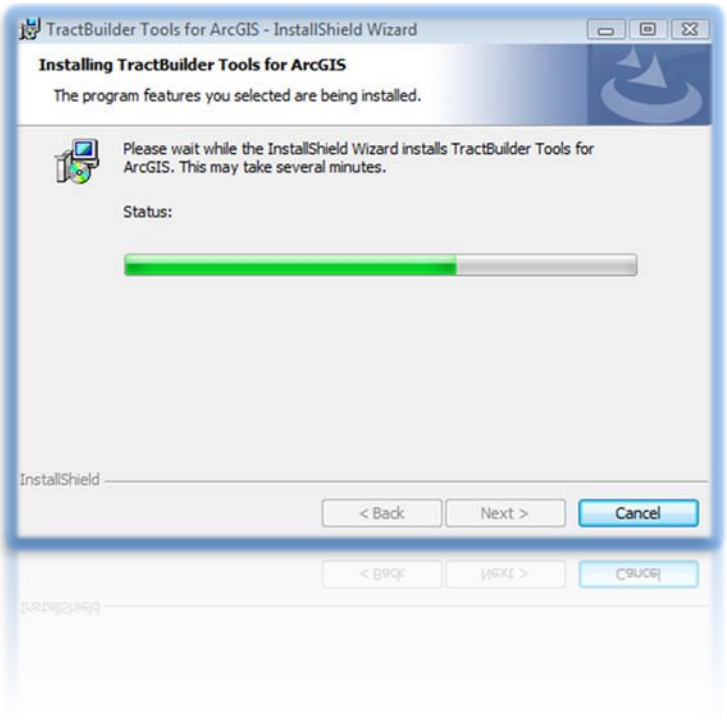
Step 5: Before continuing you must accept the End User License Agreement (EULA). After reading and agreeing to the terms of the EULA, click the radio button to select "I accept the terms in the license agreement", and then click "Next".



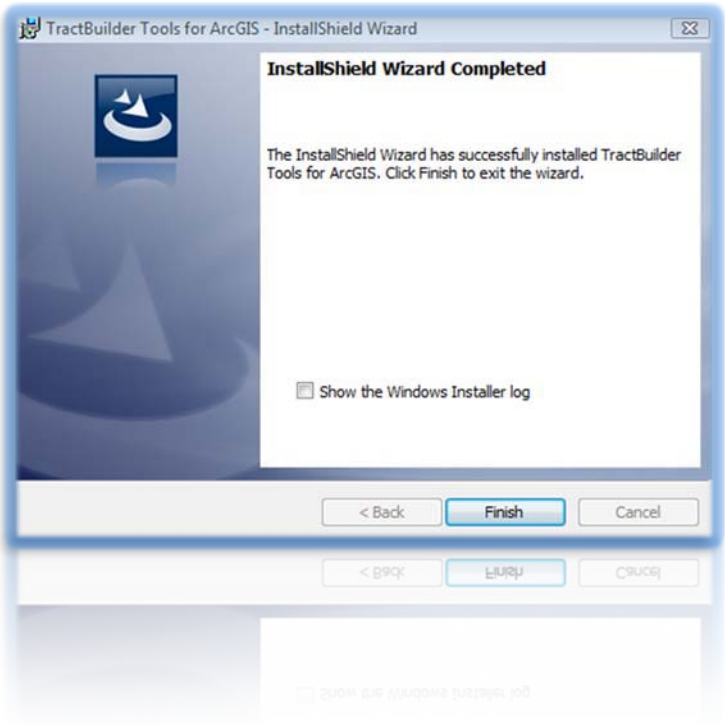
Step 6: Click "Install".



Step 7: You will see a progress bar appear. NOTE: Do not be alarmed is a command prompt window appears temporarily, this happens while registering some files during the installation.

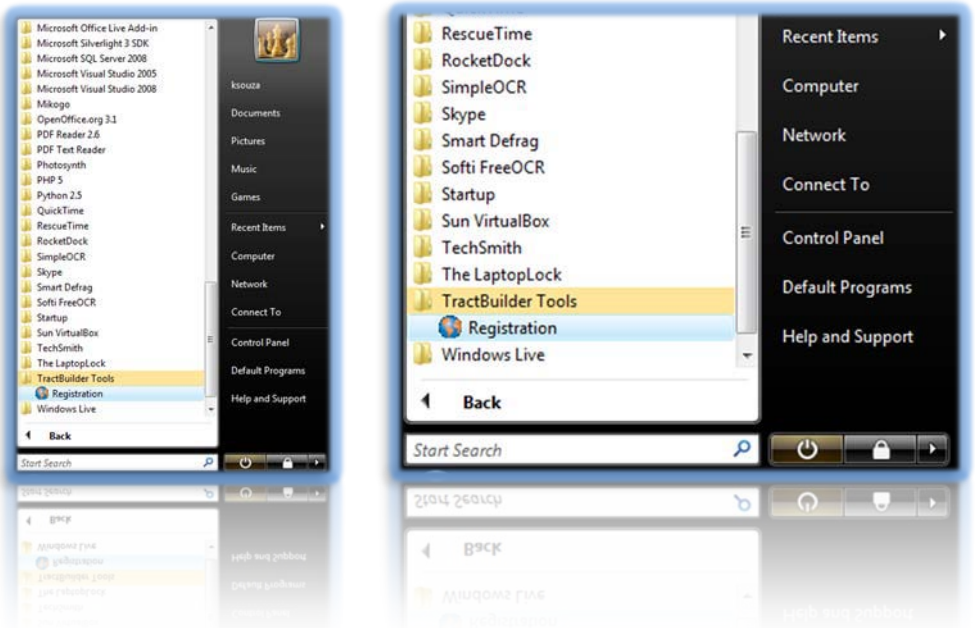


Step 8: Click "Finish".

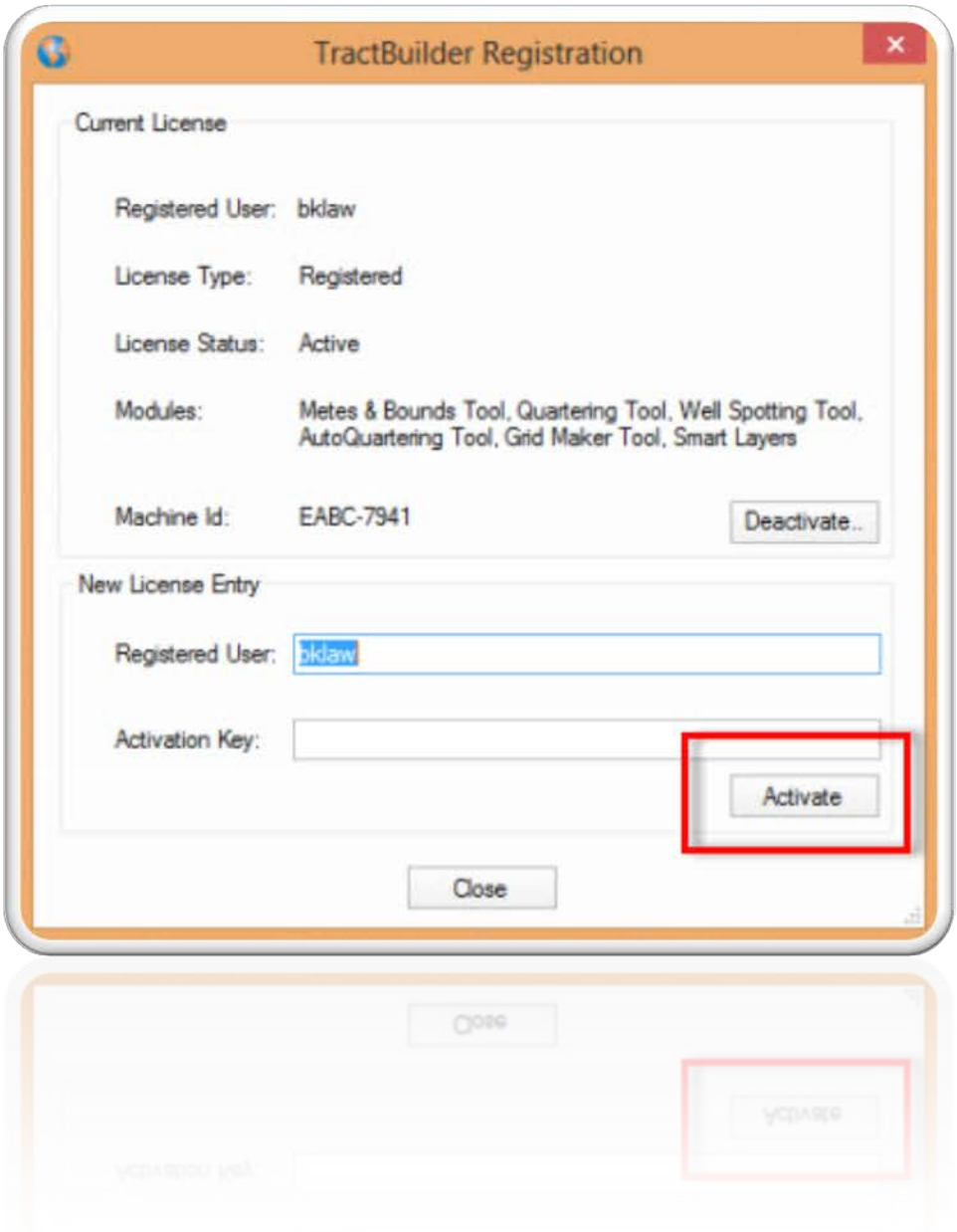


Register

Step 9: Now you can register the tools (once you have purchased a key). NOTE: without a key the tools will work for up to ten days if this is the first time they have been installed on that machine. Go to your Start Menu → All Programs → TractBuilder Tools → Registration. **No key is required to run the tools in trial mode.**



Step 10: If using a trial, skip this step. Enter your company or user name and your Activation key (issued at time of purchase). Click "Activate".



Step 11: Click "Close".

Summary

In this tutorial we downloaded, installed, and registered our purchased product. Now that the tools are registered you can enjoy their uninterrupted use.

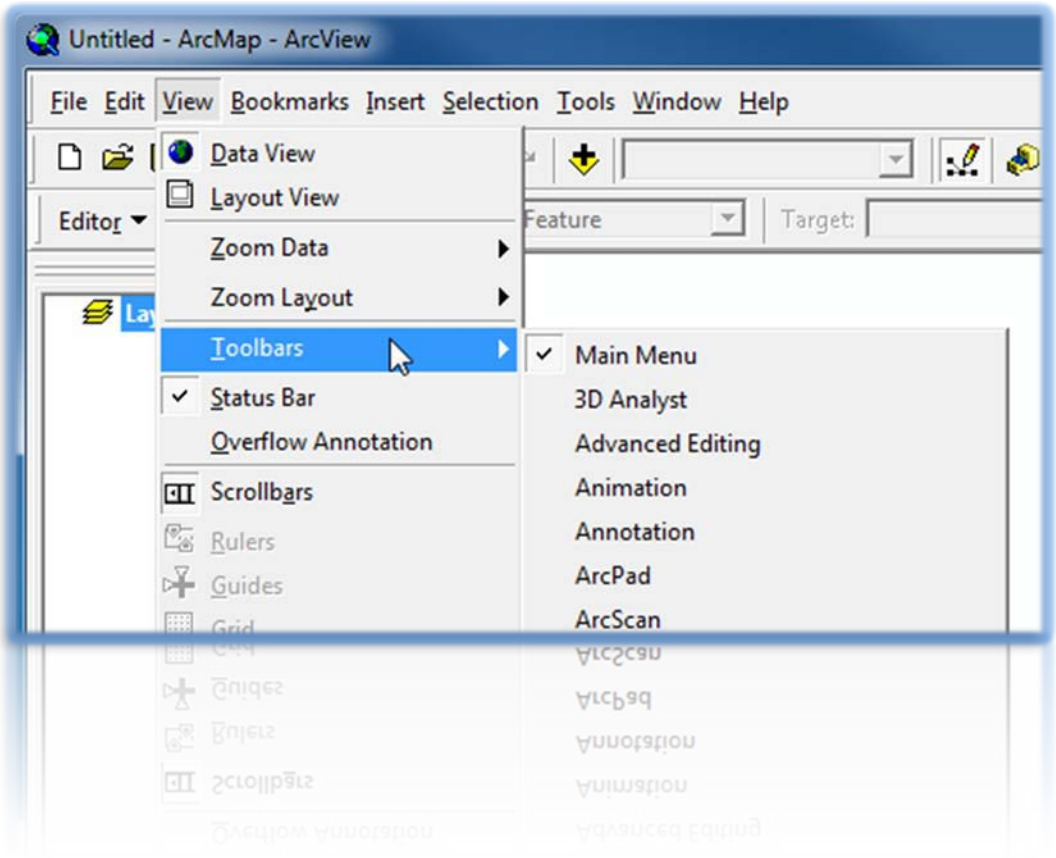
Tutorial 2: Adding the Toolbars

Introduction

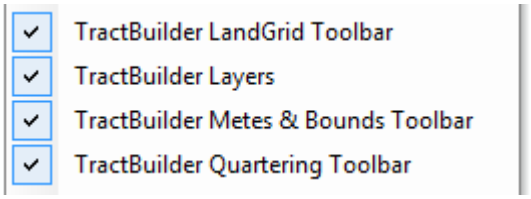
Open ArcMap. Where are the icons for the TractBuilder Tools? Let me show you…

Process

Step 1: In ArcMap 9.3 Go to "View" → "Toolbars". In ArcMap 10.x Go To "Customize" →"Toolbars"



Step 2: Scroll down so that you can see the TractBuilder Tools. Note: Not all options may be available.



Step 3: Select "TractBuilder Metes & Bounds Toolbar".

Step 4: Repeat steps 1 & 2

Step 5: Select "TractBuilder Quartering Toolbar".

Summary

In this tutorial we added the TractBuilder toolbars to our user interface. Now we can begin enjoying the time savings that having the tools provides.

Tutorial 3: Map Setup

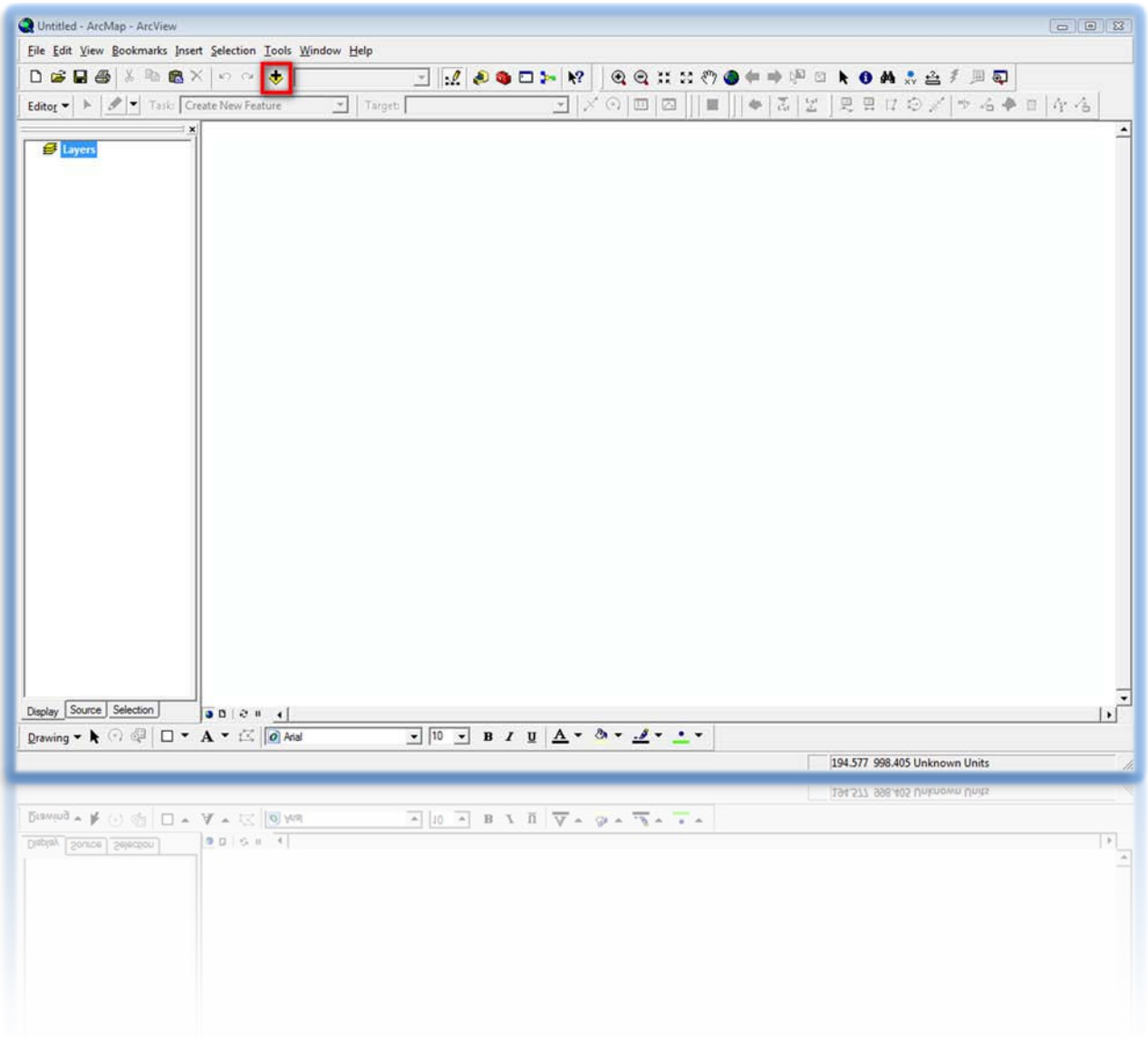
Introduction

Alright, you've got the program installed and can't wait to begin creating polygons! But before you can use the tools we need to set-up a map in ArcView. Using ArcMap we will create a simple map. Sample data has been included with this tutorial; we will use "polygons.shp" and "sections.shp" for this and the next two tutorials. Go ahead and open ArcMap…

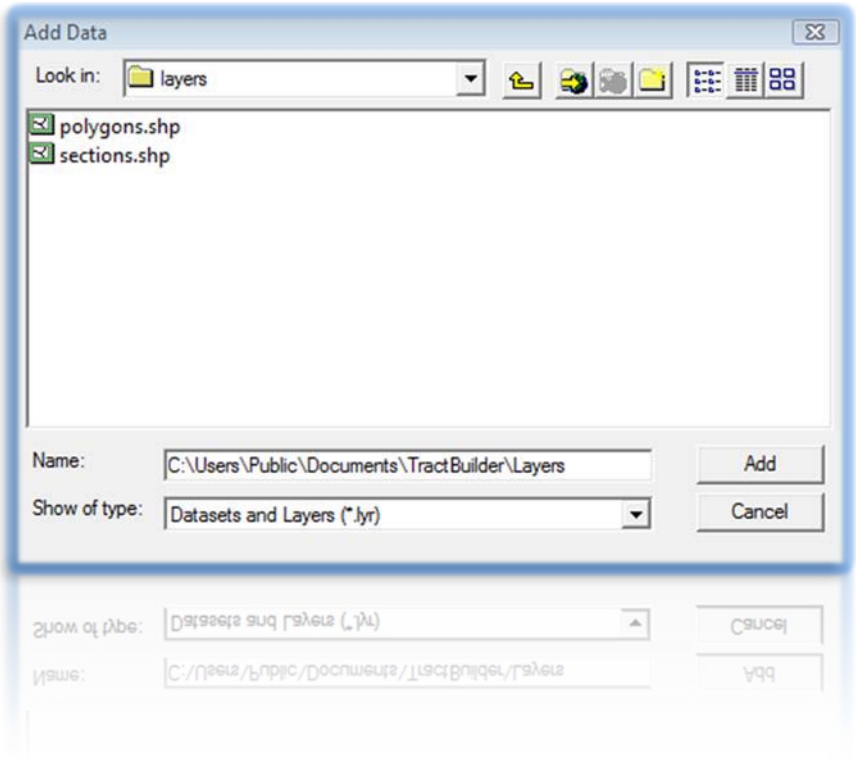
Process

Add a Basemap

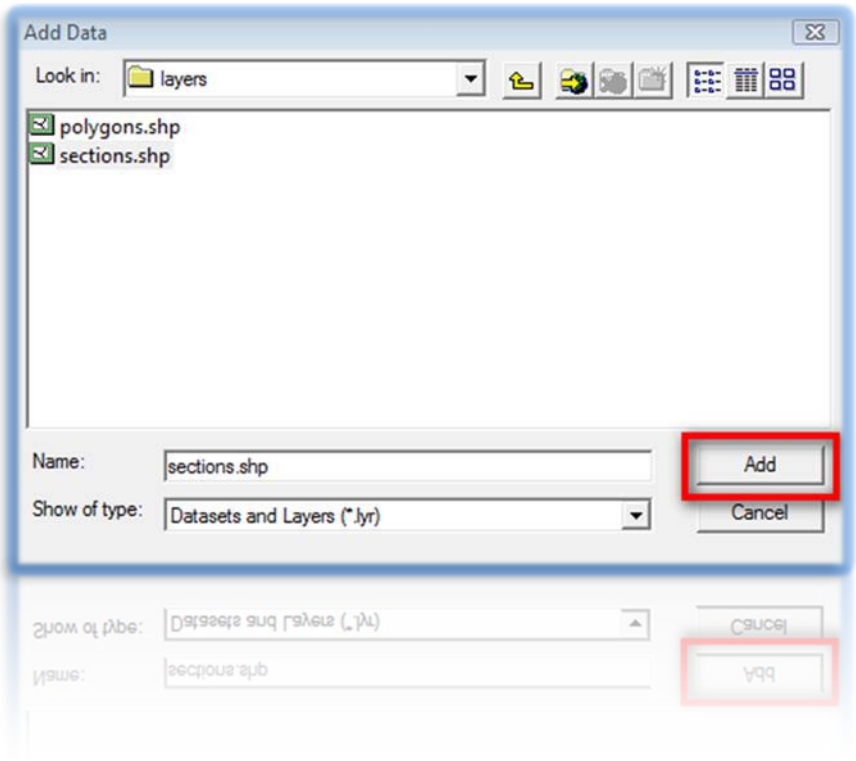
Step 1: Click on the "Add Data" button.



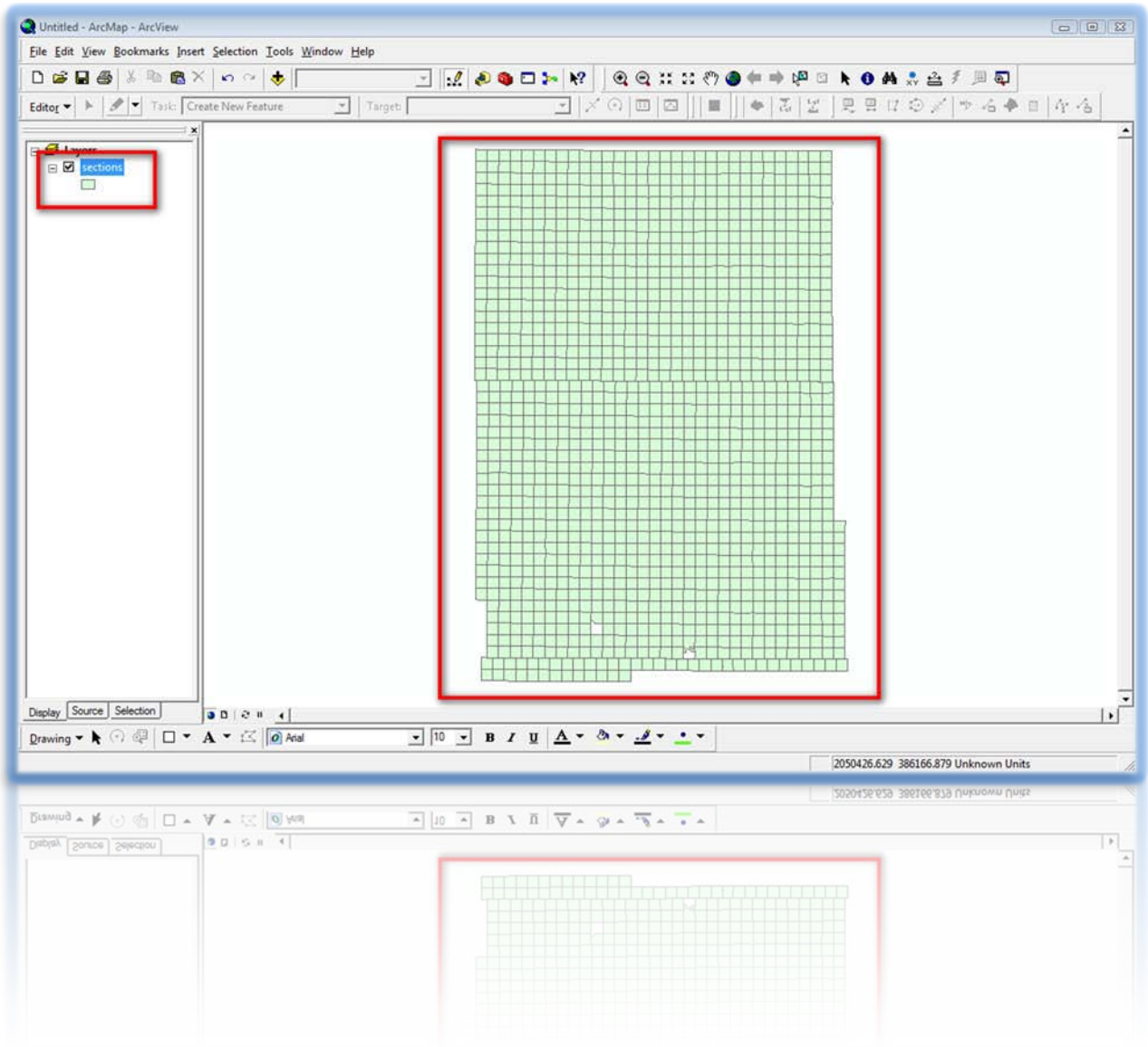
Step 2: Navigate to C:\Users\Public\Documents\TractBuilder\Layers.



Step 3: Select "sections.shp". Click "Add".



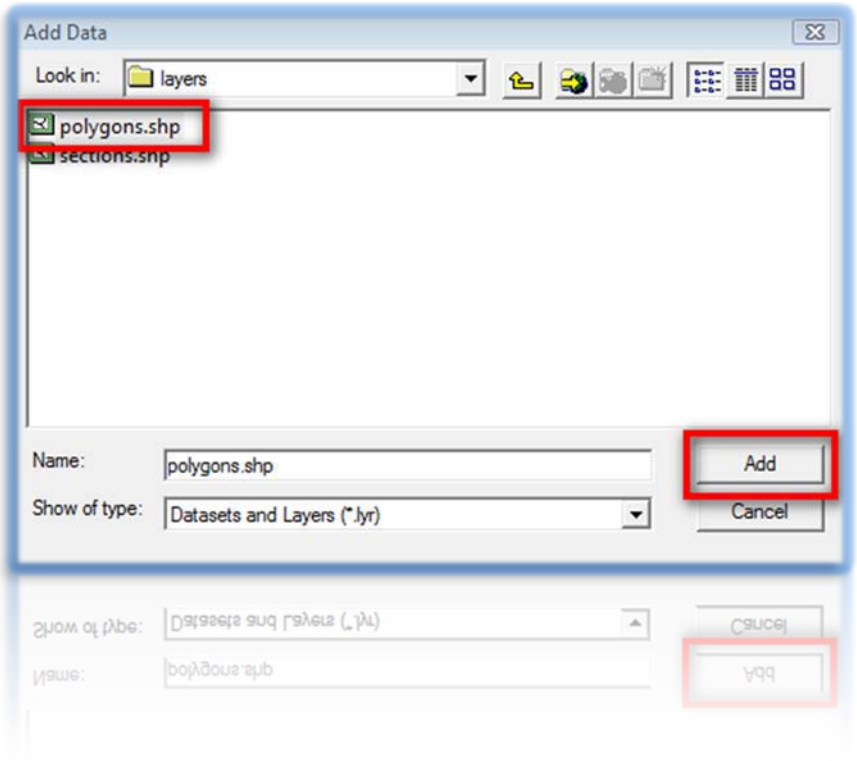
You will now see your layer in the Table of Contents and see the data it holds in the viewing area of the program.



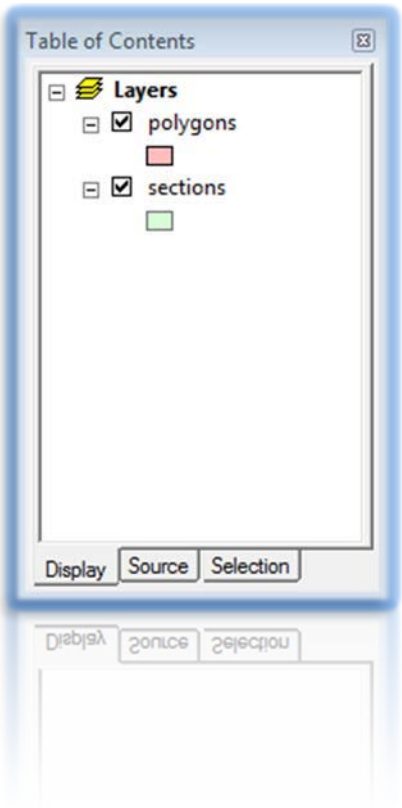
Add your Edit Layer

Step 4: Click the "Add Data" button.

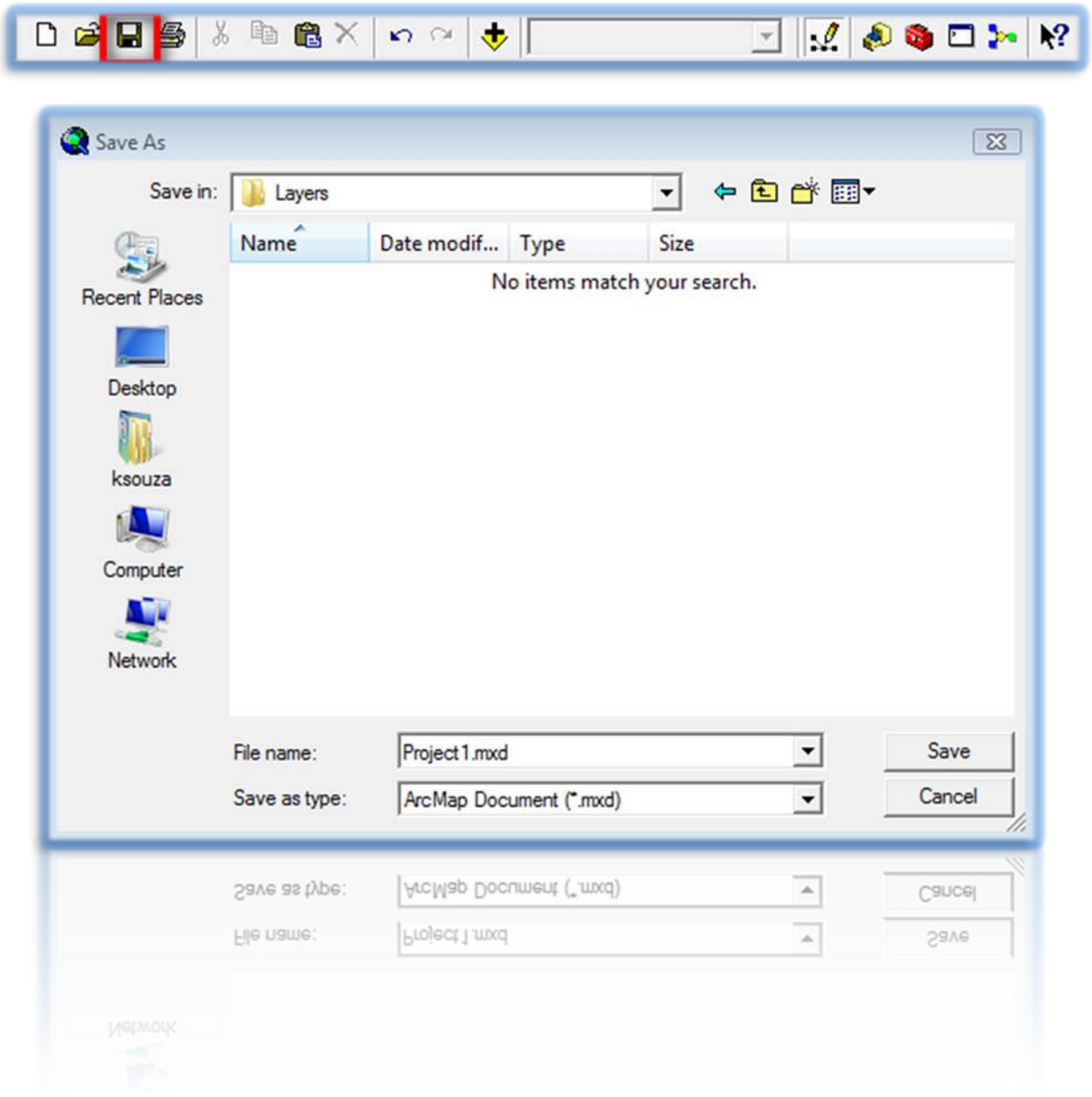
Step 5: Select “polygons.shp”. Click “Add”.



Now both layers are in your Table of Contents.



Step 6: Save the project as "Project1.mxd" in your C:\Users\Public\Documents\TractBuilder\Layers directory.



Summary

In this tutorial we added a base map and an editable layer to map. Don't forget to save often! For more information on how to do specific tasks of ArcGIS that are not specific to the TractBuilder Tools I suggest visiting the ESRI learning center and downloading the book "Using ArcGIS Desktop."

Tutorial 4: The Quartering Tool – Level 1: Halves and Quarters

Introduction

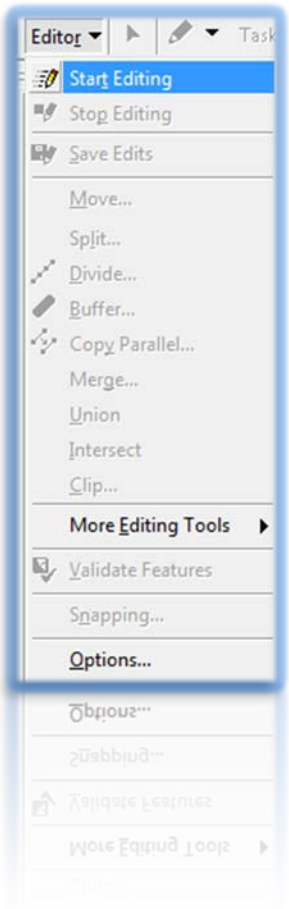
Before you can begin using the TractBuilder Quartering Tool for ArcView you need to be sure that you understand PLSS **legal descriptions**. For a brief explanation of the PLSS visit http://www.nationalatlas.gov/articles/boundaries/a_plss.html, or for an in-depth understanding of reading and writing legal descriptions download and read *"Specifications for Description of Tracts of Land for Use in the Land Orders and Proclamations"* from http://www.blm.gov/pgdata/etc/medialib/blm/az/pdfs/cad.Par.22256.File.dat/dlt.pdf or even the "*Manual of Instructions for the Survey of the Public Lands of the United States*" from http://www.blm.gov/pgdata/etc/medialib/blm/az/pdfs/cad/man.Par.63181.File.dat/complete.pdf. Once you are confident that you can understand such descriptions as "NW/4 NE/4", "S2SE", and "The North 400 Feet of the East Half" continue on with the tutorial.

Process

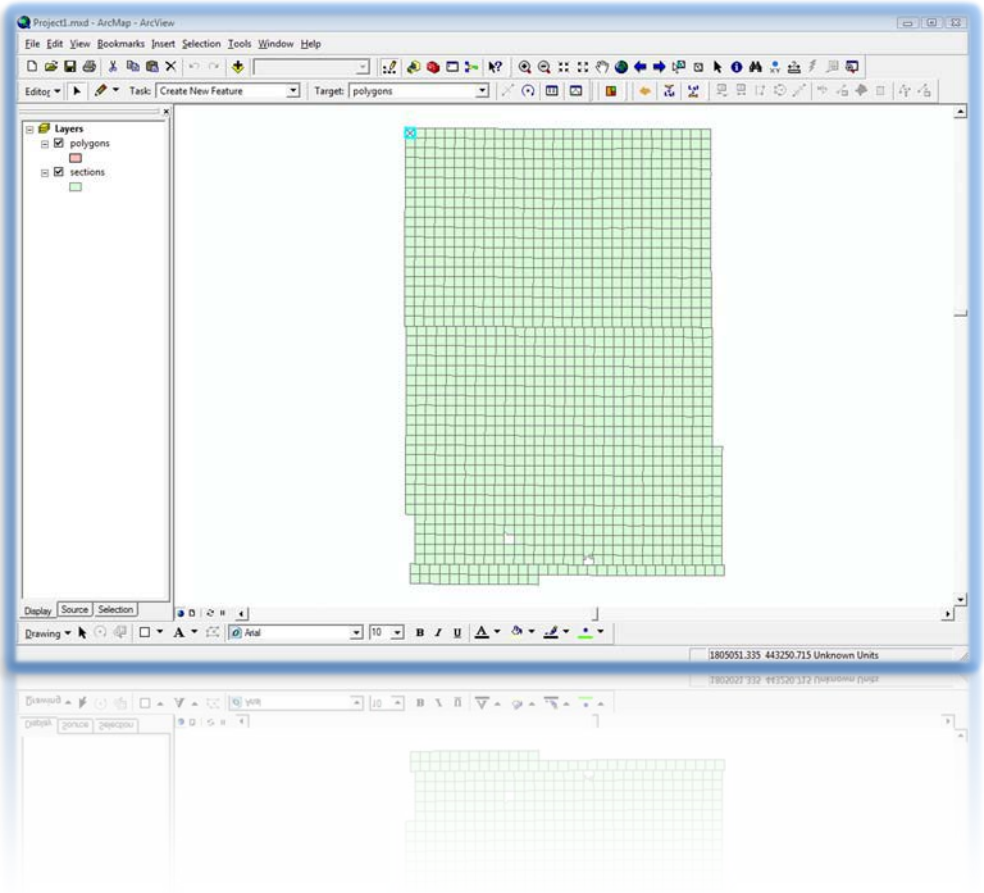
Start Editing

Step 1: Start editing by selecting the Editor Button on the Edit Toolbar and clicking on "Start Editing"

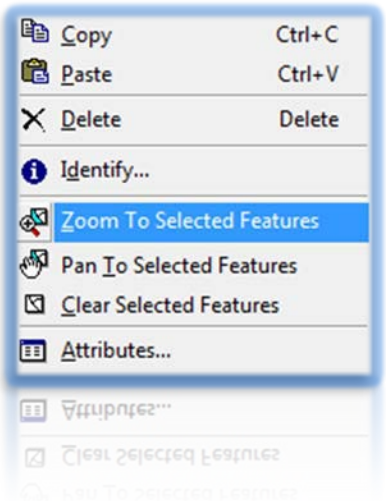
Tip: In ArcMap 10.x you can start editing a layer by right clicking on it in the table of contents and selecting "Edit Features" → "Start Editing"



Step 2: Select the **section** in the top left corner of the layer.

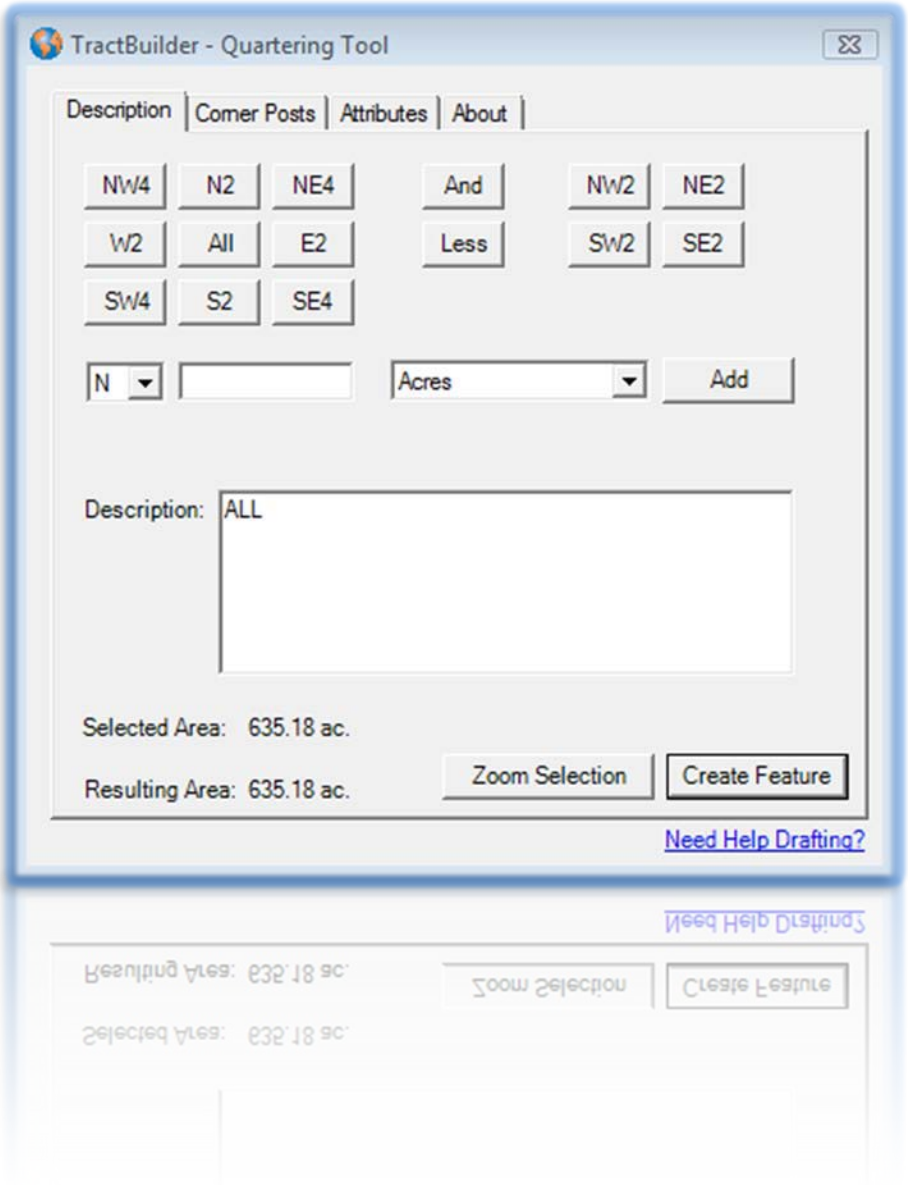


Step 3: Right-click in the Map View and choose “Zoom To Selected Features”.

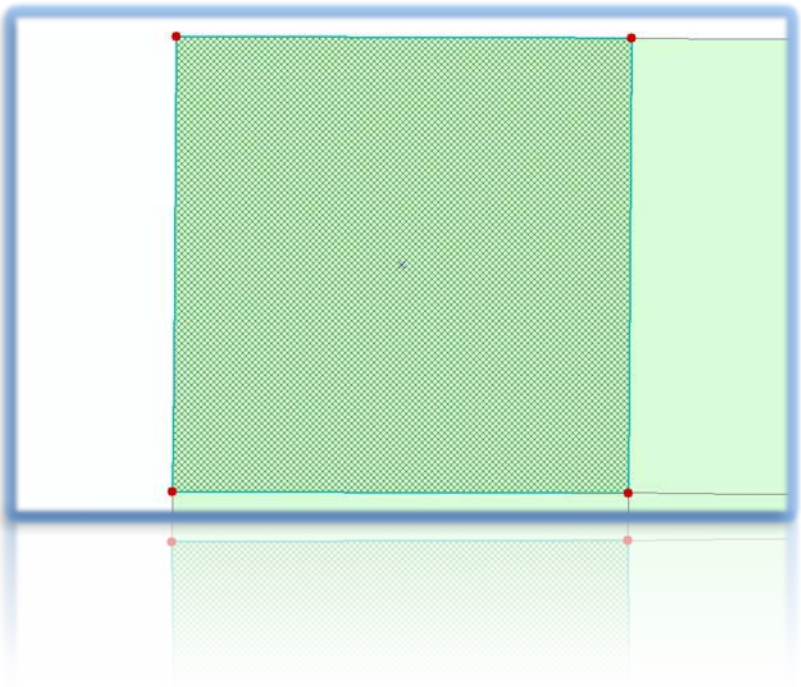


Step 4: Choose the TractBuilder Quartering Tool form your toolbar.

This window (form) will appear:

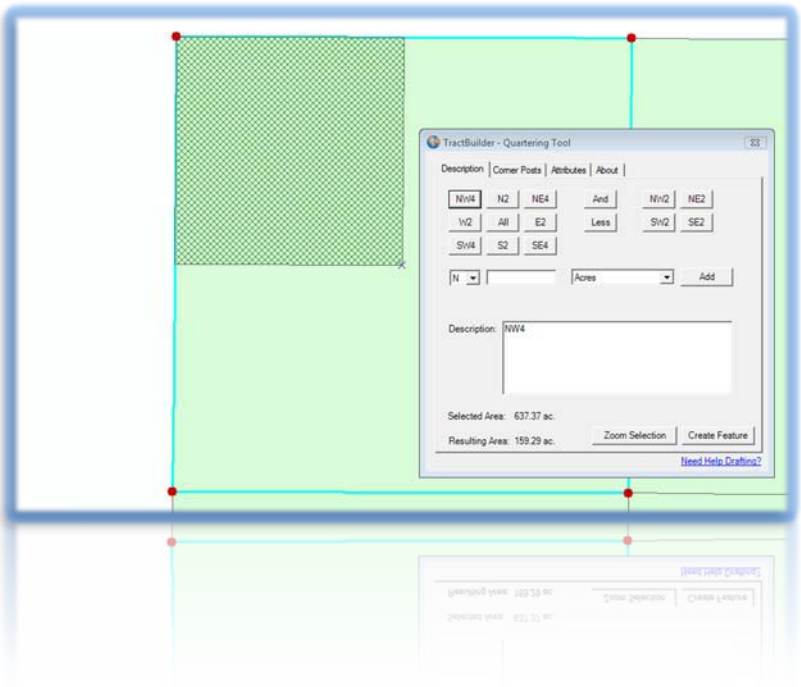


Step 5: Click on the section to select it with the tool.

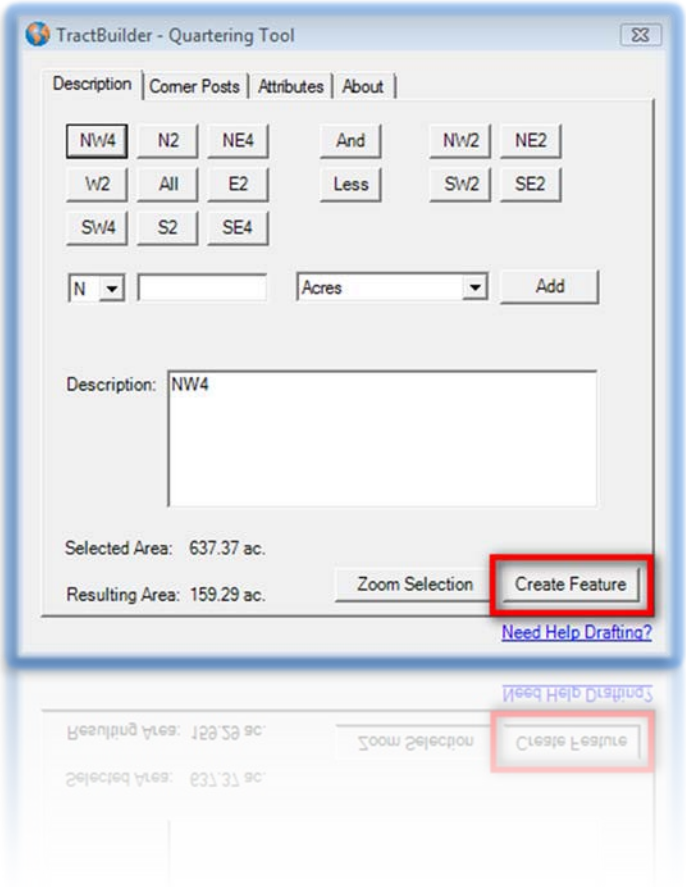


Halves and Quarters

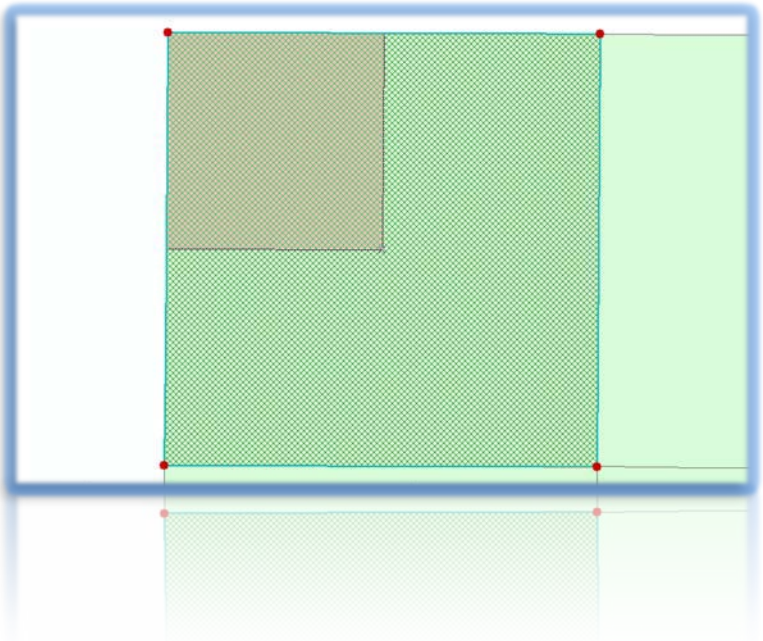
Step 6: Let's find the *northwest quarter* or this section. Click the "NW4" button on the Quartering Tool form.



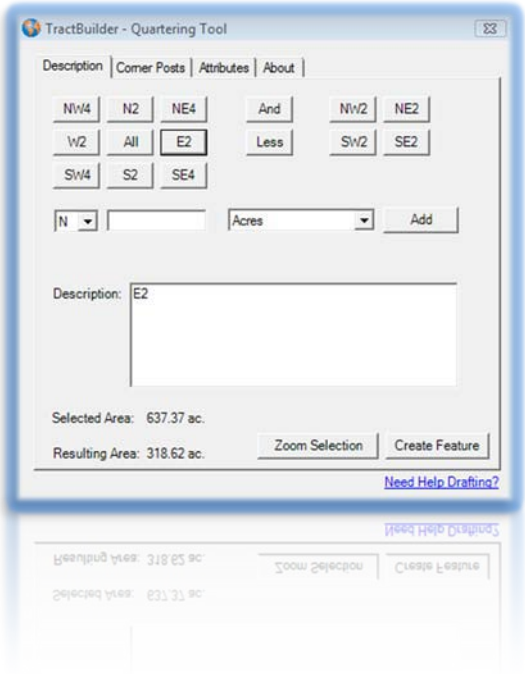
Step 7: Click "Create Feature".



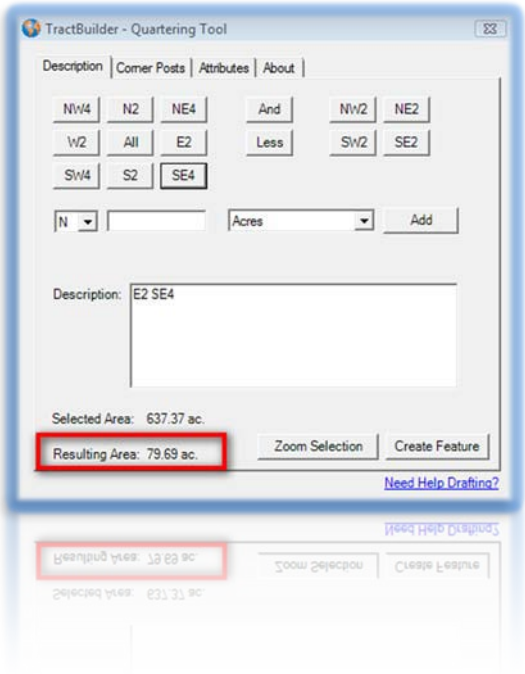
You should now have:



Step 8: Let's find the *east half of the southeast quarter* of the same section. Fist click on "E2".



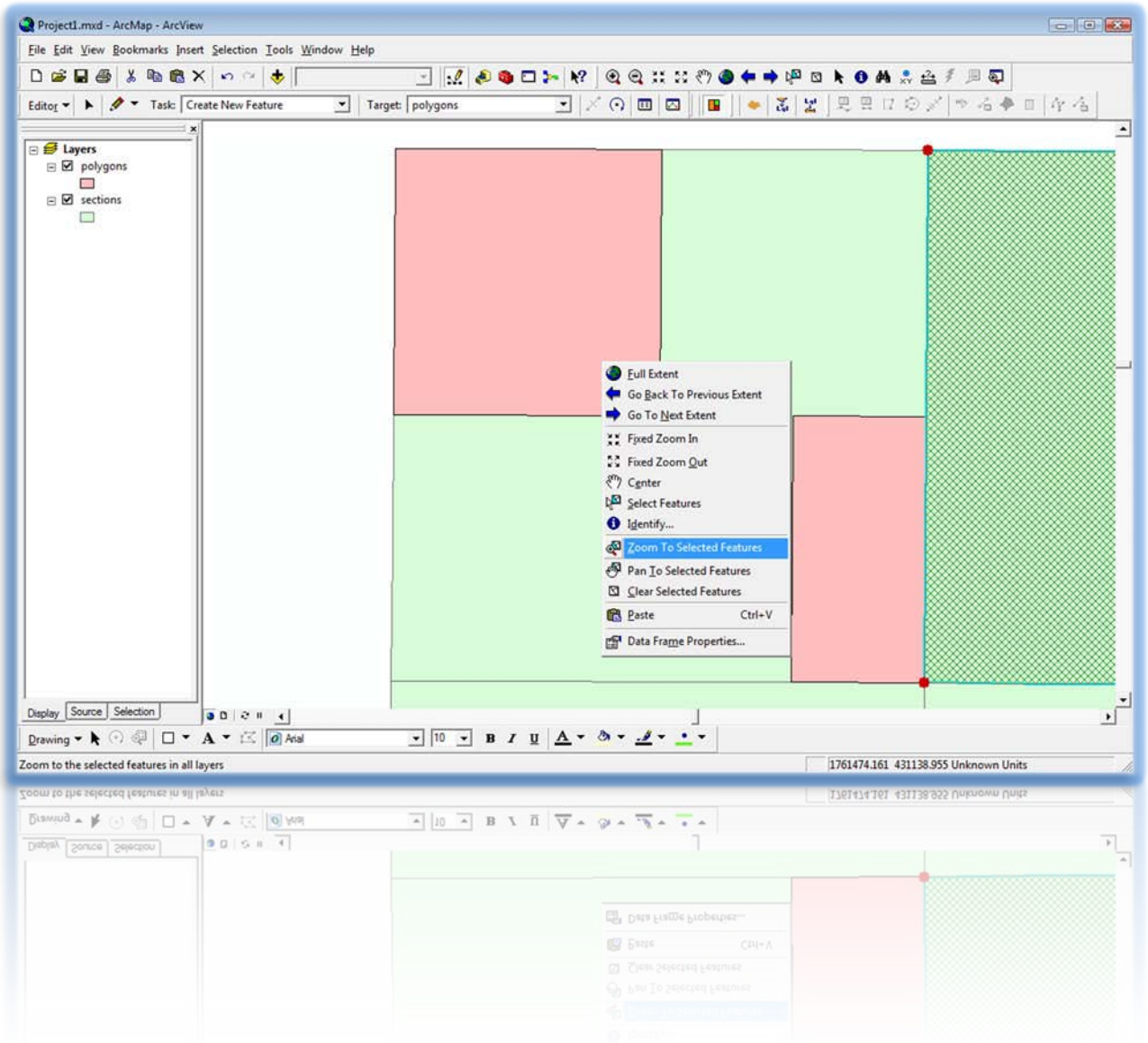
Step 9: Now click "SE4". Notice that you can see the acreage of the resulting feature in the bottom left of the tool's form, this is so that you can double check to make sure you entered the correct polygon size. A half of a quarter is 80 acres in a perfect world, in a GIS a %5 acreage difference is usually considered acceptable. Click "Create Feature".



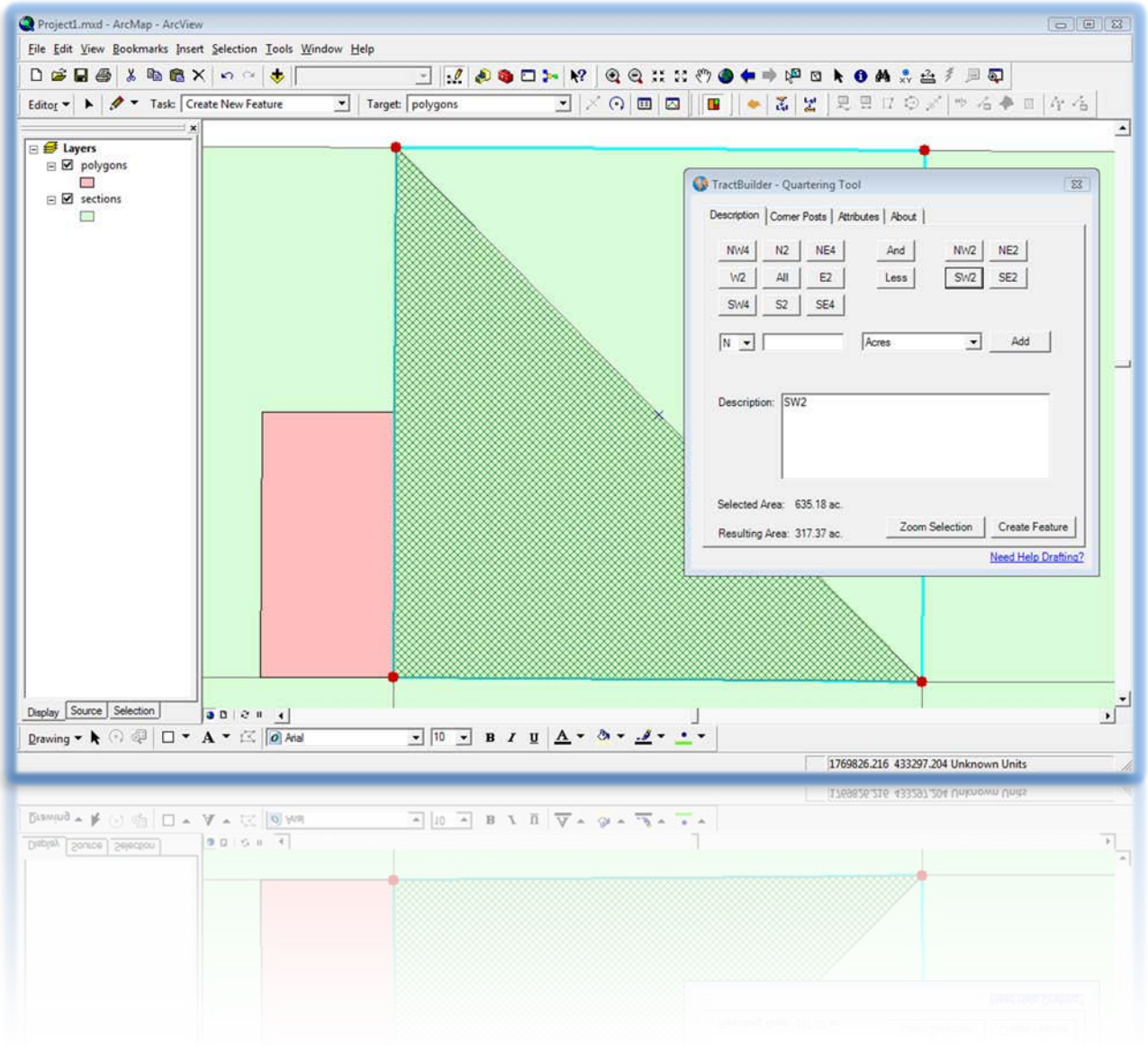
You can continue practicing these types of exercises in the "TractBuilder Tools: Further Exercises" document, section "The Quartering Tool – Level 1: Halves and Quarters".

Diagonal Calls

Step 11: Select the section to the east (right) of the current selection and right-click → "Zoom To Selected Feature".

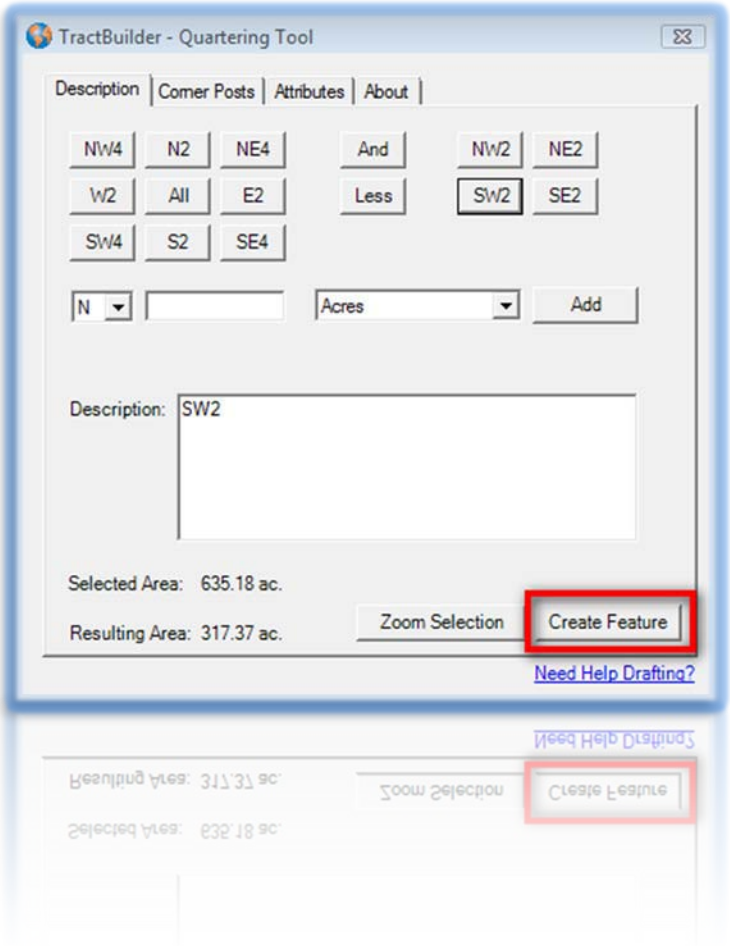


Step 12: Click "SW2" on the Quartering Tool form.



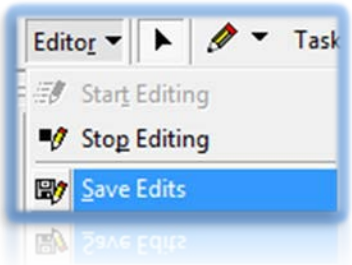
You can see that this cuts the feature diagonally to form a triangle. This type of call is most common in west Texas where many surveys are diamond shaped.

Step 13: Click "Create Feature".



You can continue practicing these types of exercises in the "TractBuilder Tools: Further Exercises" document, section "The Quartering Tool – Level 1: Diagonal Calls".

Step 14: Save your edits.



Summary

In this tutorial we learned the basics of the TractBuilder Quartering Tool for ArcView. You should now be comfortable halving, quartering, and quarter-quartering sections.

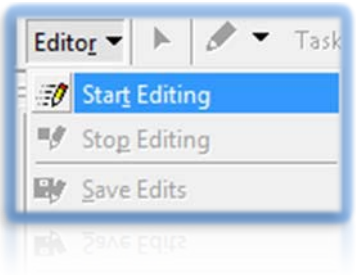
Tutorial 5: The Quartering Tool – Level 2: Adding Attributes

Introduction

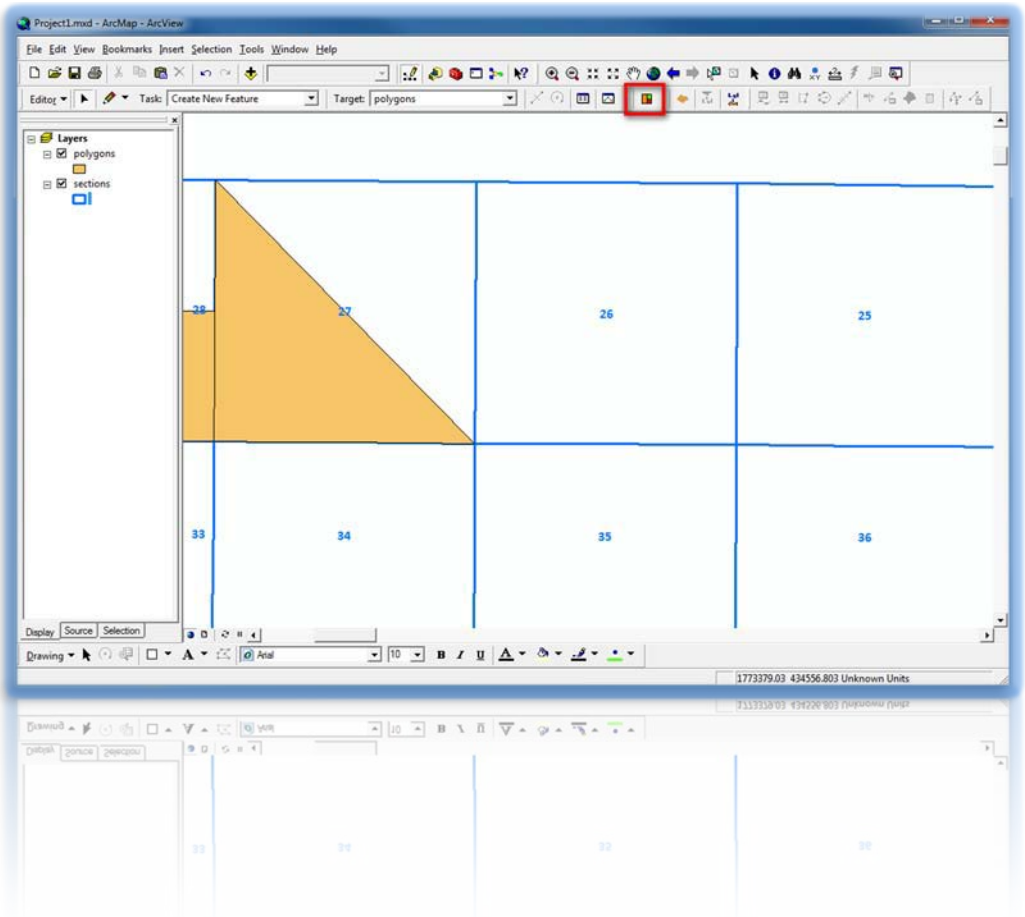
Creating shapes is only part of the process; you also need to add attribute data to your features. The TractBuilder Tools make this very easy.

Process

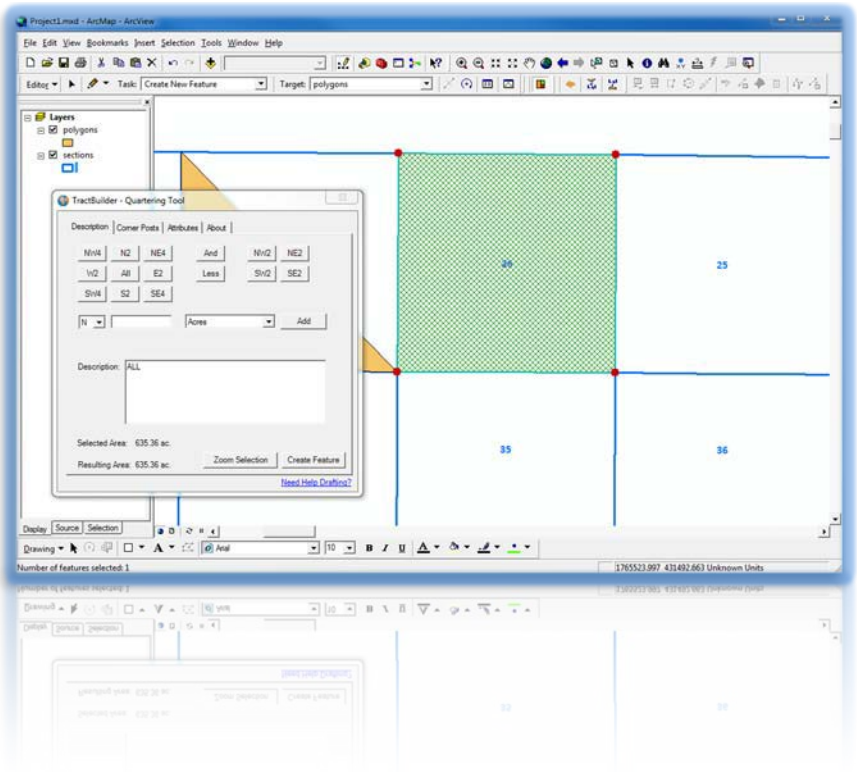
Step 1: Start your edit session.



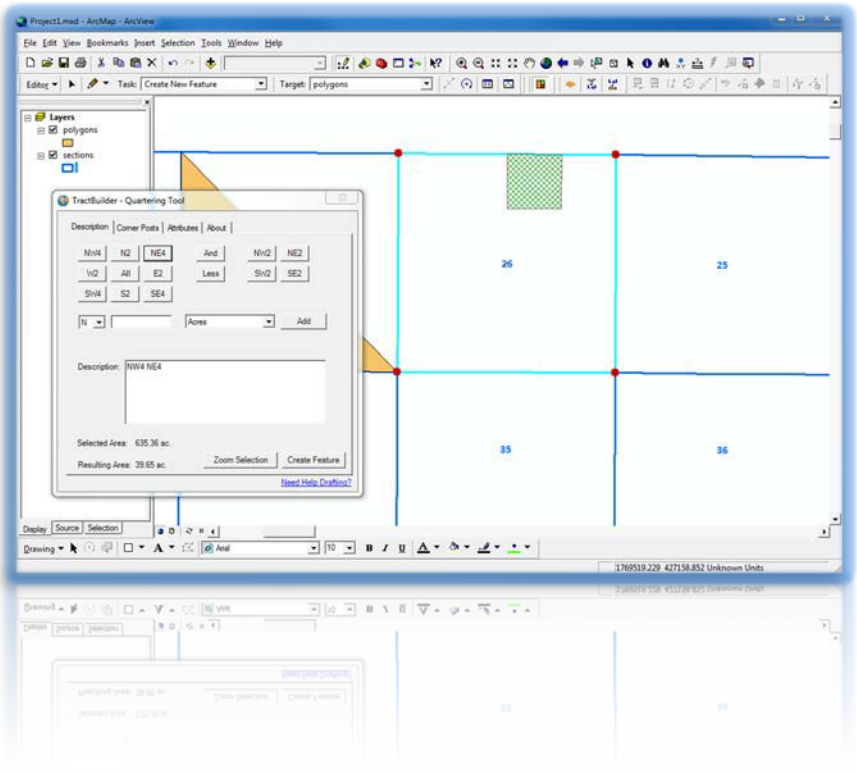
Step 2: Select the Quartering Tool.



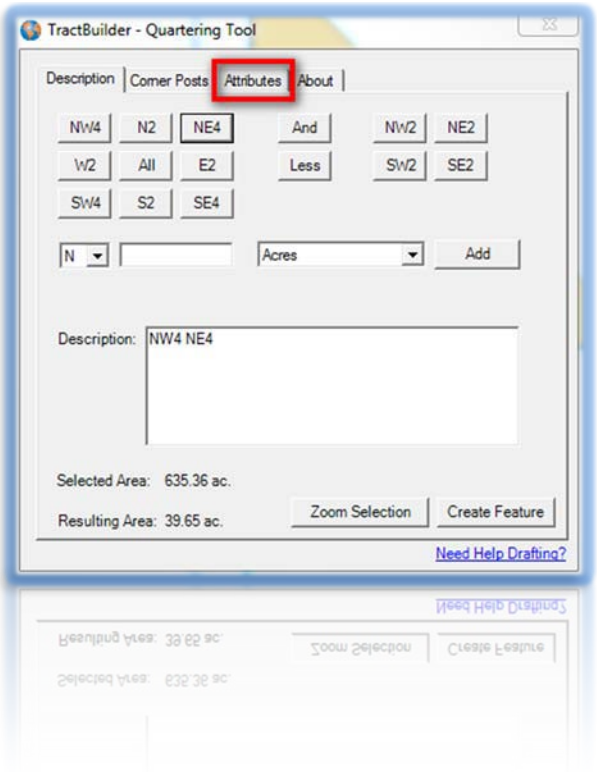
Step 3: Select Section 26.



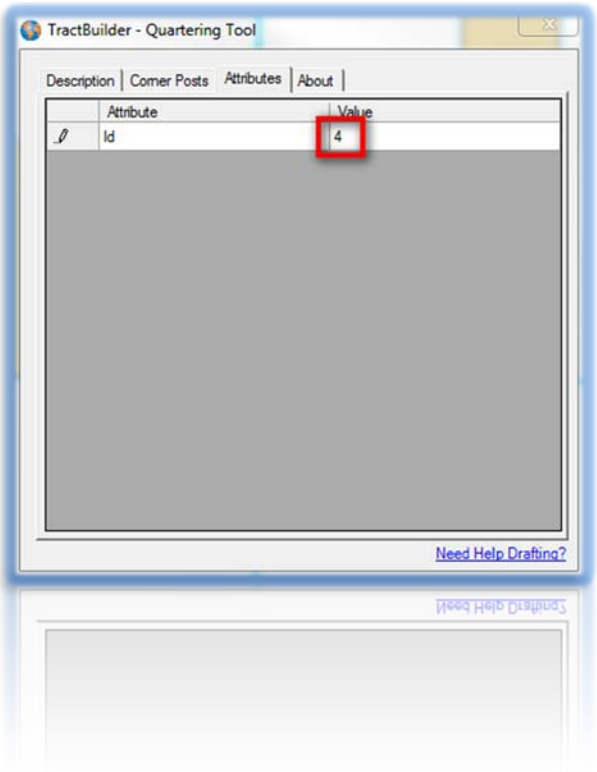
Step 4: Enter in the TractBuilder Tool "Description" tab the Northwest quarter of the Northeast quarter.



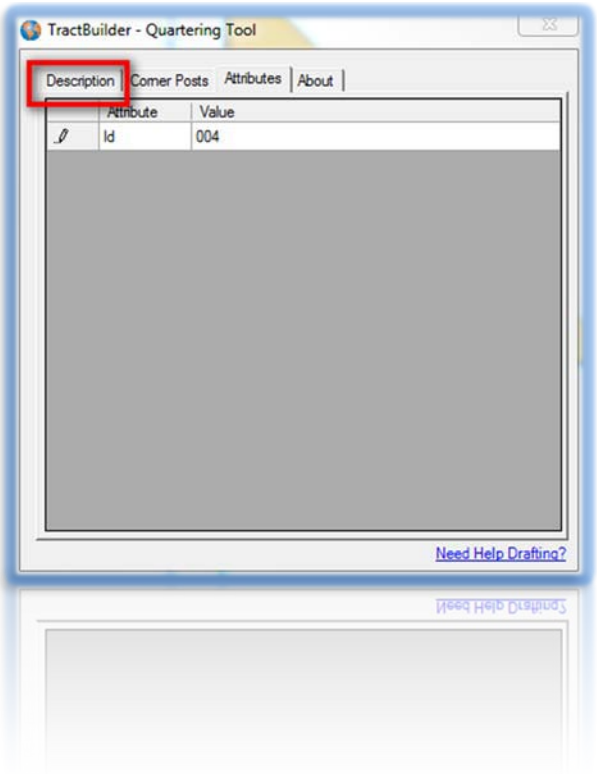
Step 5: Click on the "Attributes" tab of the Quartering Tool.



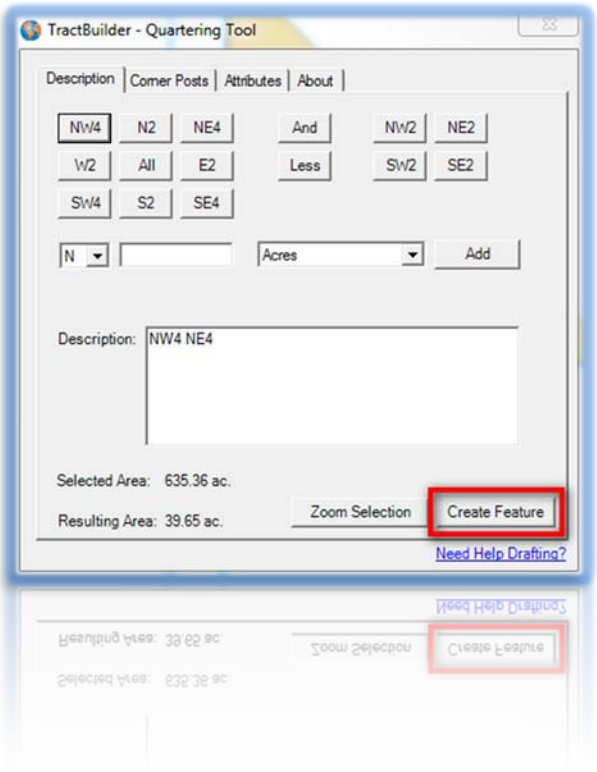
Step 6: Click in the value box for "id". Type "4".



Step 7: Click on the "Description" tab.

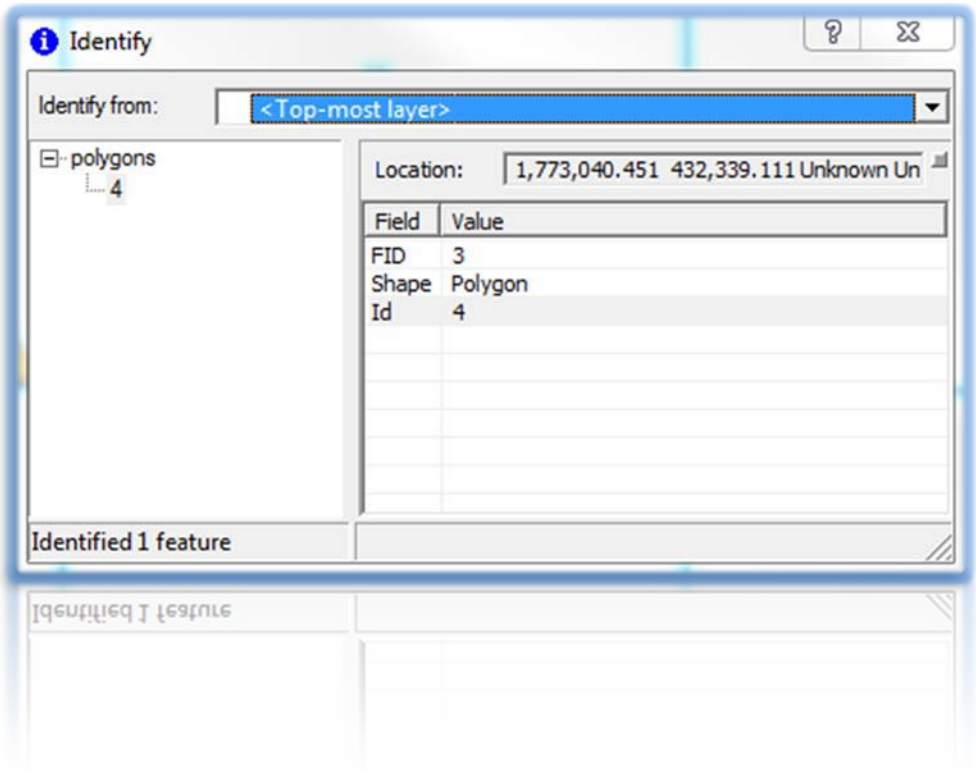


Step 8: Click "Create Feature".



Step 9: Stop and Save your edits.

Now the polygon is created and has attribute data. You can see this by opening the attribute table or the identify tool.



Summary

In this tutorial we realized the time savings that the TractBuilder Tools provide by allowing attribute data entry during the creation of polygons. A single tool with a simple process to provide a way to create a complete feature allows you to be as efficient as possible.

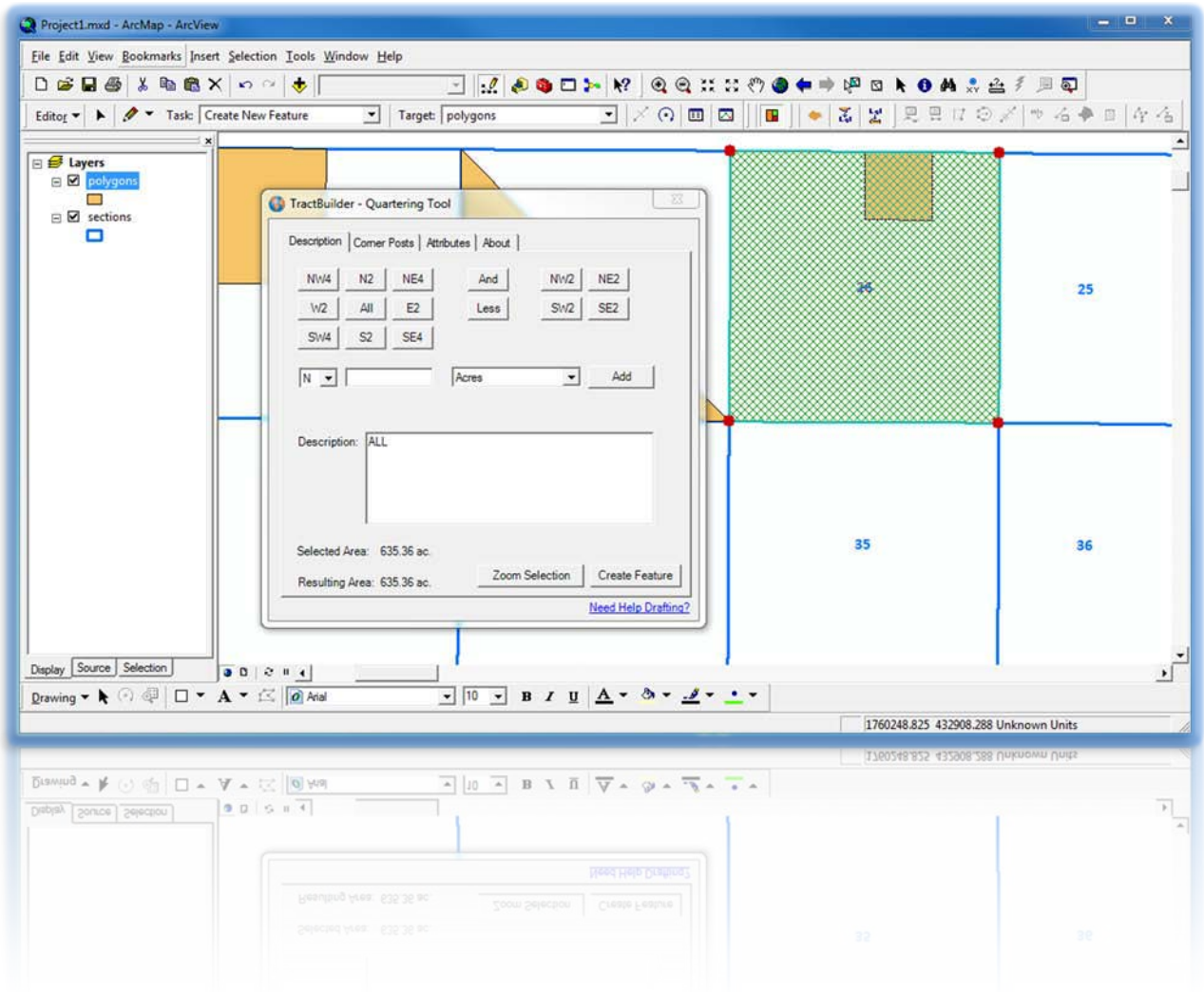
Tutorial 6: The Quartering Tool – Level 3: Less & Excepts and Joins

Introduction

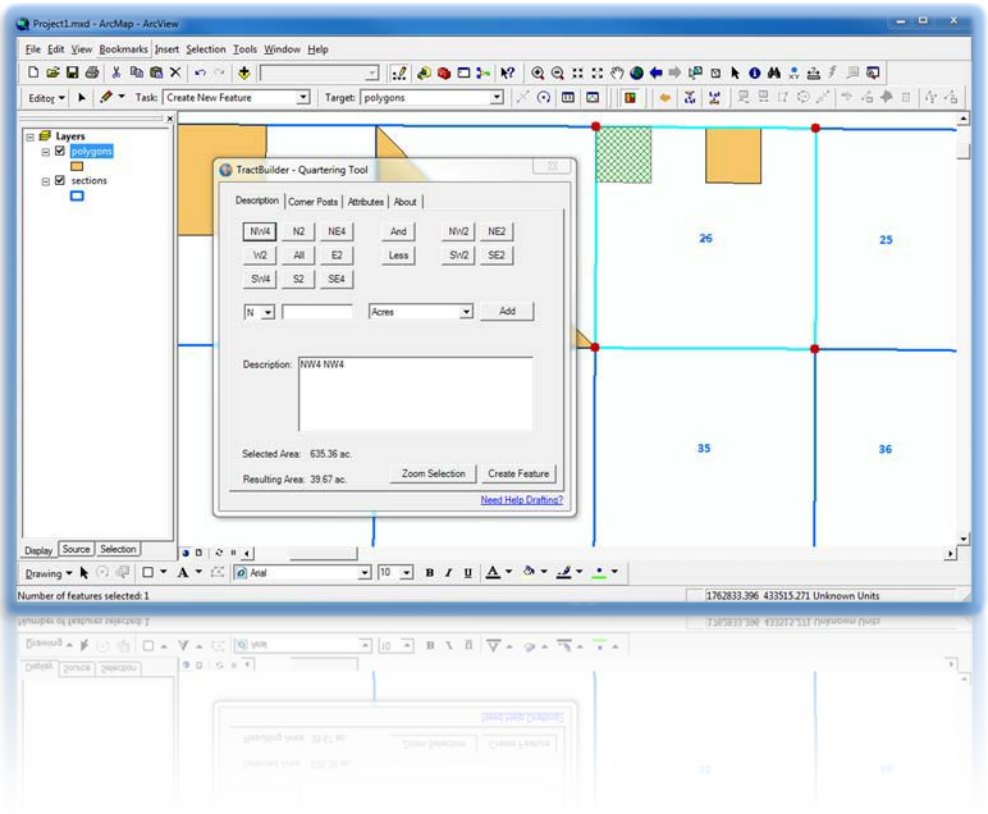
Not all features are as straight forward as the "East half", "Northwest quarter of the Northwest quarter", or the "Southwest half". Many times you have legal descriptions that involve a **less & except** statement or have **combined features**. Also, not all descriptions use mathematical divisions of a base feature.

Process

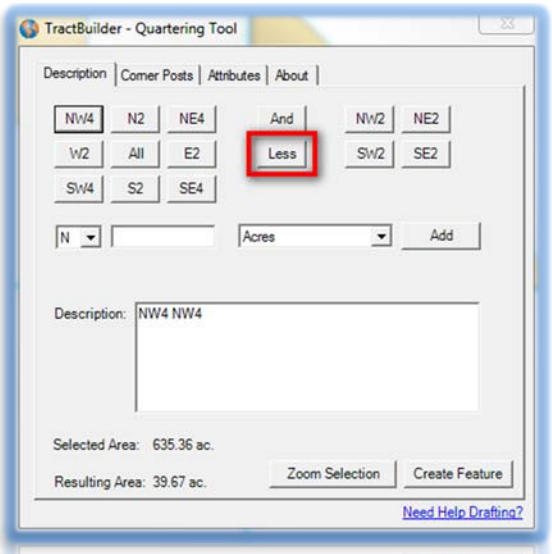
Step 1: Start Editing, activate the Quartering Tool, and select Section 26.



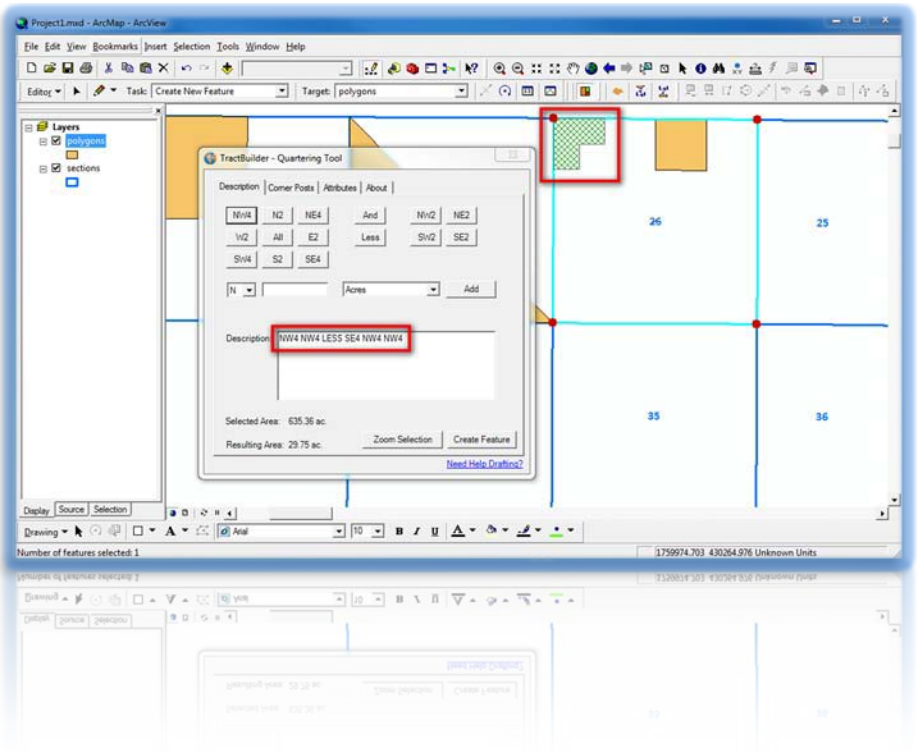
Step 2: Let's describe the Northwest quarter of the Northwest quarter less and except the Southeast quarter of the Northwest quarter of the Northwest quarter (30 acres). Click "NW4" two times.



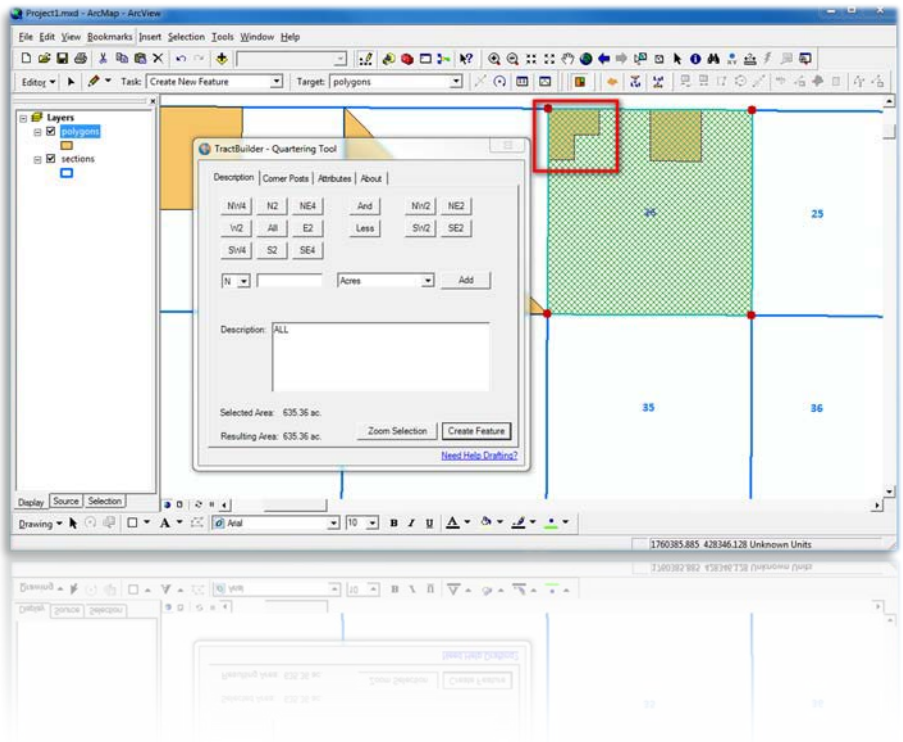
Step 3: Click "Less".



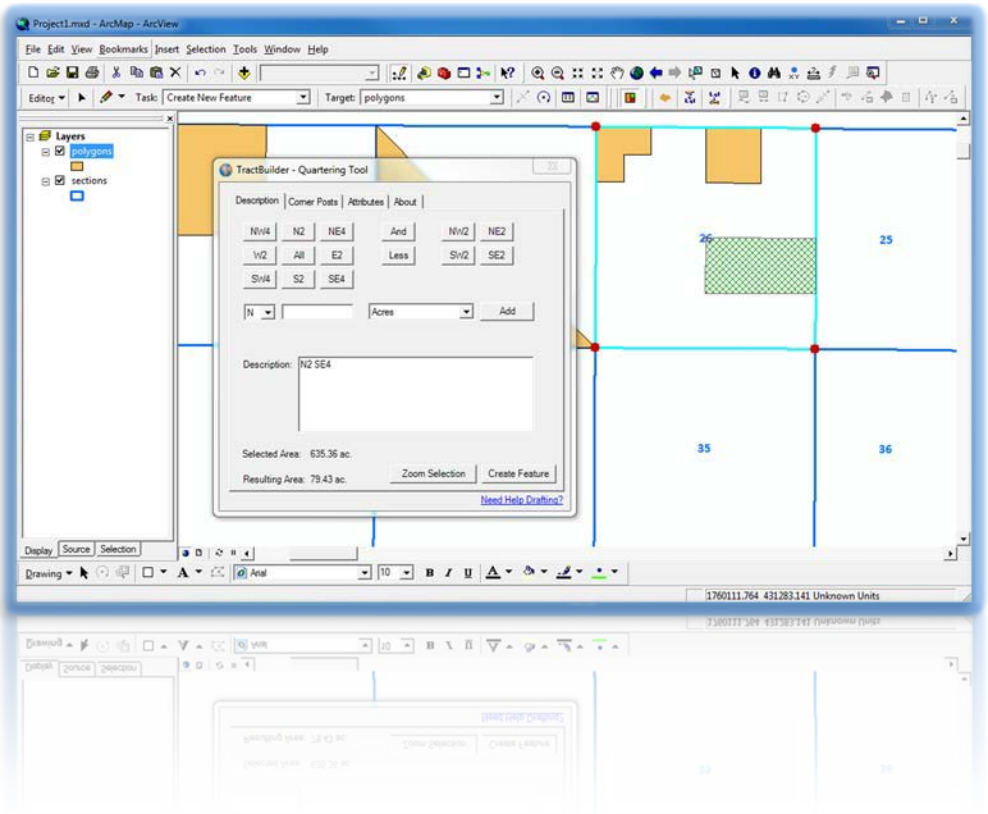
Step 4: Now click to enter “SE4 NW4 NW4”. The entire description should read “NW4 NW4 LESS SE4 NW4 NW4”.



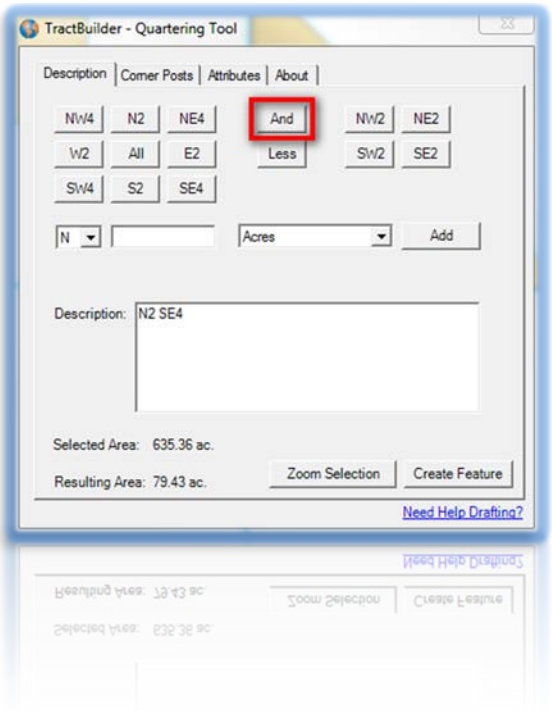
Step 5: Add attributes as desired and create the feature.



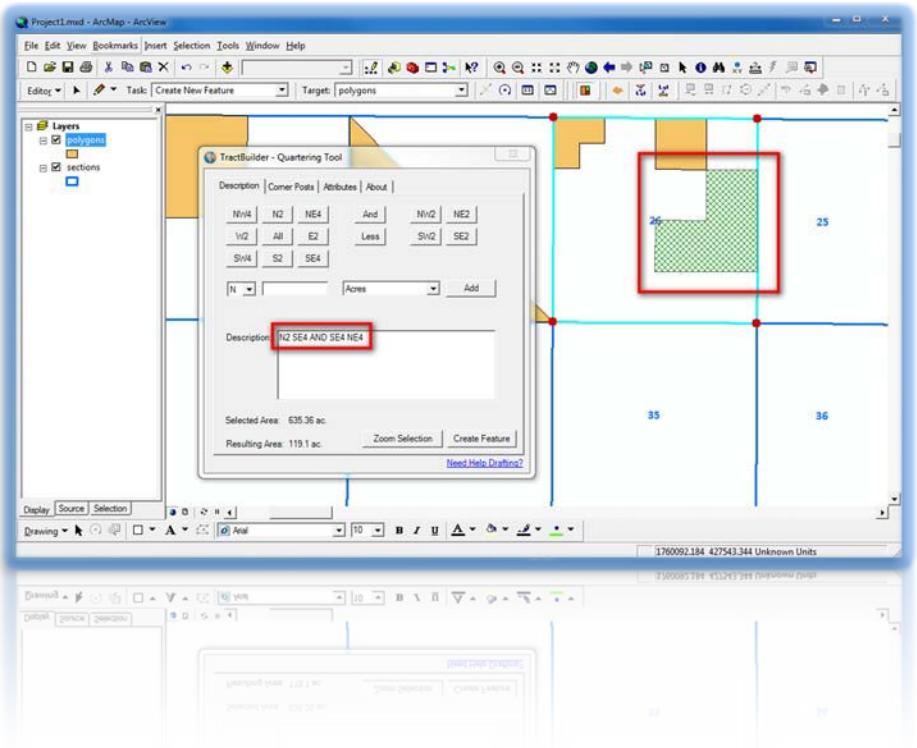
Step 6: Now let's look at a combined feature example. Describe the North half of the Southeast quarter and the Southeast quarter of the Northeast quarter. Click to enter "N2 SE4".



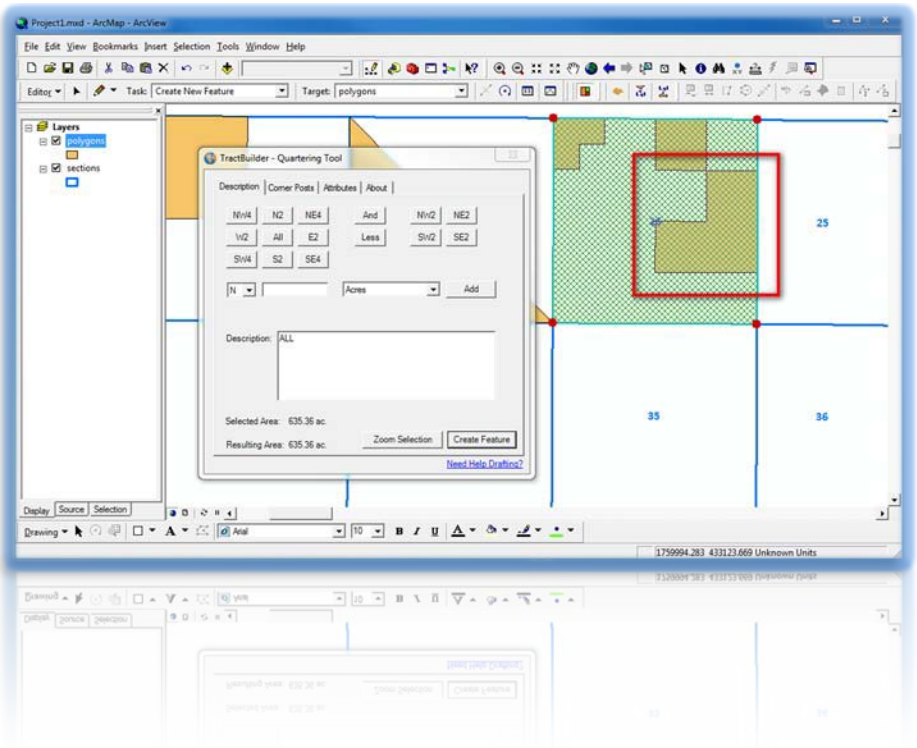
Step 7: Click "And".



Step 8: Now click to enter “SE4 NE4”. The entire description should read “N2 SE4 AND SE4 NE4”.



Step 9: Add attributes as desired and create the feature.



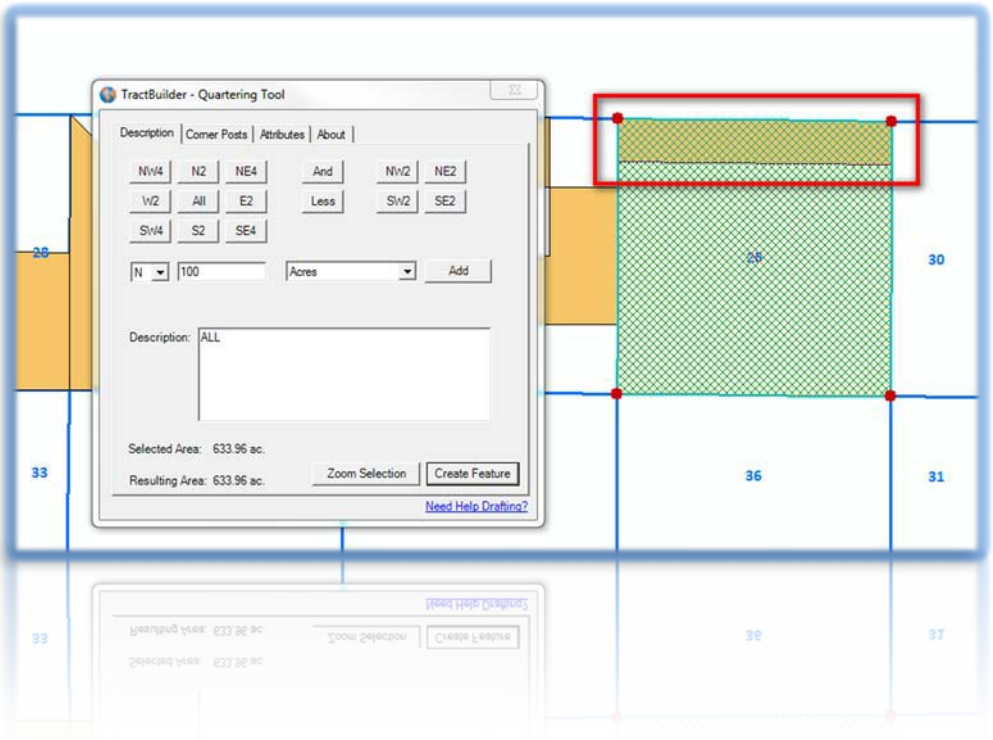
Step 10: You're doing a great job! These descriptions can be complex, but are not hard *if you have the right tools* (and since you're using this manual: ***you do have the right tools***). Now we are going to focus on specialty calls, such as the "North 100 acres", "South 10 acres of the northeast quarter", and "West 80 feet of the Southwest quarter of the Southwest quarter". Let's move over to Section 25. Along the horizontal centerline of the Quartering tool you will see this:

1. A drop-down box that allows you to choose N,S, E, W (North, South, East, West).
2. Text box that allows you to enter a number.
3. Determines your unit of measure (Acres or Feet).
4. Click to add what you have entered to the description.

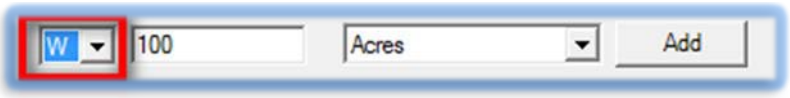
Step 11: Type "100" in the text box.

Step 12: Click "Add".

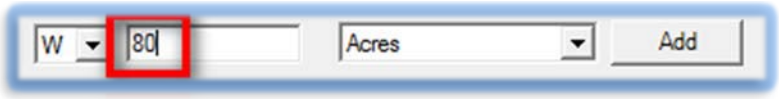
Step 13: Add attributes as desired and create the feature.



Step 14: Let's do another one! Change the "N" to "W".



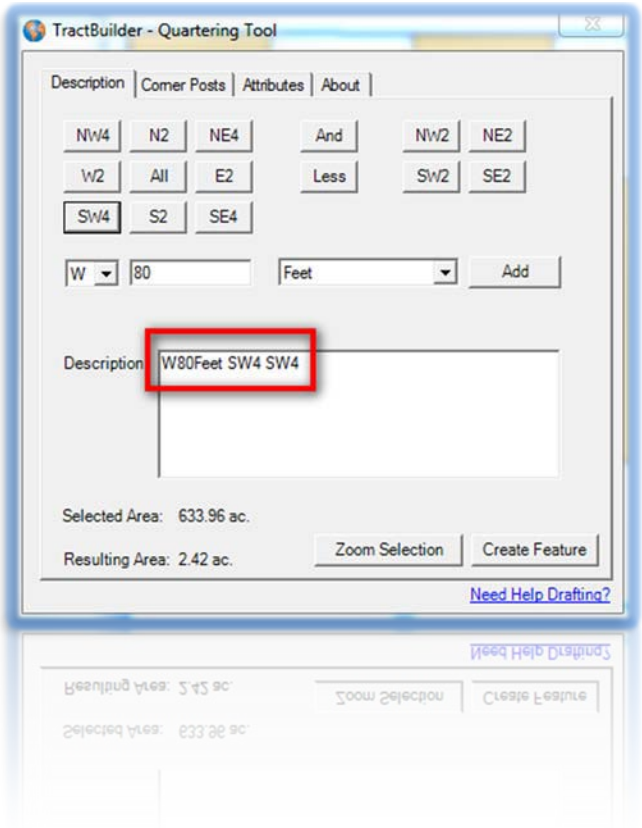
Step 15: Type "80" in the text box.



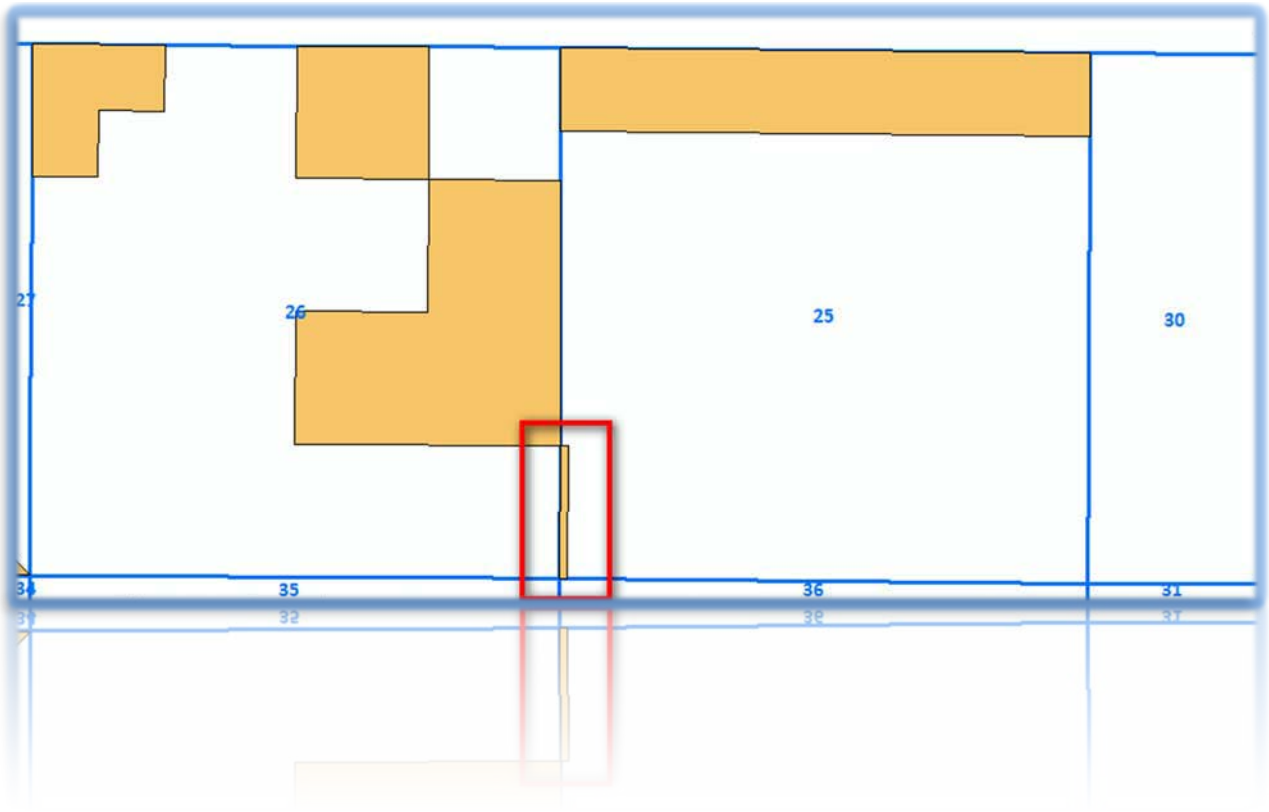
Step 16: Change "Acres" to "Feet".

Step 17: Click "Add".

Step 18: Click to add "SW4 SW4". The entire description should read W80Feet SW4 SW4.



Step 19: Add attributes as desired create the feature.



Step 20: Save your edits.

Summary

In this tutorial we covered specialty calls, less & excepts, and combined features. You should be all "square". You can now create most, if not all, quartering descriptions you will encounter while mapping.

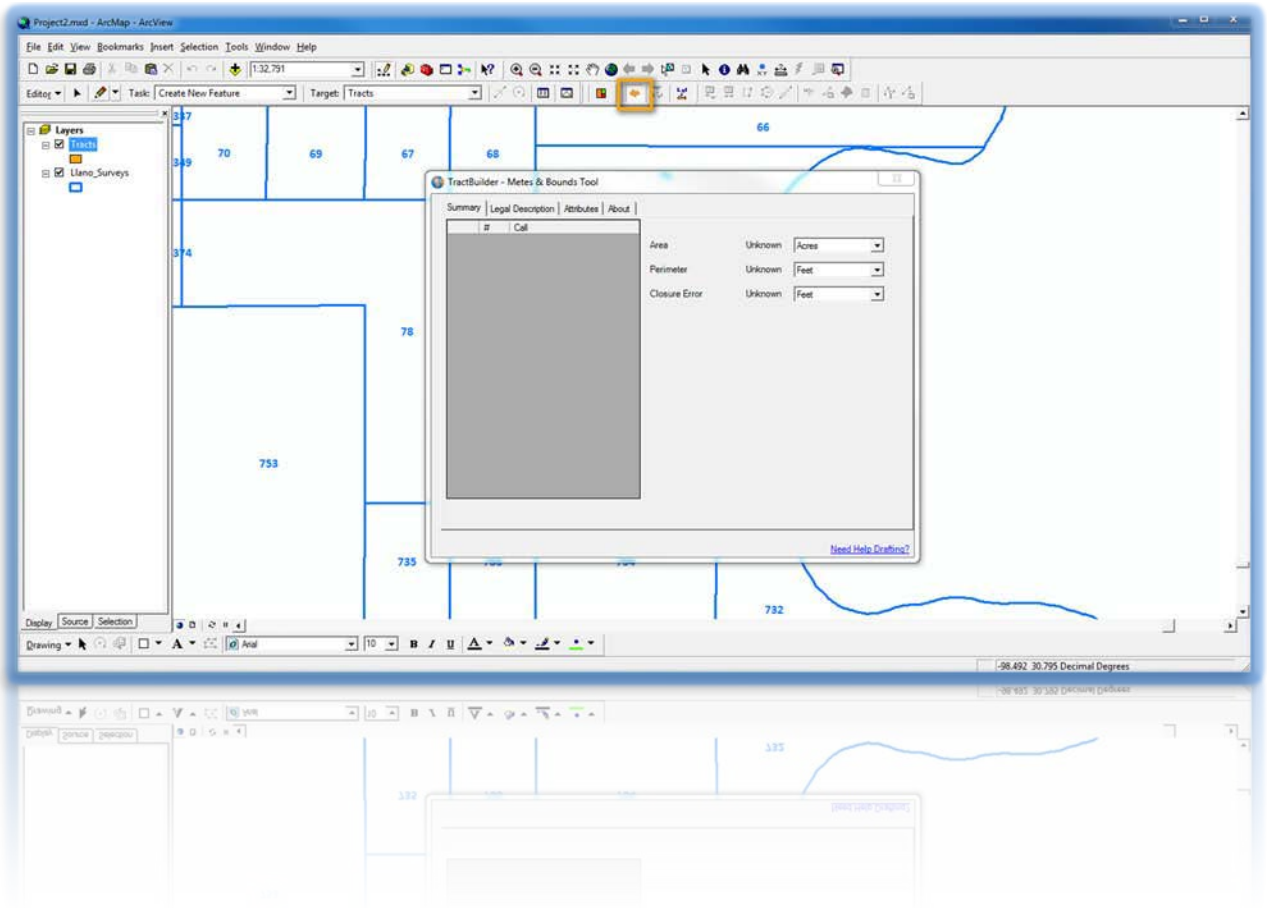
Tutorial 7: The Metes & Bound Tool – Level 1: Auto-Converting Legals

Introduction

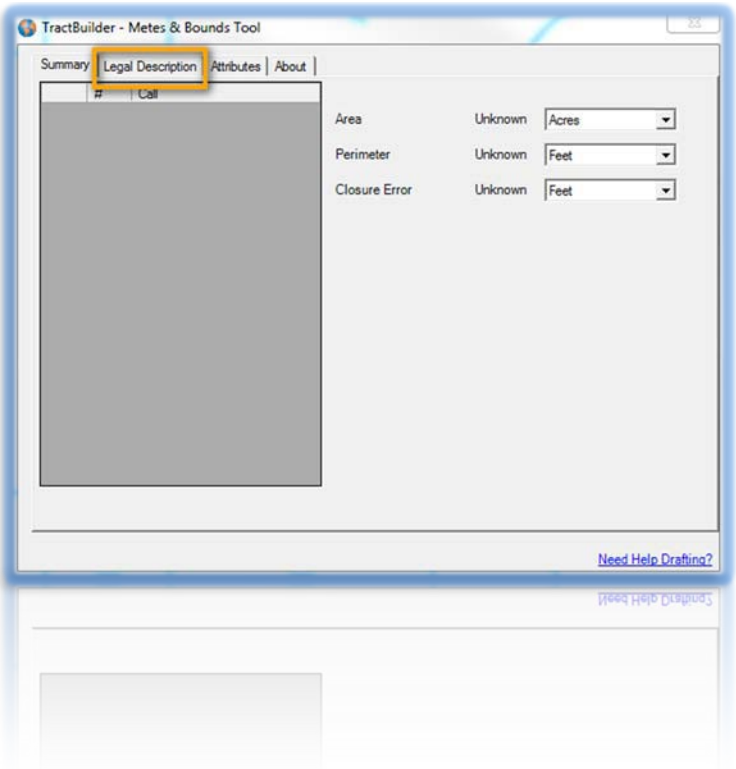
Are you ready to start working with metes and bounds descriptions? Before you can use the tool to enter legal descriptions you need to be able to read and understand them. Once you are comfortable with reading a legal description continue on with this tutorial. We will be working in a different project, Project 2 (C:\Users\Public\Documents\TractBuilder\Layers), go ahead and open that up.

Process

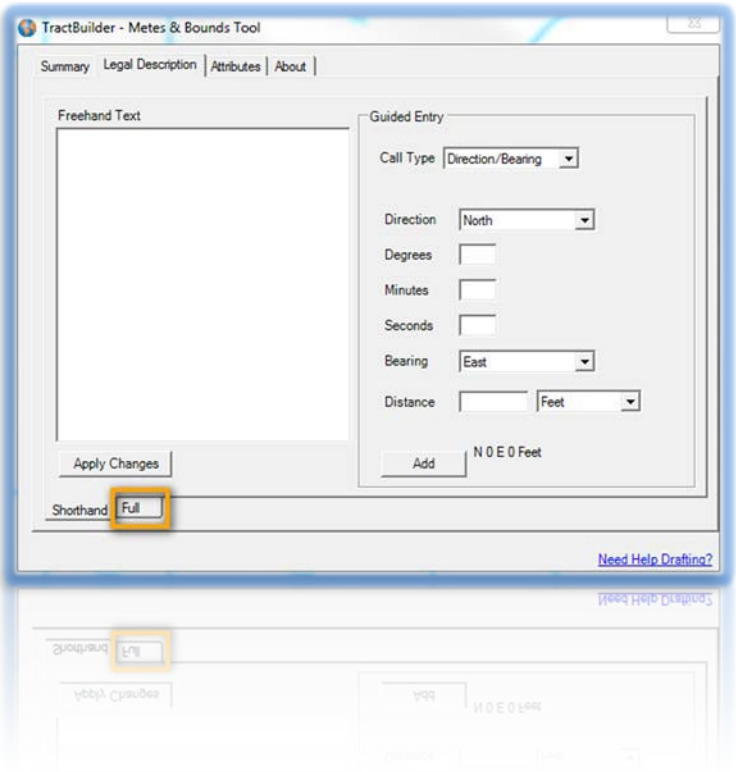
Step 1: We are going to start with auto converting legal descriptions using the TractBuilder Metes & Bounds Tool. Start editing your "Tracts" layer and activate the Metes & Bounds Tool.



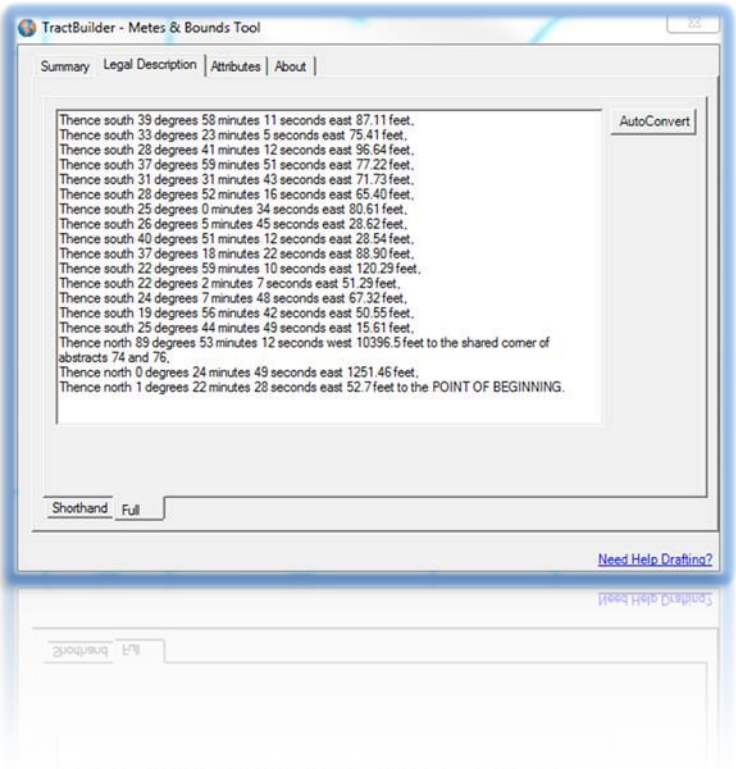
Step 2: Click on the "Legal Description" tab.



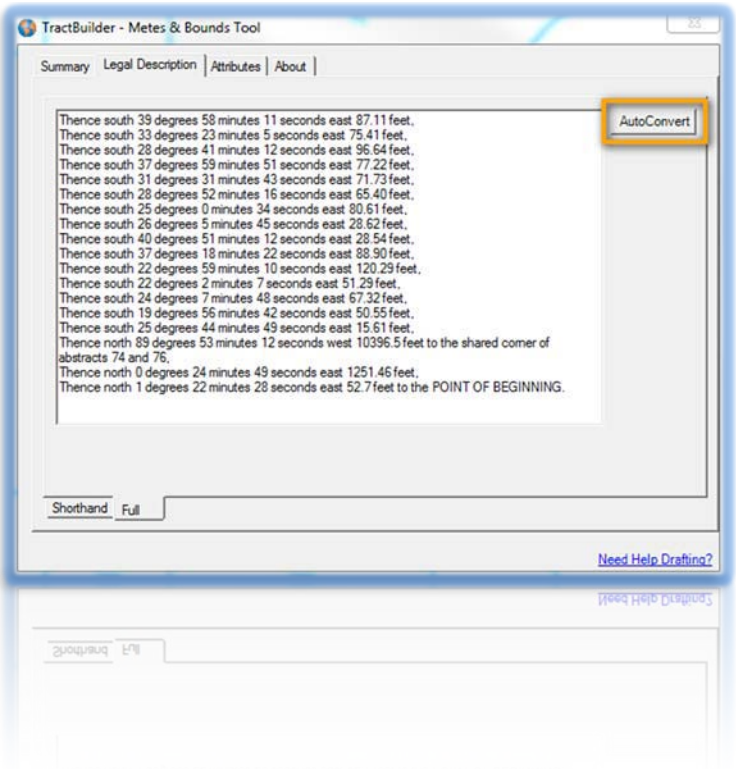
Step 3: Click on the "Full" tab.



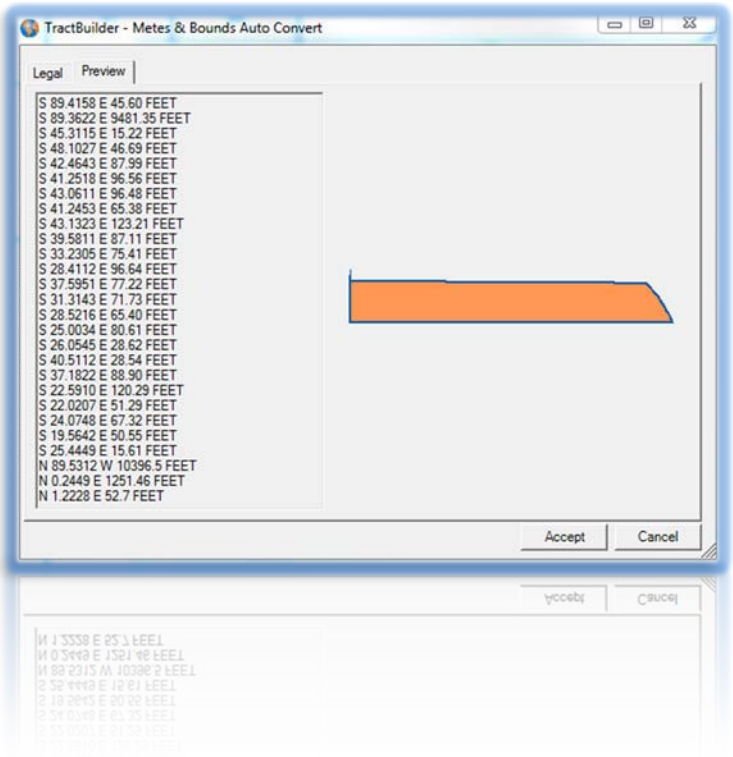
Step 4: Copy and paste "Legal Description 1" from Appendix A into the text area.



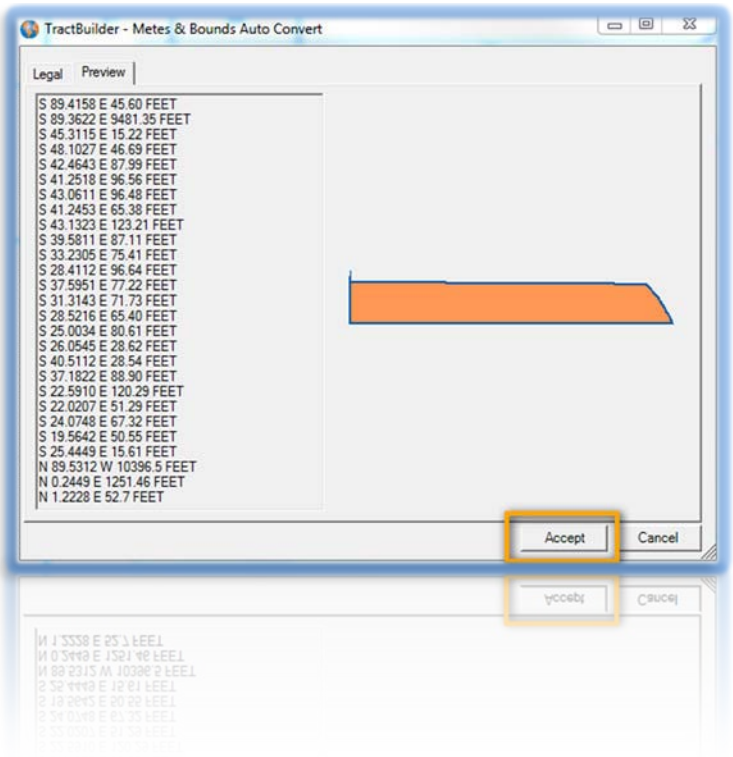
Step 5: Click "Auto Convert".



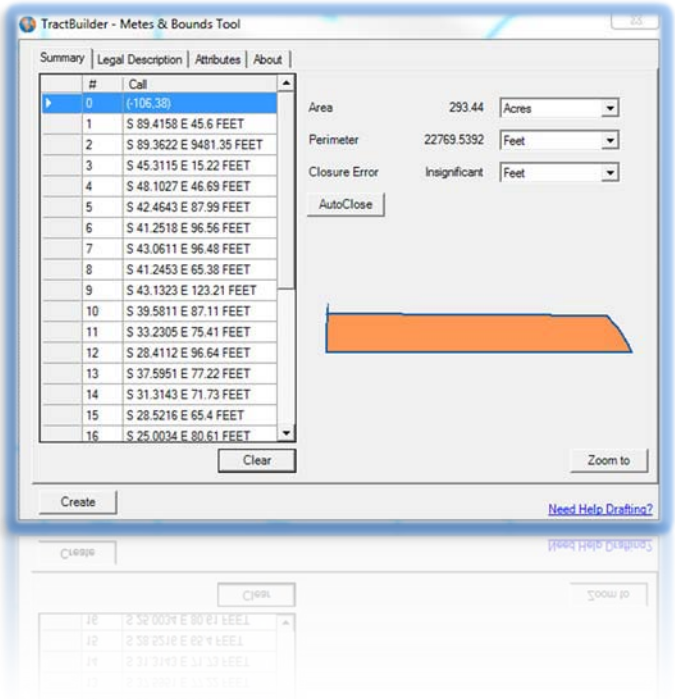
Step 6: You will now be shown a preview of the feature based on the legal description translation.



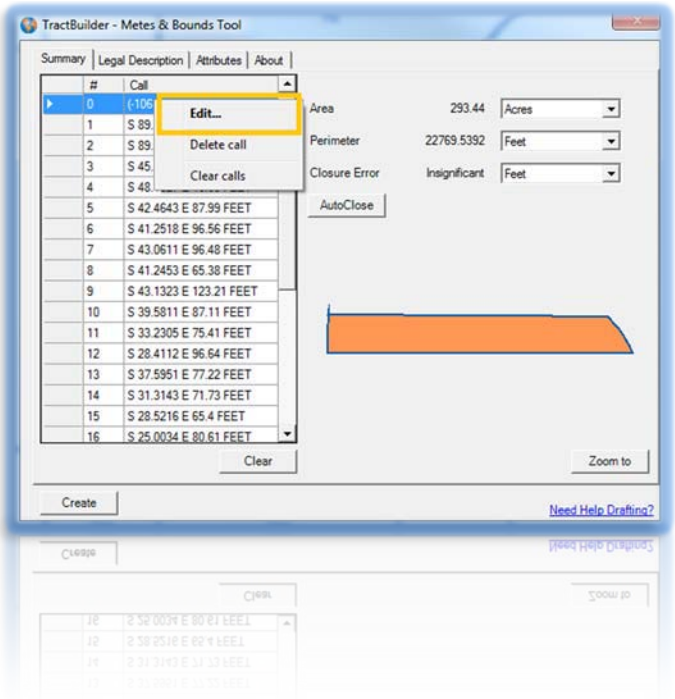
Step 7: Click “Accept”.



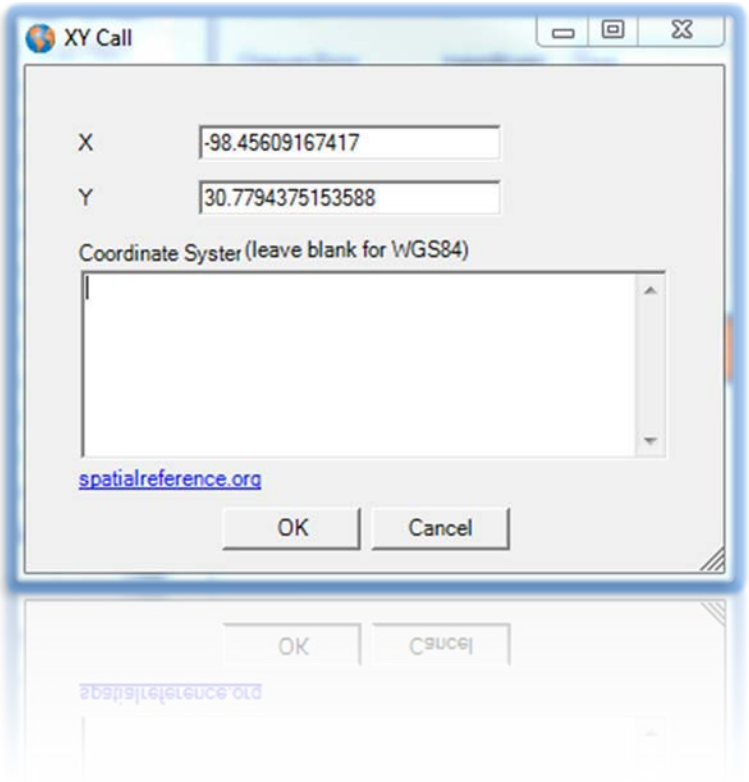
Step 8: The calls are then created. Double check the "Area" and "Closure Error" for that feature.



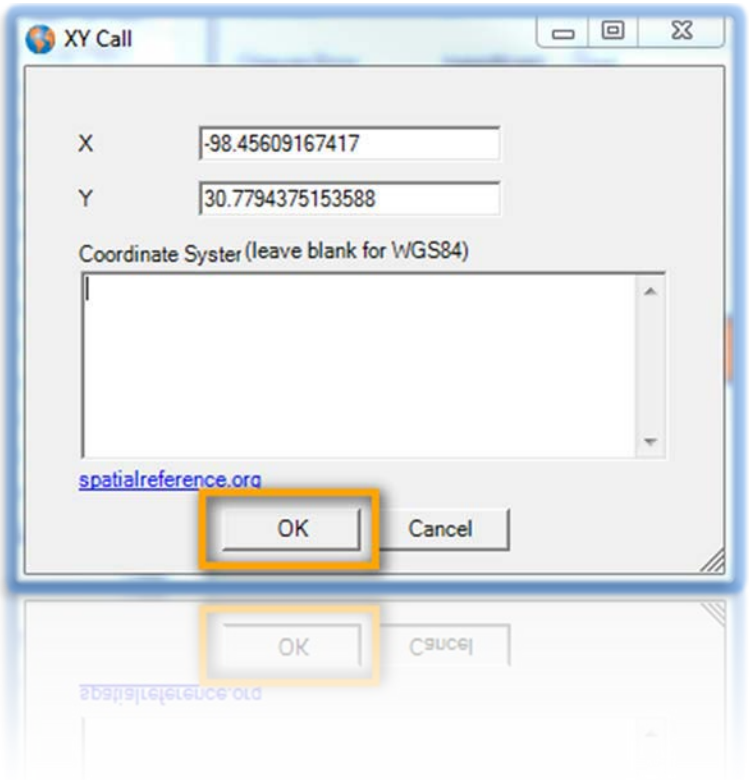
Step 9: We still need to set the starting position. This can be done by hand or by editing the first call (#0). Since we know the XY of the starting position let's just edit the first call. Right click on call "0" and select "Edit".



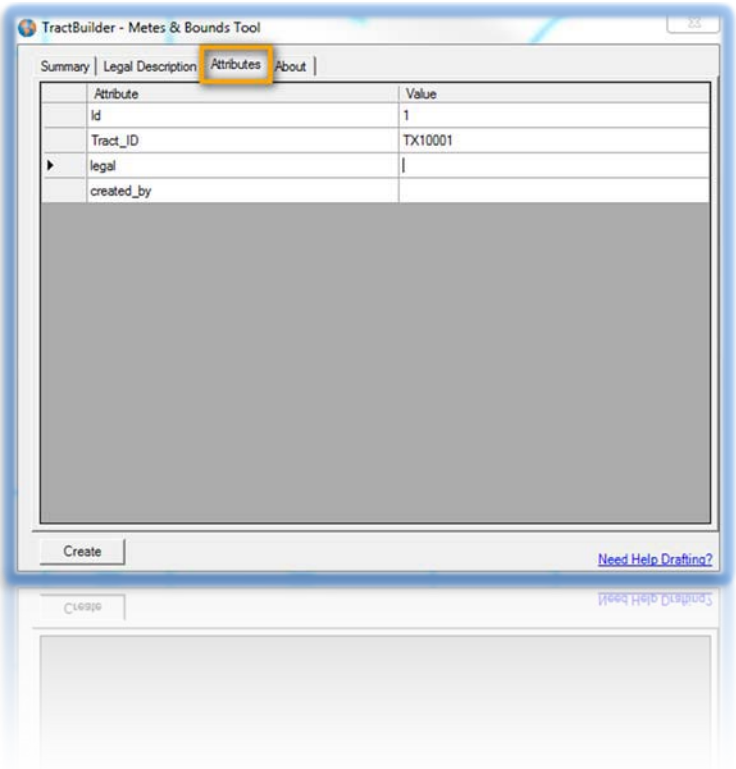
Step 10: Either copy and paste or type the correct calls into the appropriate fields in the dialog box.



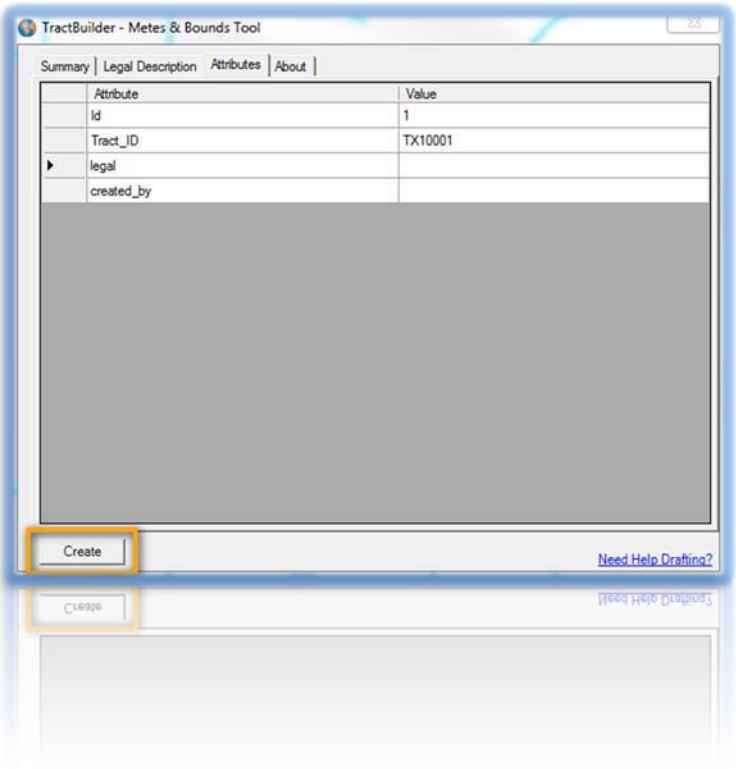
Step 11: Click "OK".



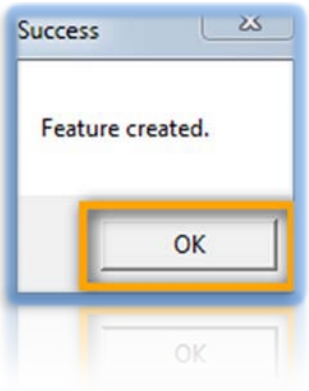
Step 12: To add attributes click on the "Attributes" tab and fill in the desired values.



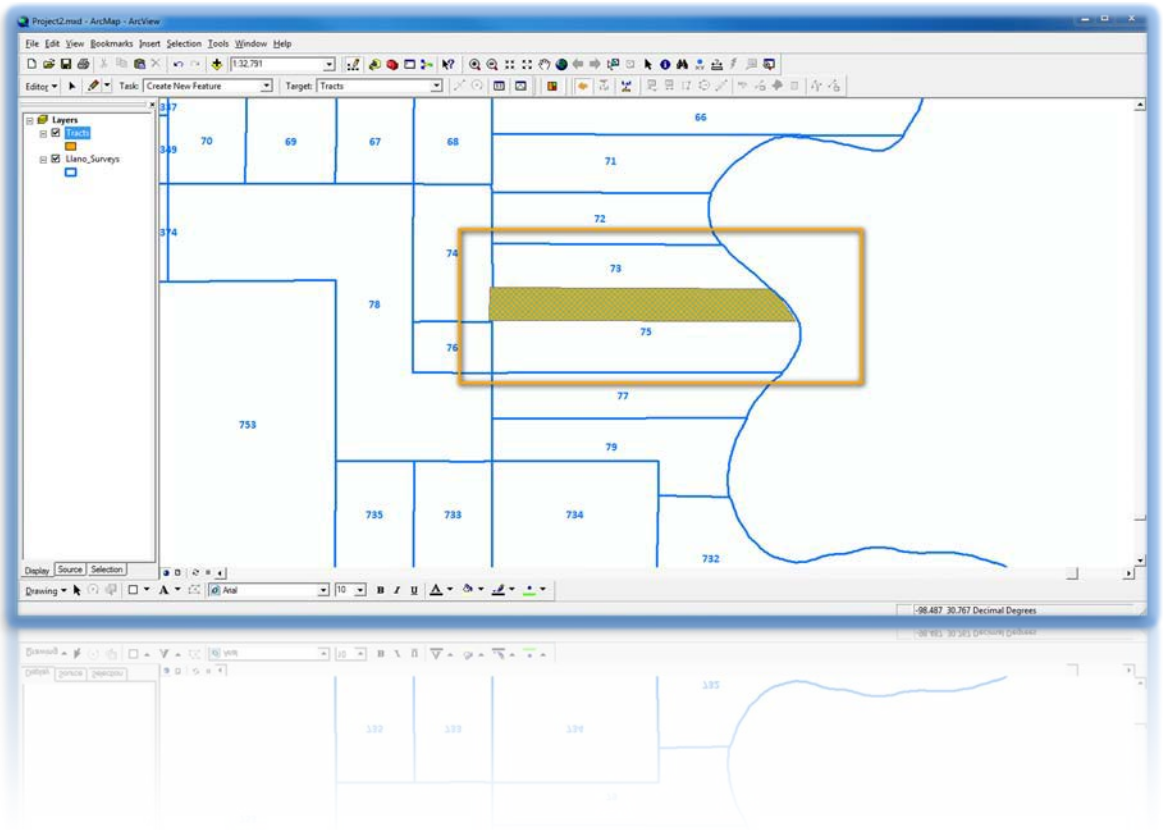
Step 13: Click Create.



Step 14: A dialog box will appear letting you know once the feature has been created. Click "OK".



Your feature should now appear on the map like so:



Once you save your edits the feature will be added to the layer.

Summary

In this tutorial we covered converting a text legal description to a metes and bounds feature using the TractBuilder Metes and Bounds tool for ArcGIS. We also saw how to add attributes to a feature during the polygon creation process.

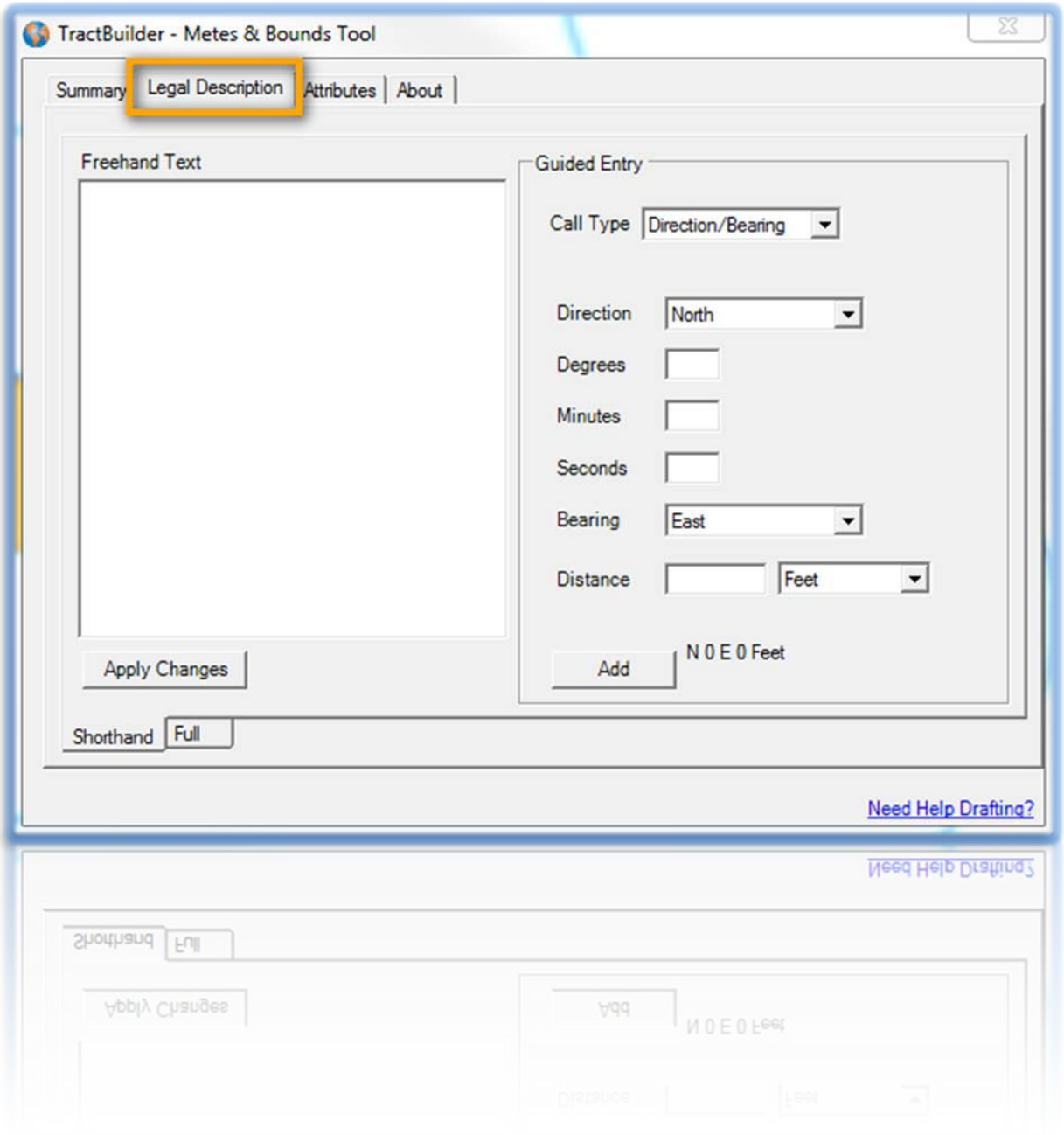
Tutorial 8: The Metes & Bound Tool – Level 2: Guided Entry

Introduction

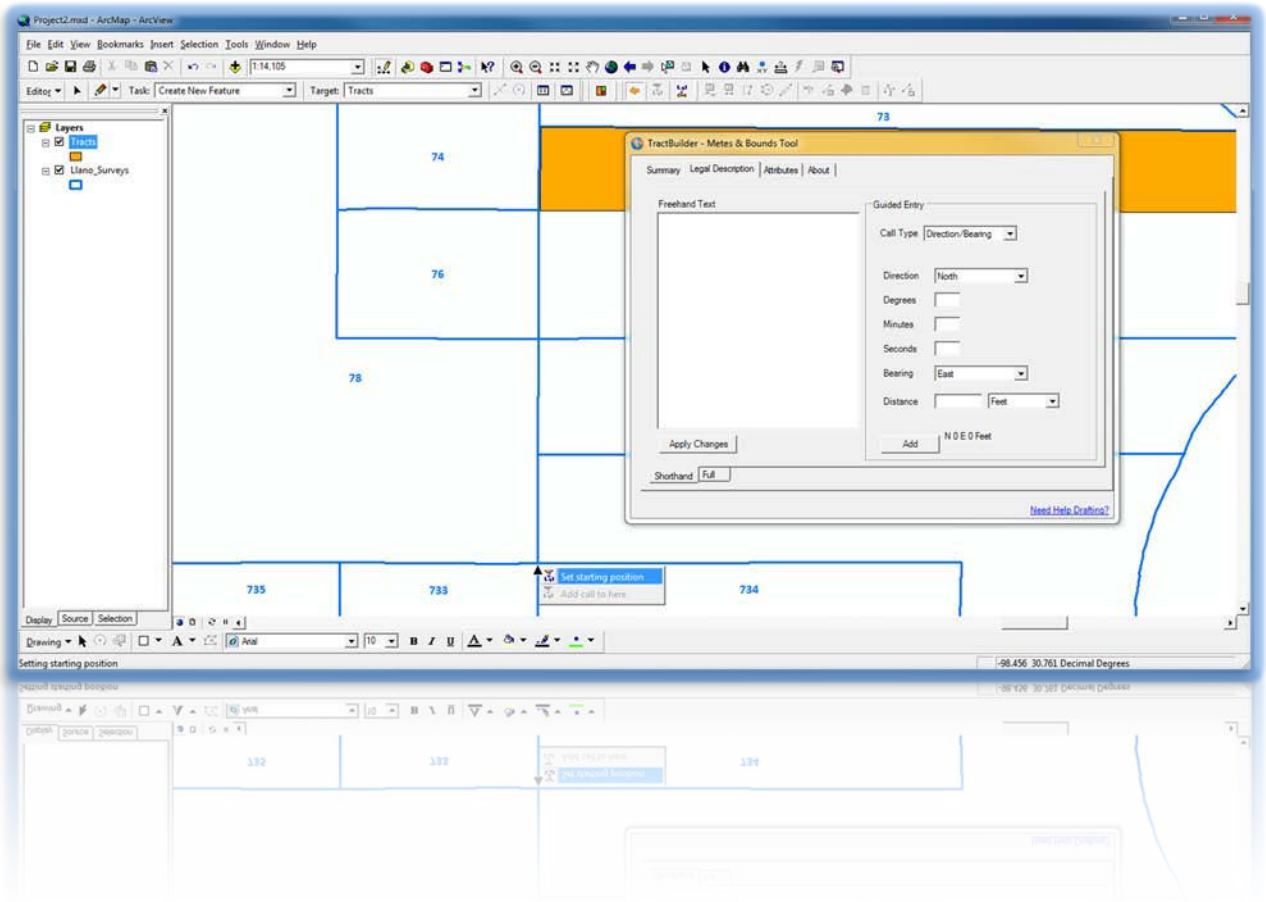
Unfortunately not every description is given to us in a format we can copy and paste into the tool and even then not every legal can be auto-converted. The TractBuilder Metes & Bounds Tool has great interface for entering a legal one line at a time. Don't worry you don't need to learn some special "language," it's just fill-in-the-blank!

Process

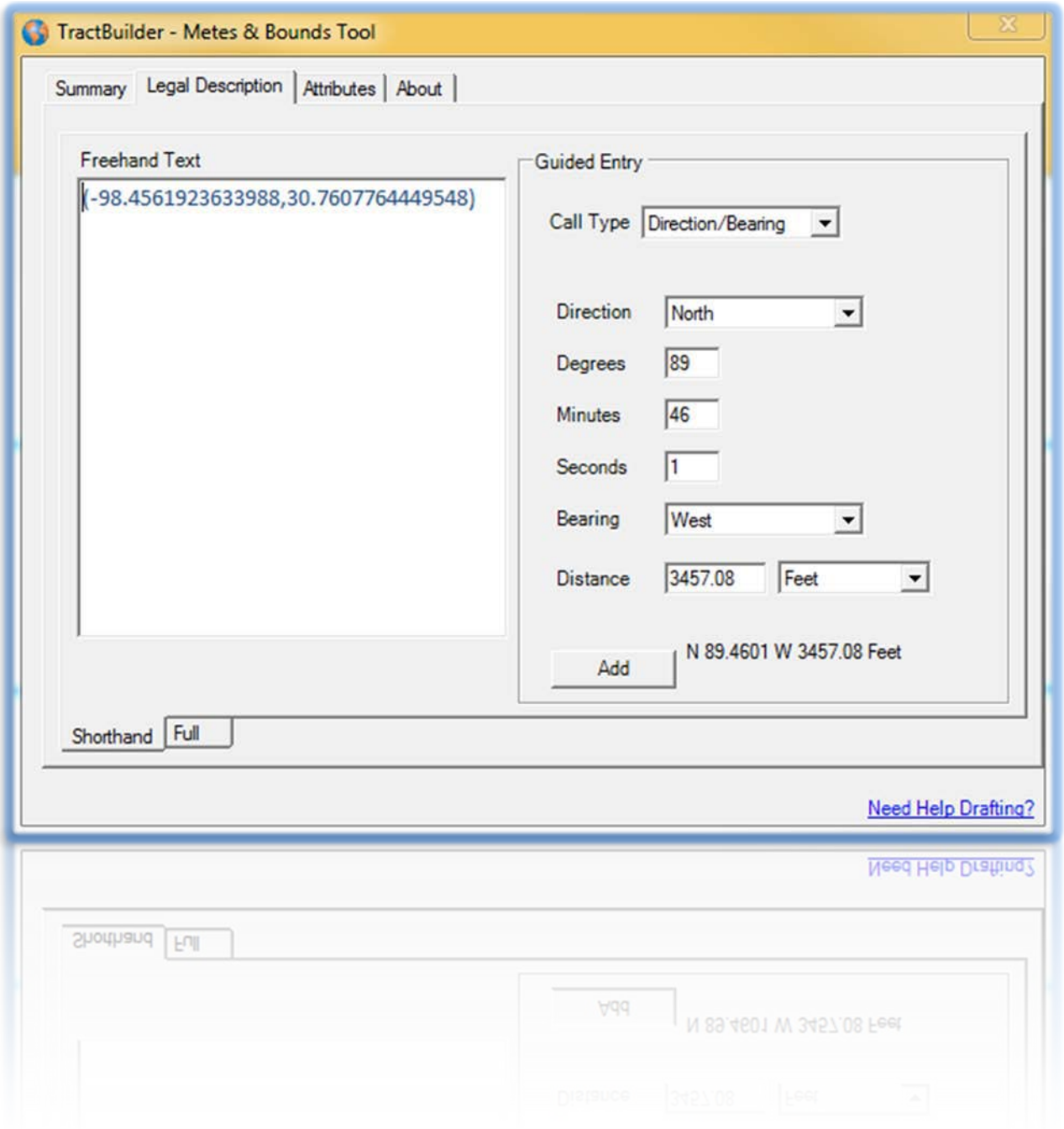
Step 1: In Edit Mode, with the Metes and Bounds Tool active, click on the "Legal Description" tab.



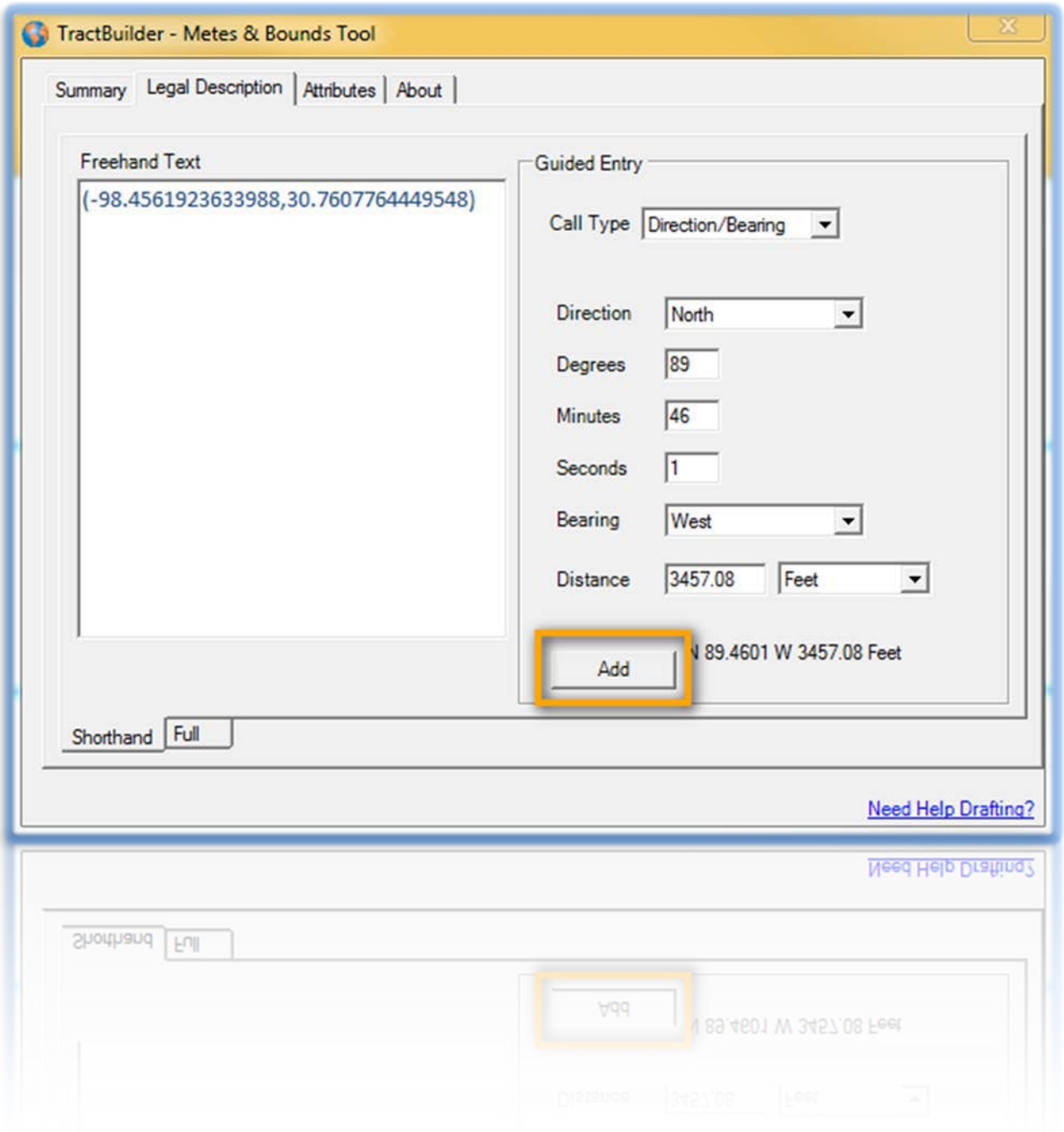
Step 2: Read "Legal Description 2" in Appendix A to figure out the starting position. We will manually place the starting position of the feature at the southwest corner of abstract 78. Hold your mouse pointer over the desired location, right-click, and select "Set Starting Position".



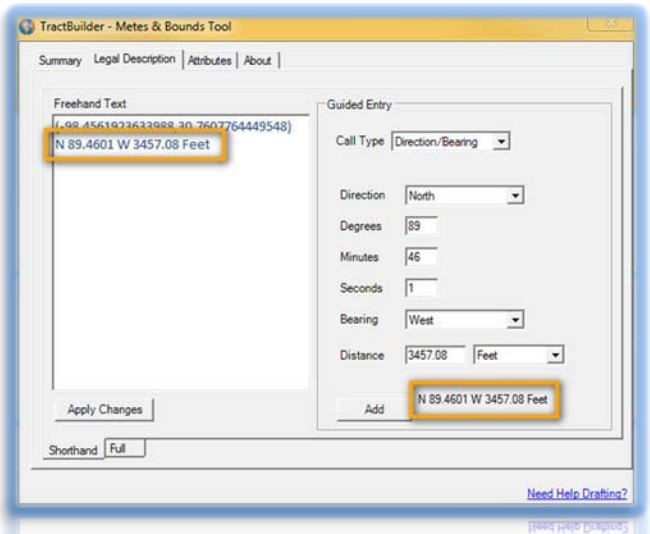
Step 3: The first distance call in our description is "Thence along the survey boundary to road being north 89 degrees 46 minutes 1 seconds west 3457.08 feet". This is what is known as a "Direction/Bearing" call type. Use the "Guided Entry" area of the "Legal Description" tab to fill in the appropriate values.

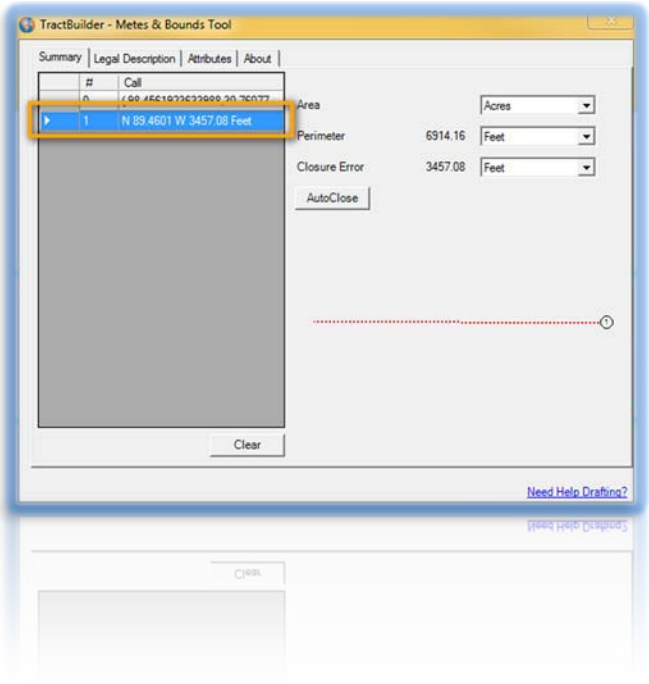


Step 4: Click "Add".



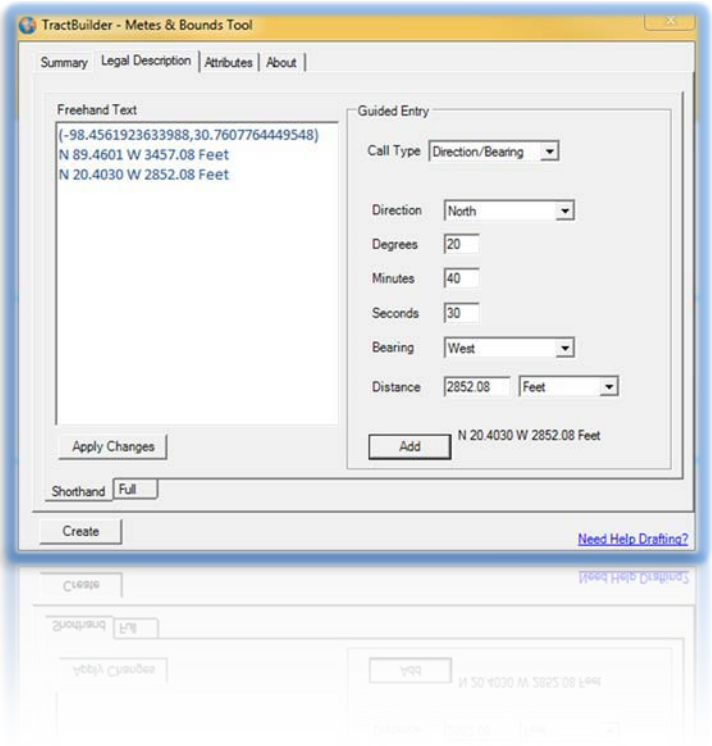
The text that was beside “Add” is now added as a call and can be viewed in the “Freehand Text” area or on the “Summary” tab.



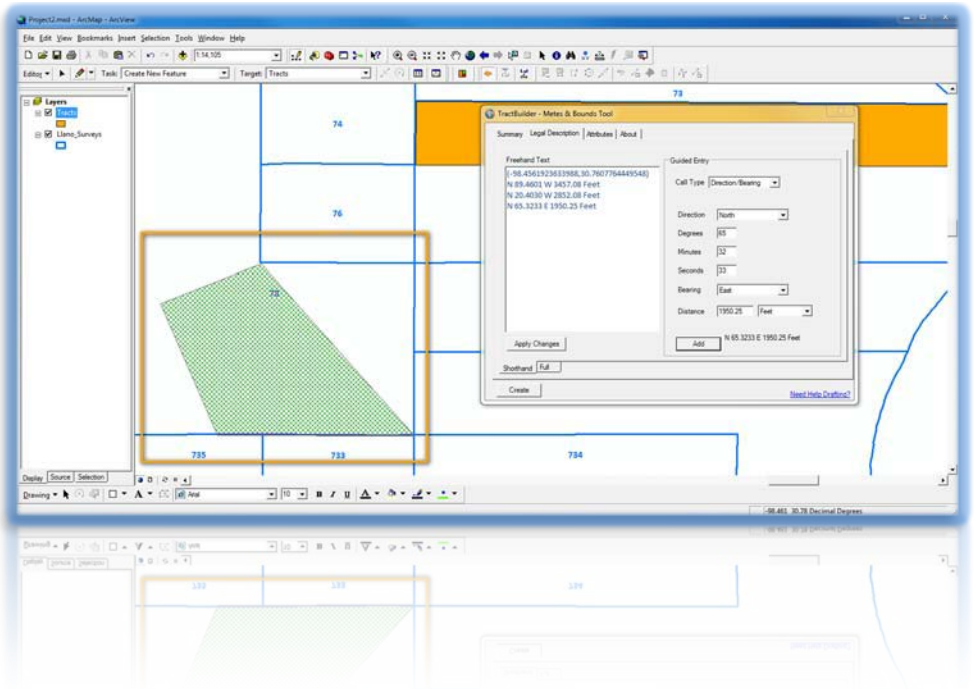


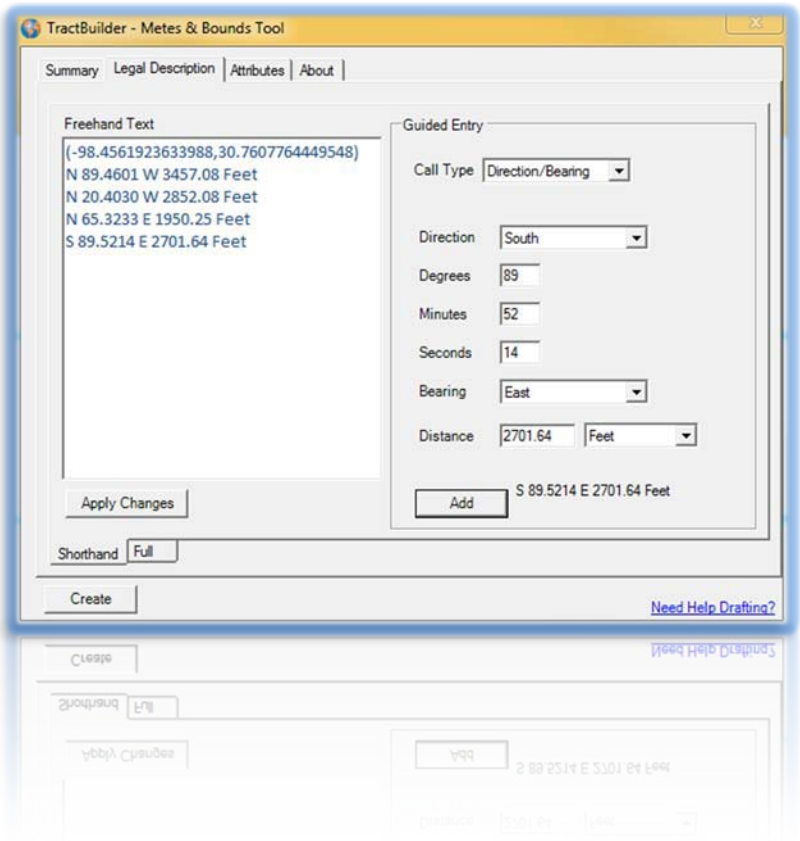
You may have noticed on the “Summary” tab the calls are numbered, starting with “0”, that is starting position. We can also see a preview of our feature (only one line at this point), as well as an area, perimeter, and closure error calculation. We will come back to these later.

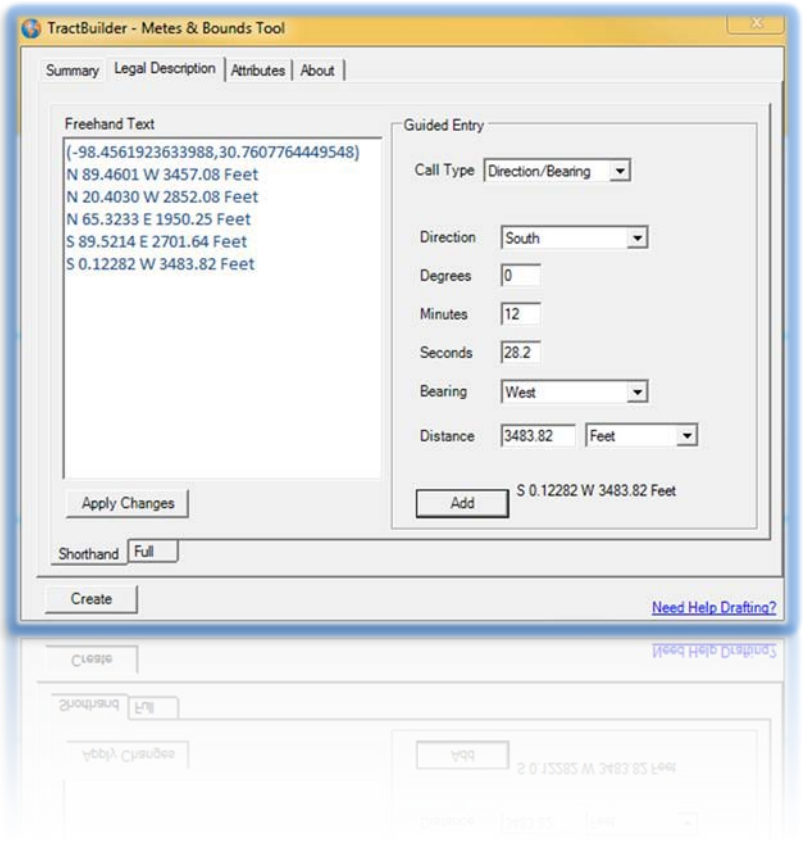
Step 5: Continue to add your call one at a time using the "Guided Entry" form. You will simply be replacing the text that is in the box with that of the new call, and changing the North/South and East/West direction dropdowns. After each call click "Add" to see them become a part of your new feature.



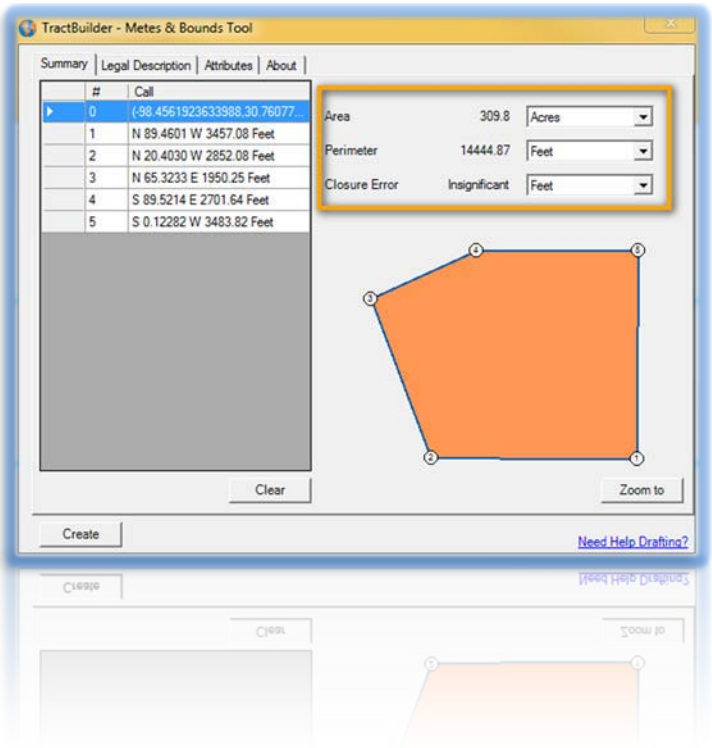
You can see you feature being "built" on the map as you add calls using the metes and bounds tool.



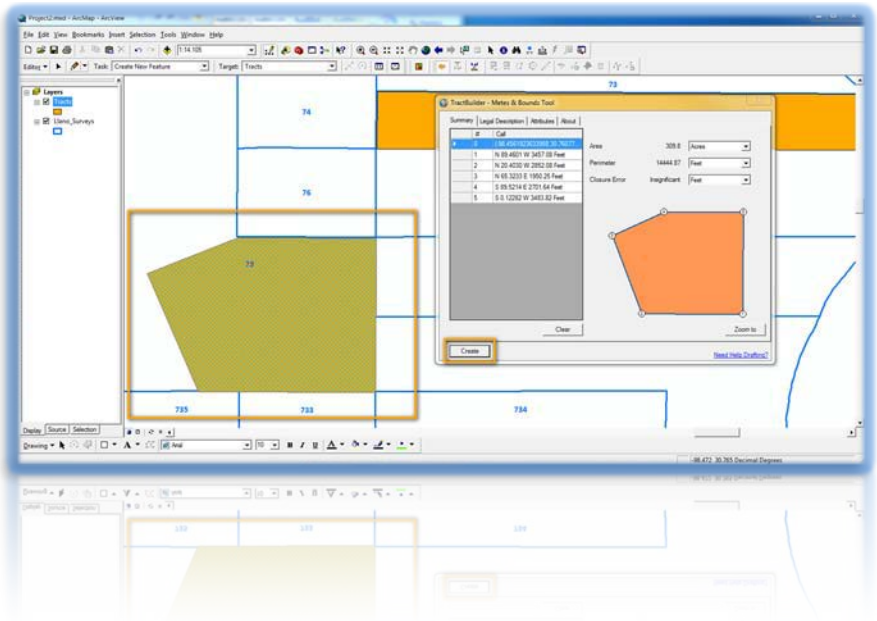

TractBuilder - Metes & Bounds Tool
Summary
Legal Description
Attributes
About
Freehand Text
(-98.4561923633988,30.7607764449548)
N 89.4601 W 3457.08 Feet
N 20.4030 W 2852.08 Feet
N 65.3233 E 1950.25 Feet
S 89.5214 E 2701.64 Feet
Guided Entry
Call Type
Direction/Bearing
Direction
South
Degrees
89
Minutes
52
Seconds
14
Bearing
East
Distance
2701.64
Feet
Add
S 89.5214 E 2701.64 Feet
Apply Changes
Shorthand
Full
Create
Need Help Drafting?


TractBuilder - Metes & Bounds Tool
Summary
Legal Description
Attributes
About
Freehand Text
(-98.4561923633988,30.7607764449548)
N 89.4601 W 3457.08 Feet
N 20.4030 W 2852.08 Feet
N 65.3233 E 1950.25 Feet
S 89.5214 E 2701.64 Feet
S 0.12282 W 3483.82 Feet
Guided Entry
Call Type
Direction/Bearing
Direction
South
Degrees
0
Minutes
12
Seconds
28.2
Bearing
West
Distance
3483.82
Feet
Add
S 0.12282 W 3483.82 Feet
Apply Changes
Shorthand
Full
Create
Need Help Drafting?

On the "Summary tab you can see the area, perimeter, and closure error calculations to make sure you entered everything correctly.



Step 6: Click "Create" to add the completed feature to your layer.



Summary

In this tutorial we covered guided entry for direction/bearing calls. You can now handle the majority of metes & bounds legal descriptions that you will encounter while drafting.

Tutorial 9: The Metes & Bound Tool – Level 3: Curve & XY Calls

Introduction

With today's modern technology surveyors can deliver GPS coordinates instead of direction bearing calls. And not all segments of a feature will be a straight line, for this you need to understand curve calls.

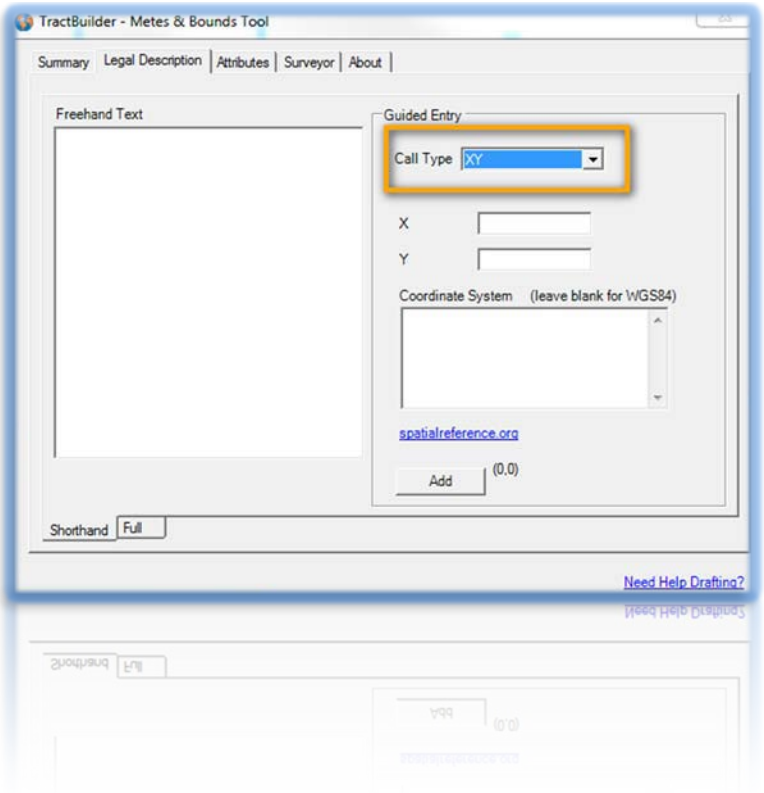
When utilizing a coordinate pair to draft a feature it is important that you understand at least the basics of coordinate systems. The legal description should tell you what system the coordinates are using, if not you can figure it out based on the digits used in the pair and the location you are working in. The description in this exercise specifies Lon/Lat WGS84, which is the default for the tools, so we do not need to worry about specifying our projection or datum. If a description is in Lon/Lat you can still use the XY call, latitude is the "Y" factor and longitude is the "X" factor.

Curve calls can come in many different forms, usually the curve description is consistent through a description and can be classified as either an Arc Length, Delta, or Chord type call. In this exercise all the curve calls are Arc Length calls.

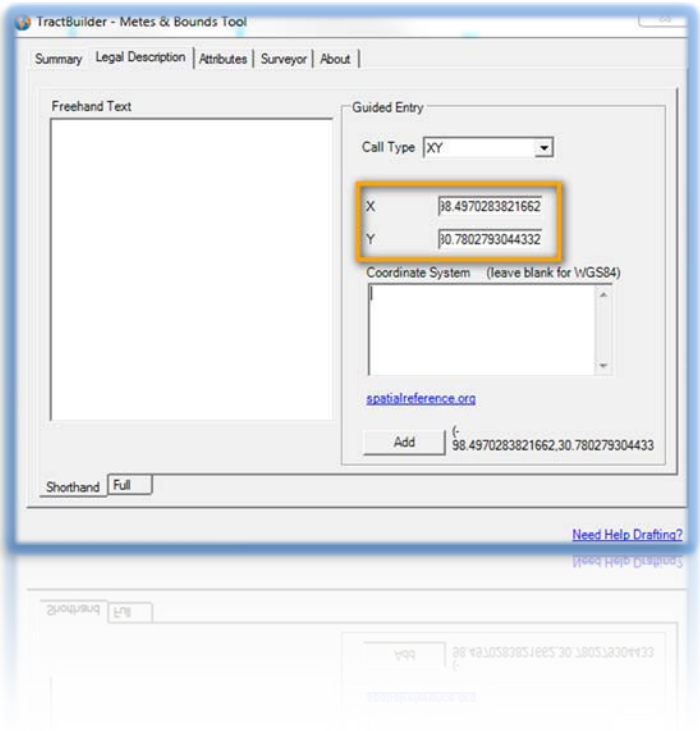
Activate the Metes & Bounds tool to begin.

Process

Step 1: We will be using Legal Description 3 (Appendix A). Since we are given the starting position as an XY coordinate, change the "Call Type" to "XY".

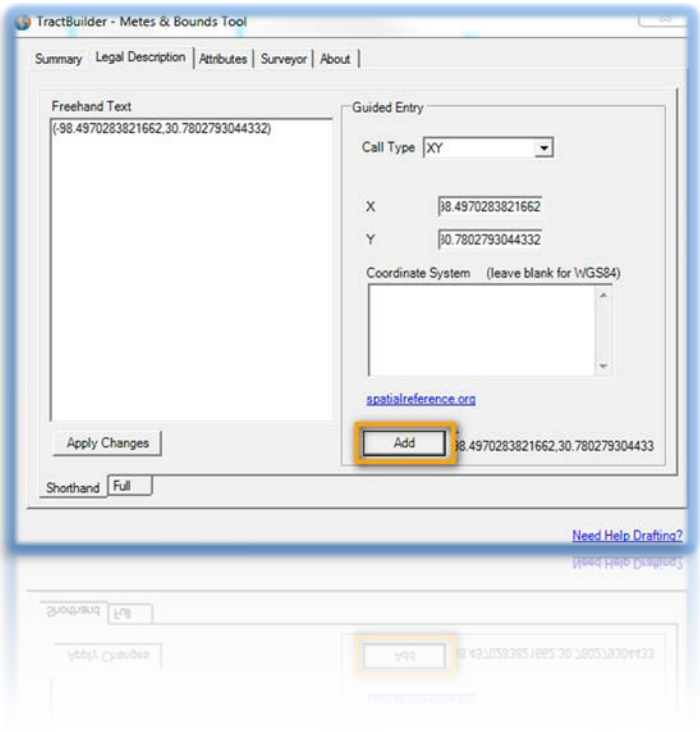


Step 2: Enter the X and Y values.

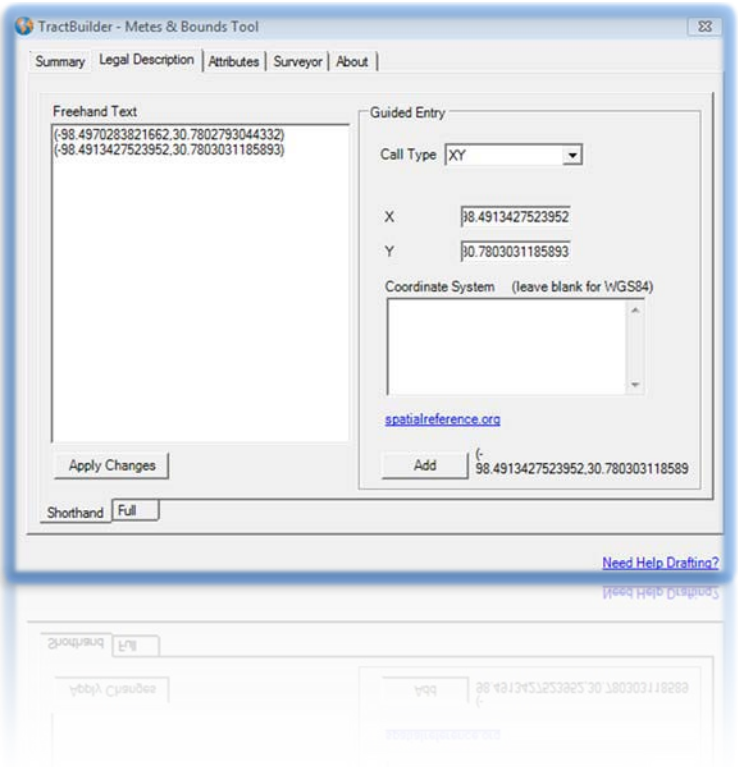


Note: See Appendix C for details on using coordinate systems aside from WGS84.

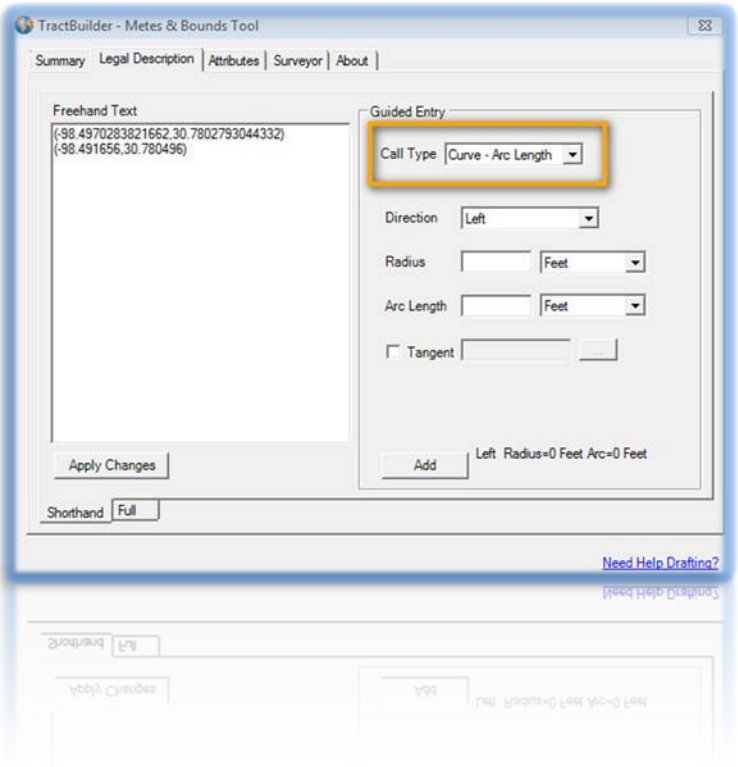
Step 3: Click "Add"



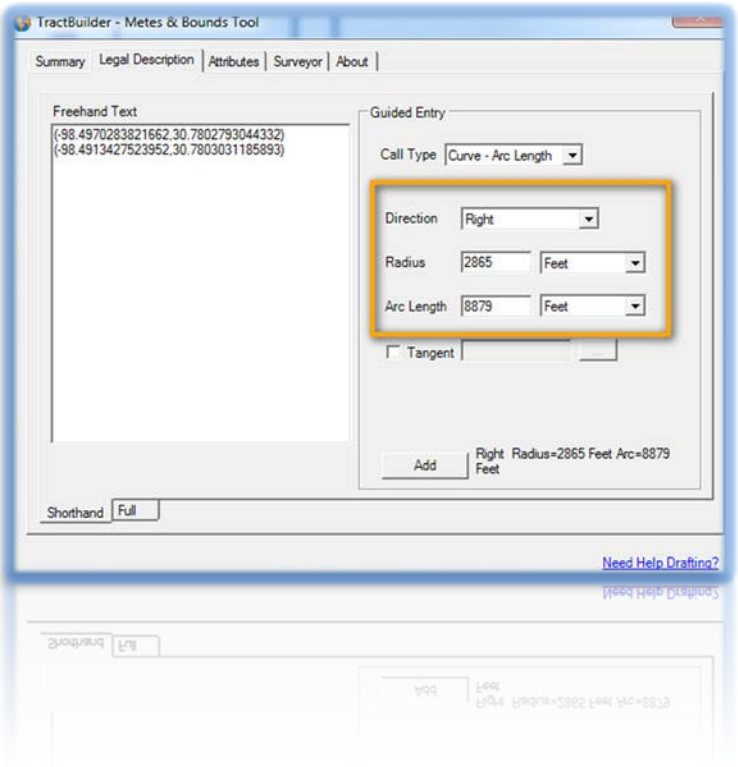
Step 4: Now we are given a second pair of coordinates to continue to. Enter and add this call.



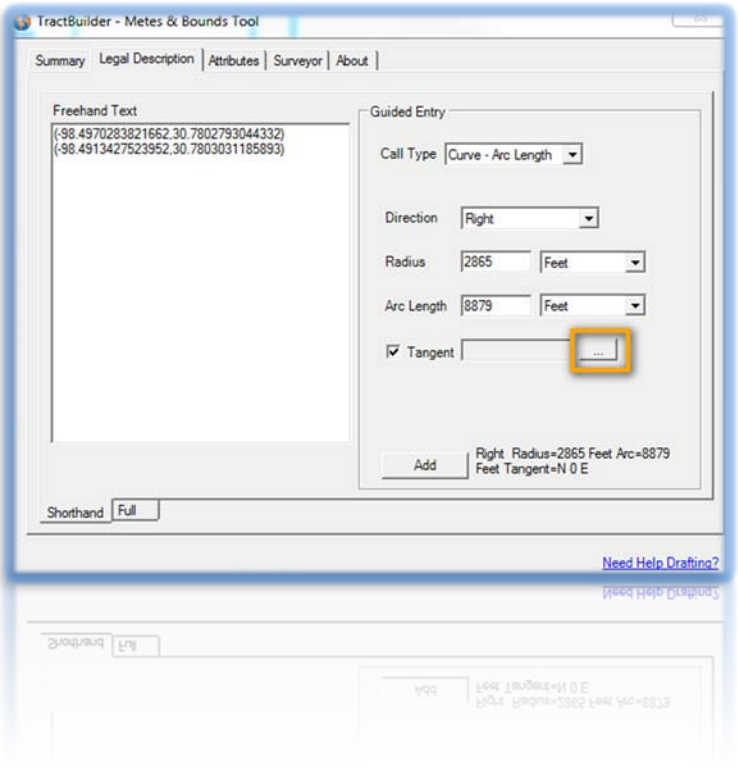
Step 5: Now we have a curve call. Change the "Call Type" to "Curve – Arc Length".



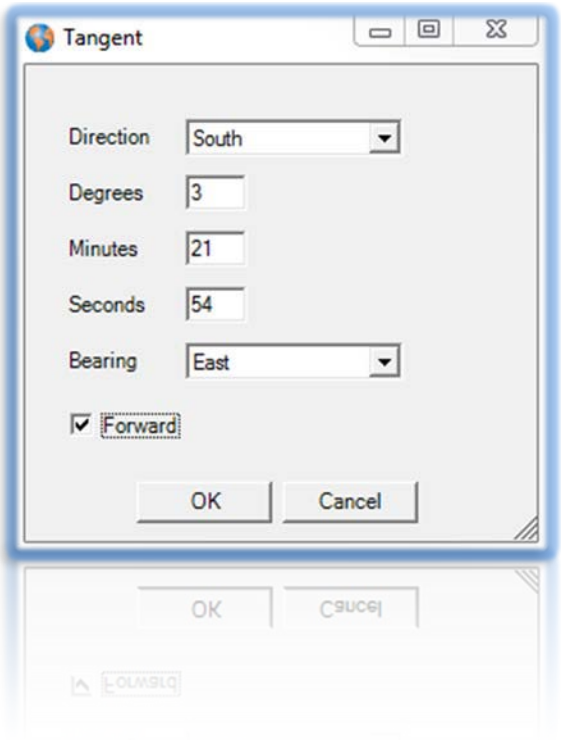
Step 6: The call reads as "". Change the direction and fill in the radius and arc length appropriately.



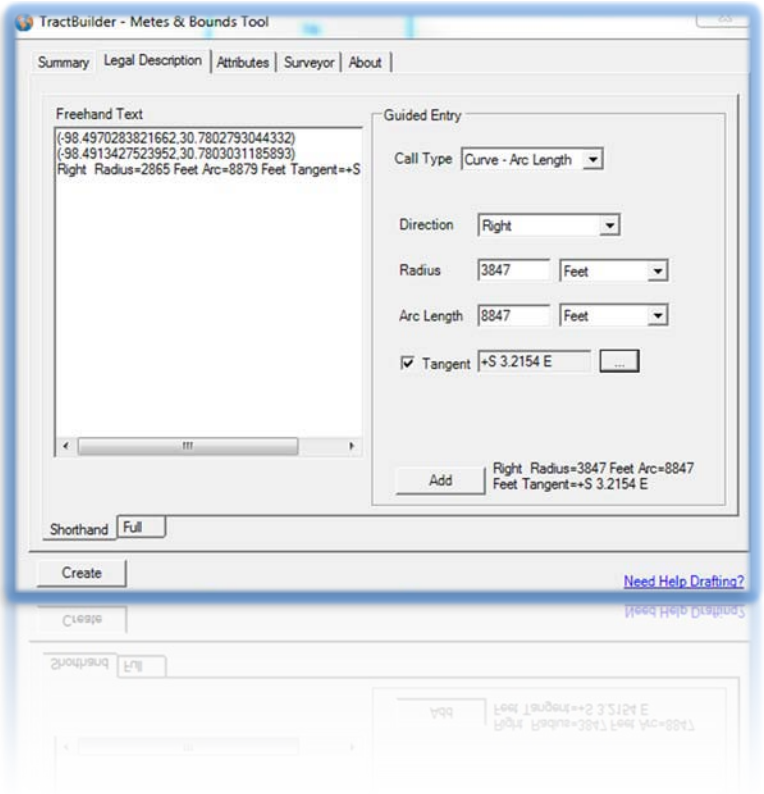
Step 7: Check the "Tangent" box, and click on the tangent button to expose the tangent entry fields.



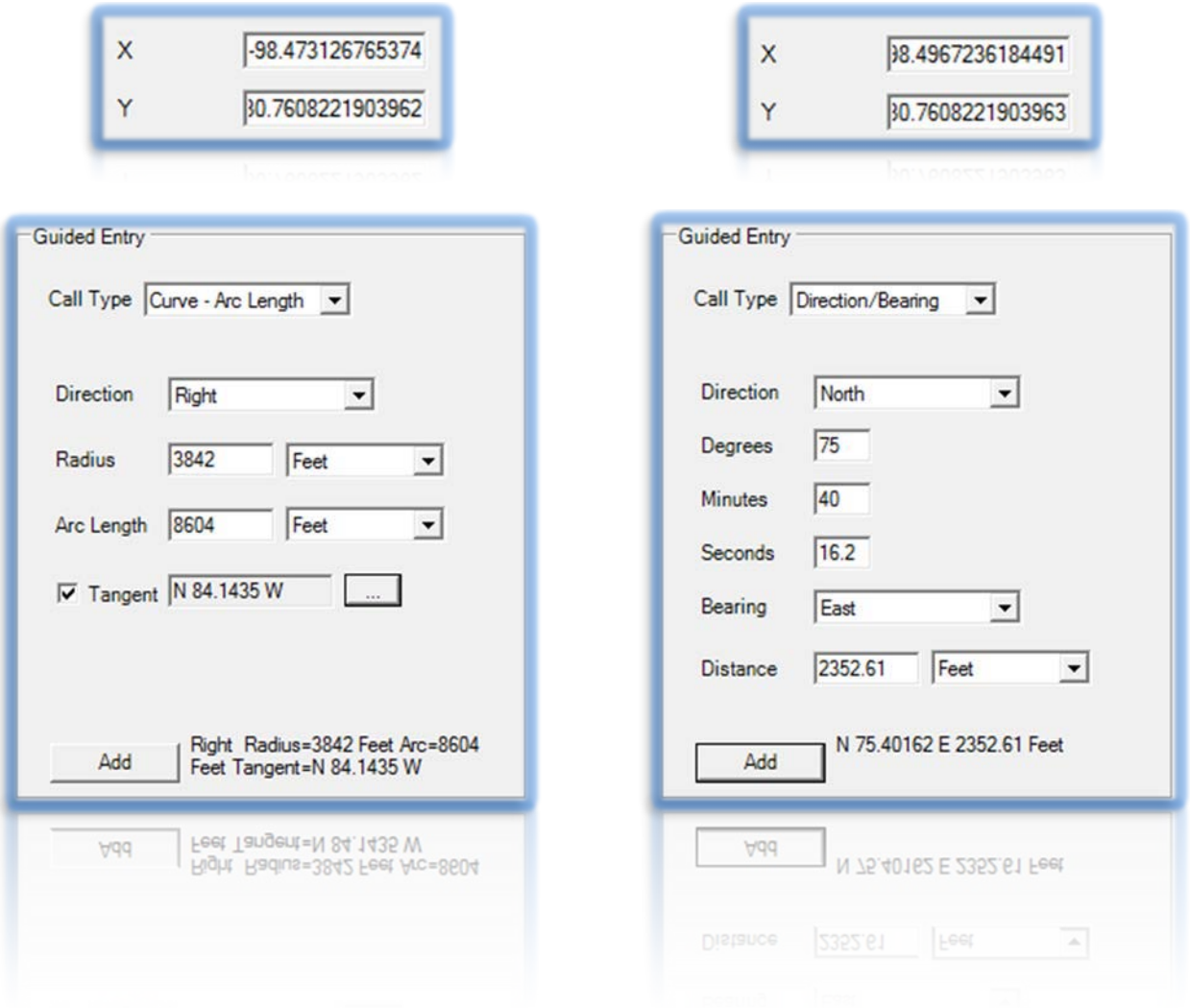
Step 8: Enter the tangent fields as described.

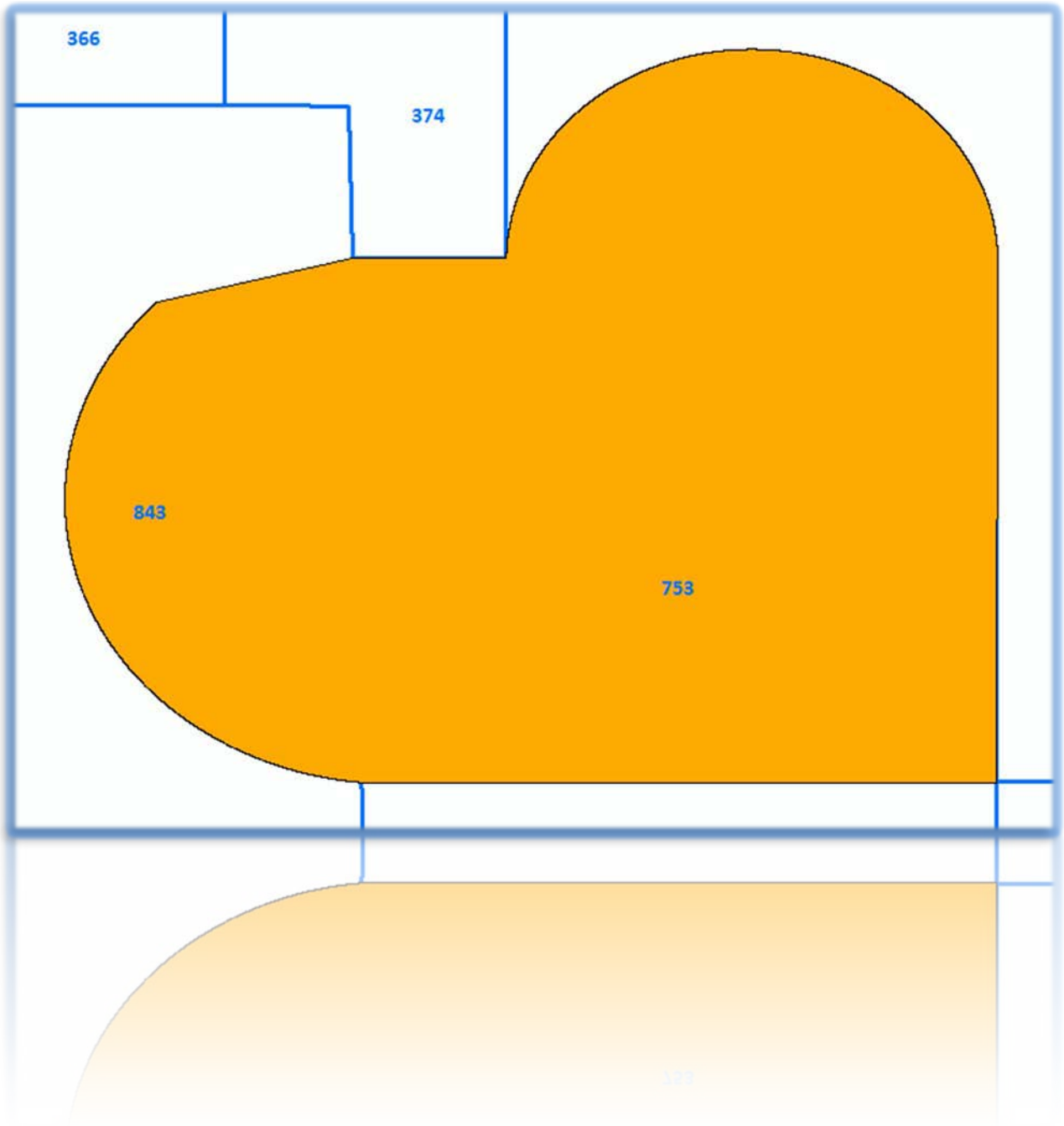


Step 9: Click “OK” and “Add”.



Step 10: Continue adding the calls as specified in the legal description.





Summary

In this tutorial we covered guided entry for curve calls as well as XY and Lon/Lat calls.

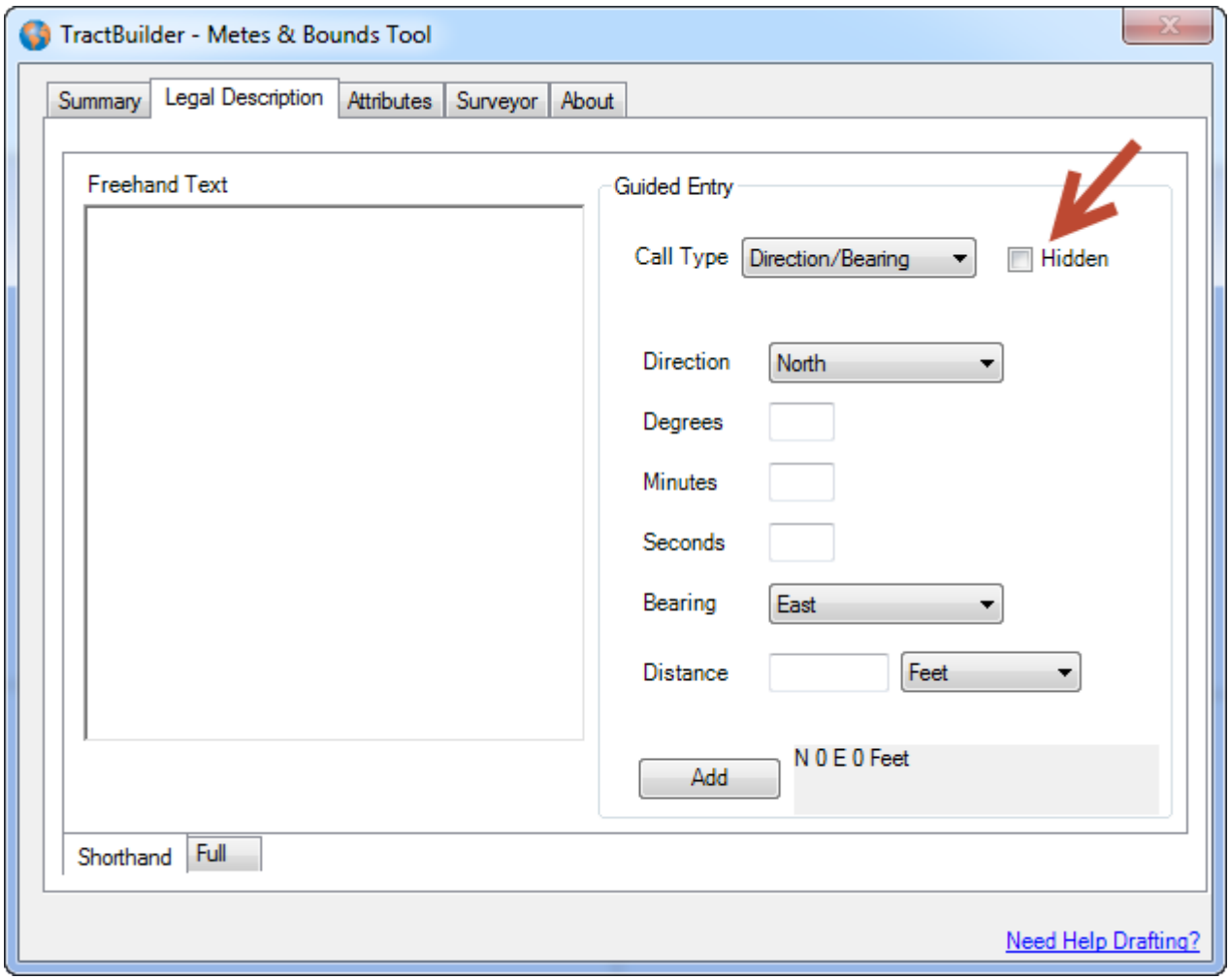
Tutorial 10: The Metes & Bounds Commencement

Introduction

In some situations a metes & bounds legal description will begin with a point of commencement instead of a point of beginning. The point of commencement and the calls prior to the point of beginning are not part of the resulting parcel shape. The TractBuilder tools consider commencement calls to be "hidden" since the call will not be part of the output.

Process

Step 1: For any calls that the part of the commencement, check the Hidden checkbox.



Step 2: When using the freehand text entry, place a '-' (minus) sign before the call.

For example: -N 30.3023 E 100 Feet

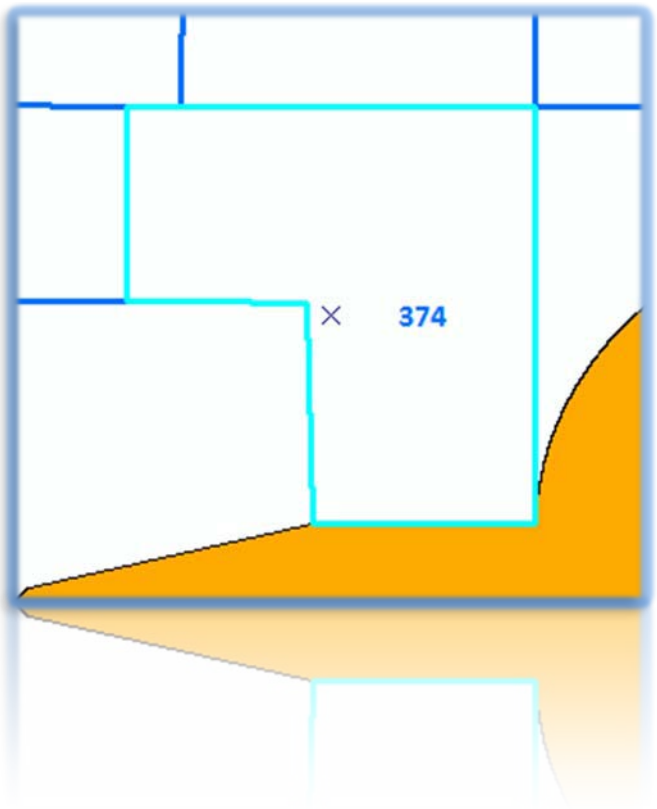
Tutorial 11: The Metes & Bounds Extraction Tool

Introduction

Extracting the metes and bounds of an existing feature is one of the most used features of our TractBuilder Drafting Tools. With this function you can select a feature, starting position, and direction to extract the calls of features you, or others, created (even if the data was not created with our tools)!

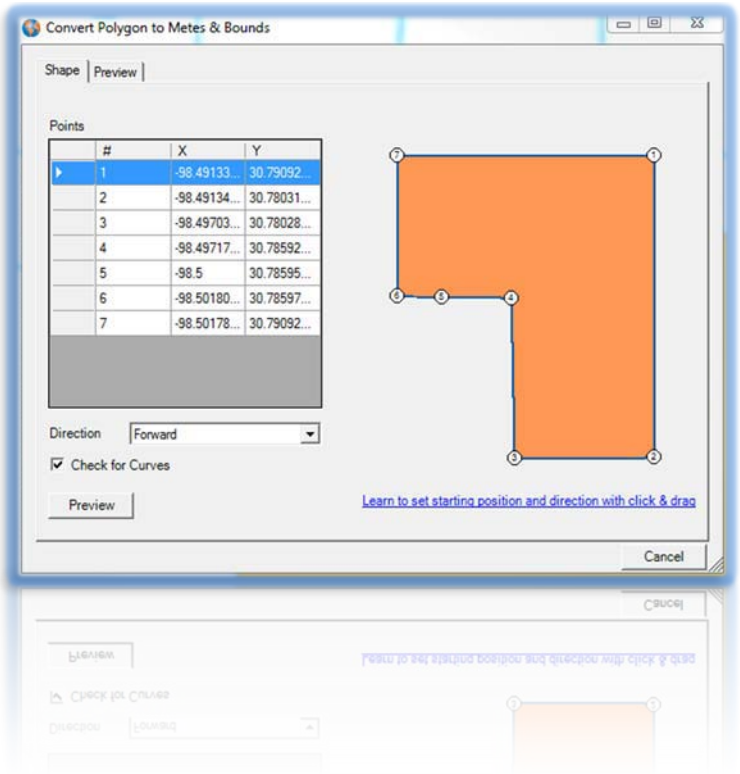
Process

Step 1: Begin editing. Select Abstract 374.

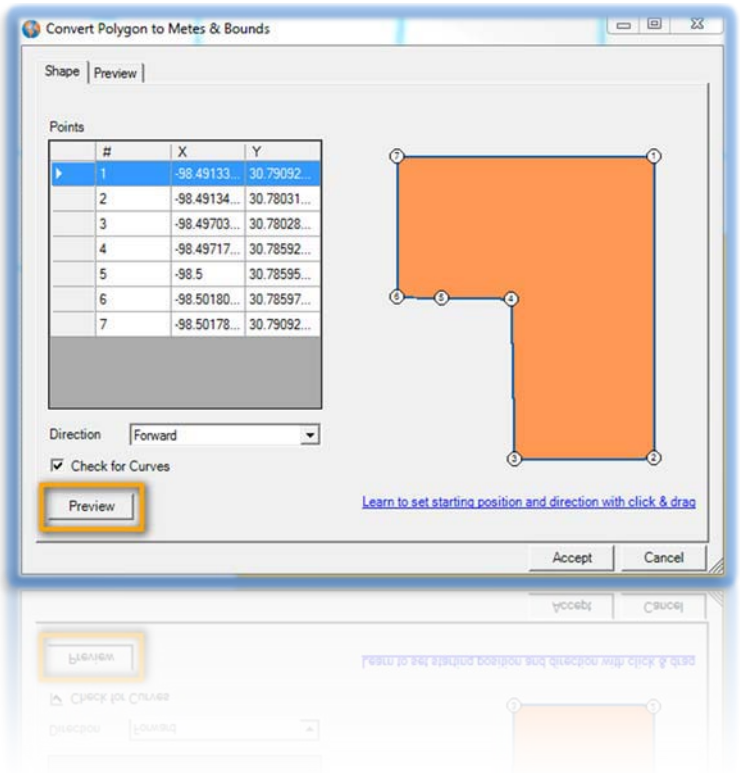


Step 2: Select the "Feature to Metes and Bounds Calls" button.

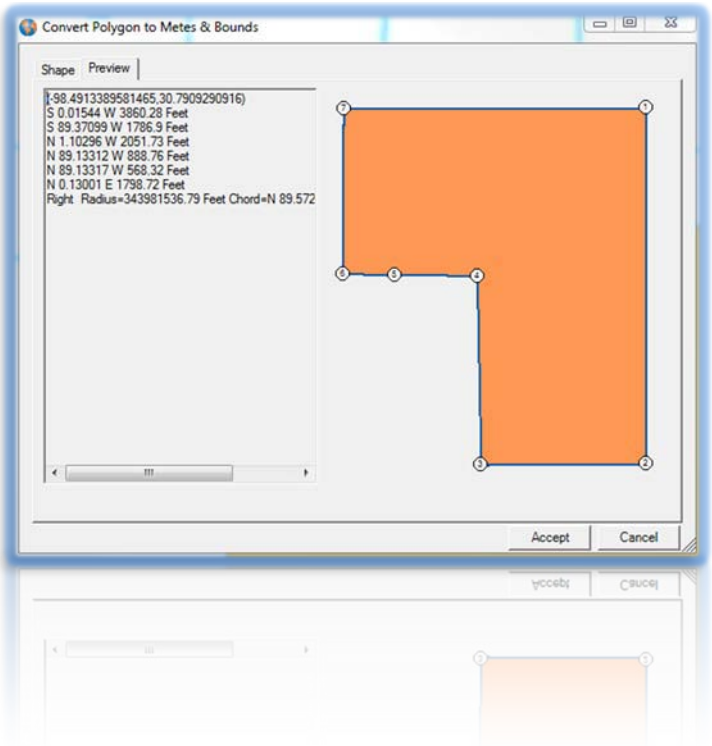
Step 3: You will now see a point set for that feature.



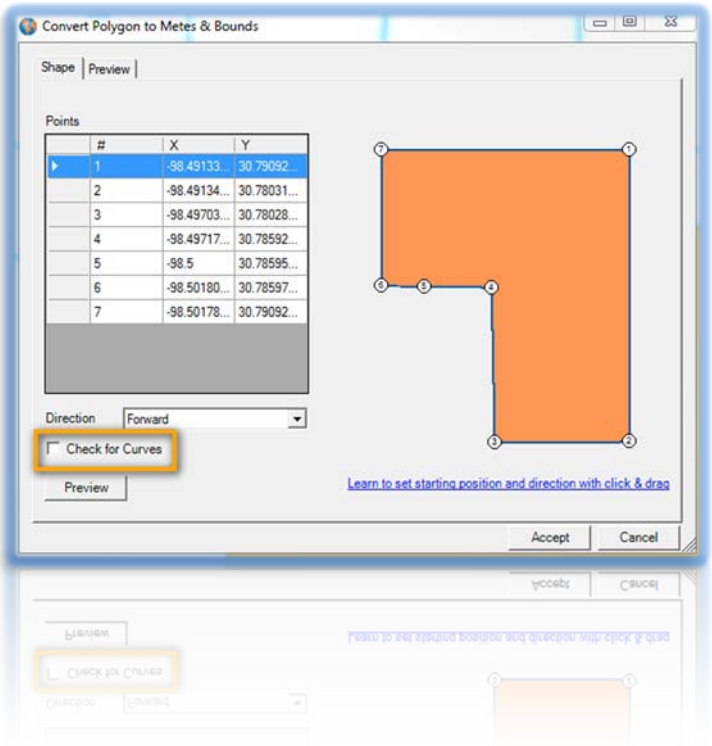
Step 4: Click the "Preview" button.



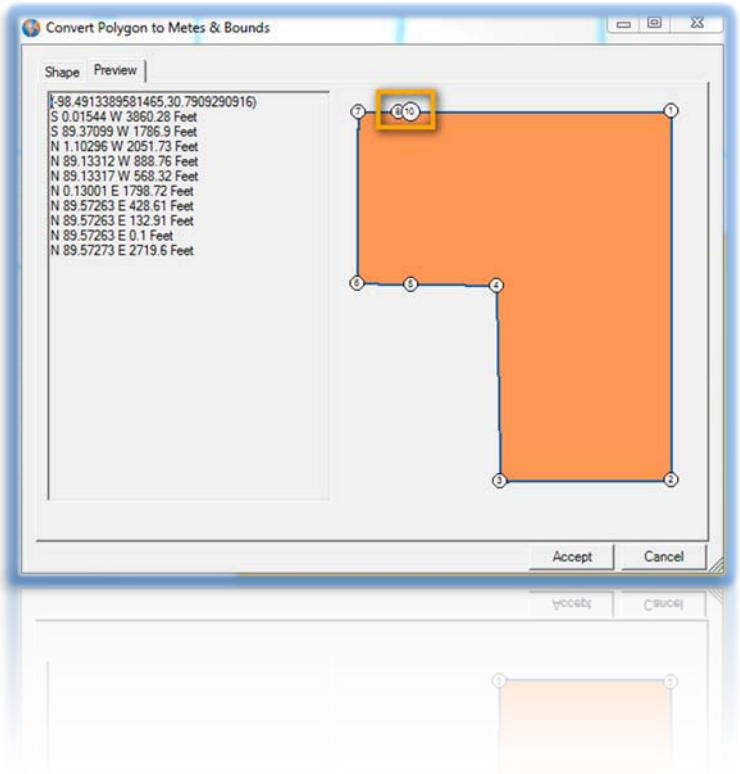
Step 5: Now you see the shorthand description for this feature.



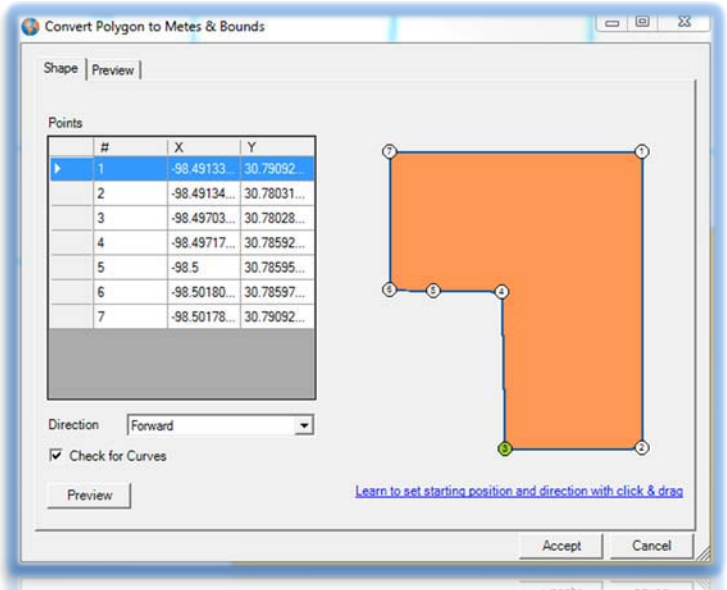
I see that the final call is a curve call. To only convert that to a set of direction bearing calls I could uncheck "Check for Curves" on the "Shape" tab.

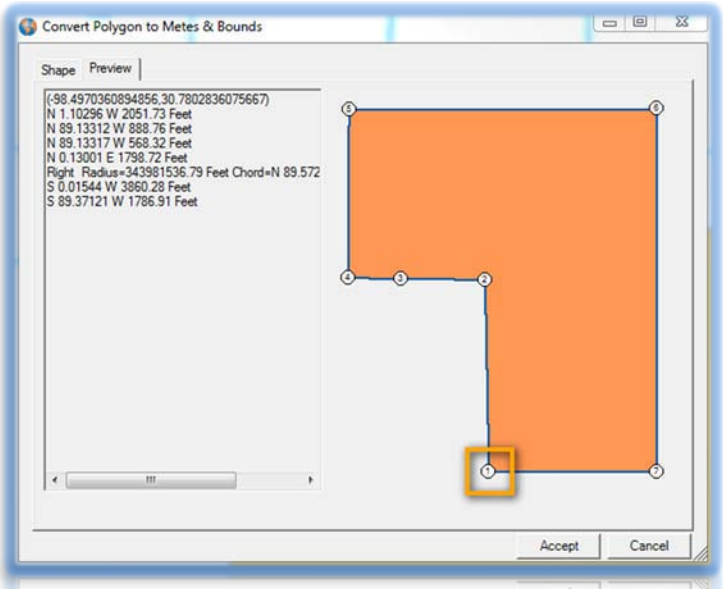


Step 6: Now when I click "Preview" I see a couple more point s between points seven and one.



Step 7: Back on the "shape" tab I am going to re-check the "Check for Curves" box and also specify a different starting position. I do this by clicking on which vertex I would like to be the new starting position. I chose point "3", it now turns green.





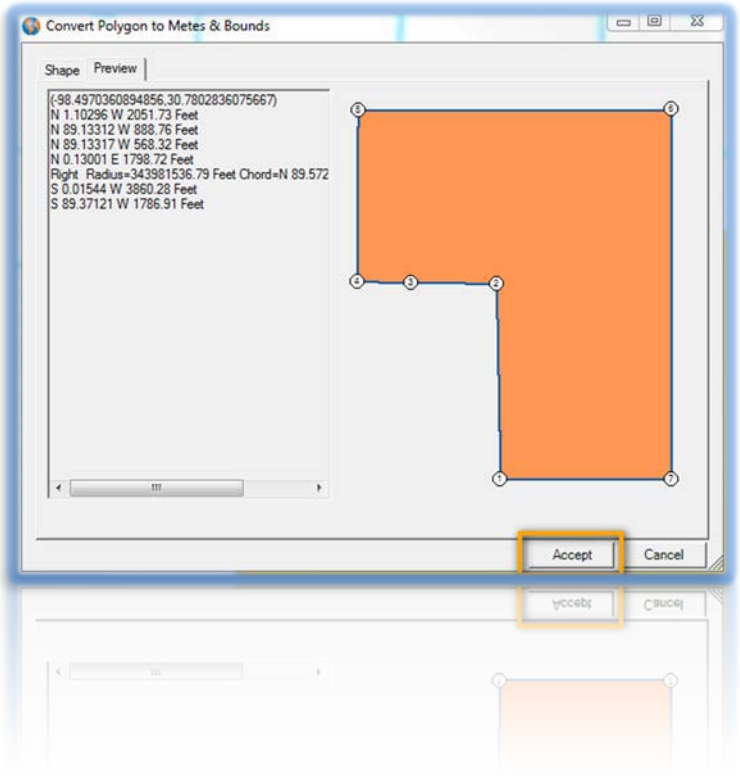
The “Direction” drop down allows we to specify which direction I would like to go from the selected vertex.

Forward = Clockwise = Left

Backward = Counter Clockwise = Right

The legal description shorthand in the “Preview” tab can be copied and pasted into a document, e-mail, or into the TractBuilder Metes and Bounds Tool, and then modified to create a new feature!

Step 8: Click “Accept” when done.



Summary

In this tutorial we discovered how to extract the metes and bound calls of existing features.

Conclusion

Thank you for enjoying our training materials. If you have any further questions give us a call (713-300-9709) or e-mail support@tractbuilder.com.

Glossary

The official BLM glossary can be download from http://www.blm.gov/cadastral/Glossary/blmglossary.zip.

Legal Description (ACSM definition): a description recognized by law which definitely locates property by reference to government surveys, coordinate systems or recorded maps; a description which is sufficient to locate the property without oral testimony.

Section: A one-square-mile block of land, containing 640 acres, or approximately one thirty-sixth of a township. Due to the curvature of the Earth, sections may occasionally be slightly smaller than one square mile.

Appendix A: Legal Descriptions for use with Metes & Bounds Tool Tutorials.

Legal Description 1: Auto Convert

765.3575 Acres in Llano County Texas, Abstract 75.
Beginning at the northwest corner of said abstract, also defined as X/Y (-98.45609167417,30.7794375153588)
Thence south 89 degrees 41 minutes 58 seconds east 45.60 feet,
Thence south 89 degrees 36 minutes 22 seconds east 9481.35 feet along the north line of the survey,
Thence south 45 degrees 31 minutes 15 seconds east 15.22 feet,
Thence south 48 degrees 10 minutes 27 seconds east 46.69 feet,
Thence south 42 degrees 46 minutes 43 seconds east 87.99 feet,
Thence south 41 degrees 25 minutes 18 seconds east 96.56 feet,
Thence south 43 degrees 6 minutes 11 seconds east 96.48 feet,
Thence south 41 degrees 24 minutes 53 seconds east 65.38 feet,
Thence south 43 degrees 13 minutes 23 seconds east 123.21 feet,
Thence south 39 degrees 58 minutes 11 seconds east 87.11 feet,
Thence south 33 degrees 23 minutes 5 seconds east 75.41 feet,
Thence south 28 degrees 41 minutes 12 seconds east 96.64 feet,
Thence south 37 degrees 59 minutes 51 seconds east 77.22 feet,
Thence south 31 degrees 31 minutes 43 seconds east 71.73 feet,
Thence south 28 degrees 52 minutes 16 seconds east 65.40 feet,
Thence south 25 degrees 0 minutes 34 seconds east 80.61 feet,
Thence south 26 degrees 5 minutes 45 seconds east 28.62 feet,
Thence south 40 degrees 51 minutes 12 seconds east 28.54 feet,
Thence south 37 degrees 18 minutes 22 seconds east 88.90 feet,
Thence south 22 degrees 59 minutes 10 seconds east 120.29 feet,
Thence south 22 degrees 2 minutes 7 seconds east 51.29 feet,
Thence south 24 degrees 7 minutes 48 seconds east 67.32 feet,
Thence south 19 degrees 56 minutes 42 seconds east 50.55 feet,
Thence south 25 degrees 44 minutes 49 seconds east 15.61 feet,
Thence north 89 degrees 53 minutes 12 seconds west 10396.5 feet to the shared corner of abstracts 74 and 76,
Thence north 0 degrees 24 minutes 49 seconds east 1251.46 feet,
Thence north 1 degrees 22 minutes 28 seconds east 52.7 feet to the POINT OF BEGINNING.

Legal Description 2: Guided Entry

Beginning at the southwest corner of abstract 78 (-98.4561923633988,30.7607764449548)
Thence along the survey boundary to road being north 89 degrees 46 minutes 1 seconds west 3457.08 feet,
Thence north 20 degrees 40 minutes 30 seconds west 2852.08 feet along said road,
Thence north 65 degrees 32 minutes 33 seconds east 1950.25 feet to southwest corner of abstract 76,

Thence south 89 degrees 52 minutes 14 seconds east 2701.64 feet to the corner of a76, a75, a77,
Thence south 0 degrees 12 minutes 28.2 seconds west 3483.82 feet, to the point of beginning.

Legal Description 3: XY & Curve

Beginning at Utilizing the Lat/long WGS84 grid begin at X/Y coordinate pair (-98.4970283821662,30.7802793044332)
Continue to (-98.4913427523952,30.7803031185893)
Thence along a curve to the right, to the northeast corner of abstract 753, along a radius of 2,865 feet with an arc length of 8,879 feet, containing a forward tangent bearing south 3 degrees 21 minutes 54 seconds east,
Continue to (-98.473126765374,30.7608221903962)
Continue to (-98.4967236184491,30.7608221903963)
Thence along a curve to the right, to a point on a road, along a radius of 3,842 feet with an arc length of 8,604 feet, containing a tangent bearing north 84 degrees 14 minutes 35 seconds west
Thence north 75 degrees 40 minutes 16.2 seconds east 2352.61 feet to the POINT OF BEGINNING.

Appendix B: Extra Quartering Descriptions

Standard and Diagonal Calls

1. ID: 11 - Section 33: The Northwest Quarter
2. ID: 12 - Section 33: The East Half
3. ID: 13 - Section 33: The Southwest Quarter of the Southwest Quarter
4. ID: 14 - Section 33: The Northwest Quarter of the South Half
5. ID: 15 - Section 34: The South Half of the North Half
6. ID: 16 - Section 34: The North Half of the Southwest Quarter
7. ID: 17 - Section 34: The Southeast Quarter of the Northeast Quarter of the Southeast Quarter
8. ID: 18 - Section 35: The Northwest Half
9. ID: 19 - Section 35: The Southeast Half of the Northeast Quarter
10. ID: 20 - Section 35: The Southeast half of the South Half