

Editing Tips and Tricks

Presentation Objectives

Be more productive with Editing Features and Attributes

Editing Basics and Useful Details

Effective Editing Setup

Editing Toolbars

Map Topology

Editing Attributes Tricks

Provide a lot of examples in the slides

This presentation will be available at www.junipergis.com
>links >presentations

Editing Tips and Tricks

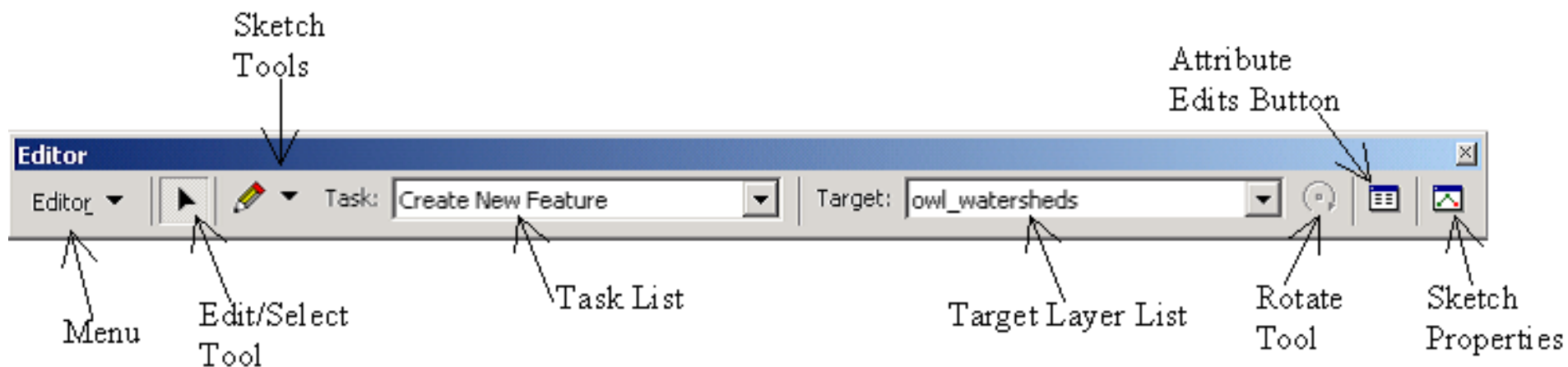
Editing Basics and Setup

Editor Toolbar

Contains most editing commands and options

Controls editing tasks

Controls the target layer



Editing Tips and Tricks

Editing Basics and Setup

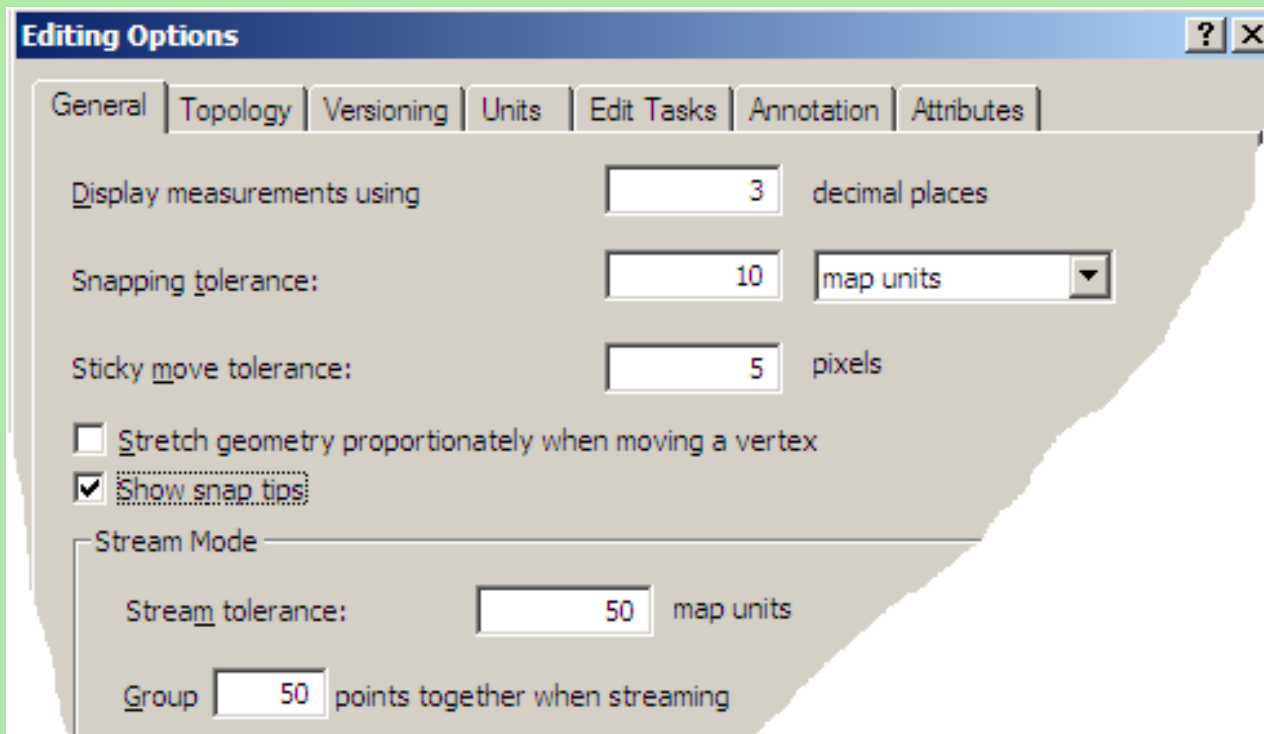
Editor Menu - Options

Snapping Tolerance – pixels or map units

“T” key shows tolerance

Sticky move tolerance

Show Snap Tips – also shows on status bar

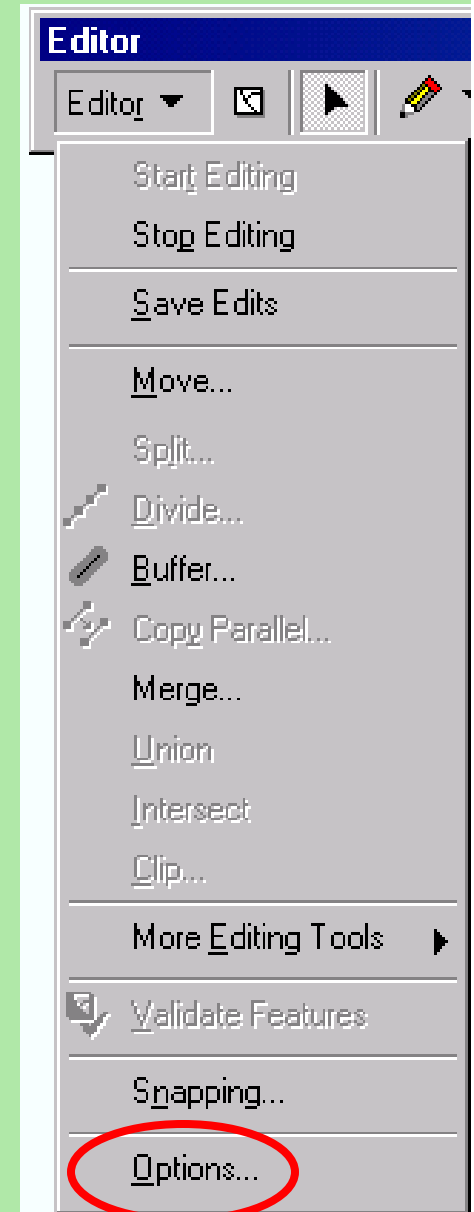
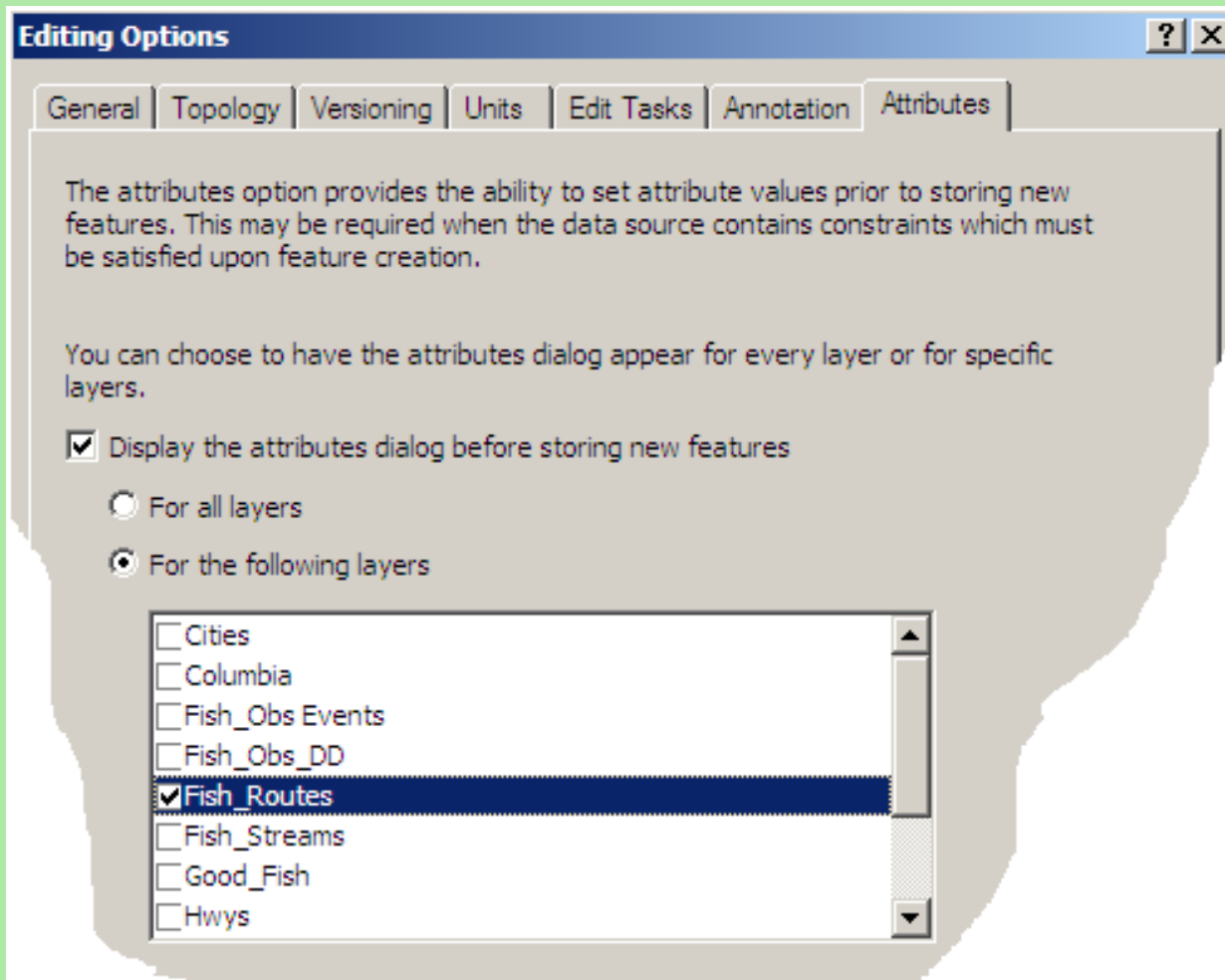


Editing Tips and Tricks

Editing Basics and Setup

Editor Menu - Options\Attributes

Automatically display the attributes dialog when editing

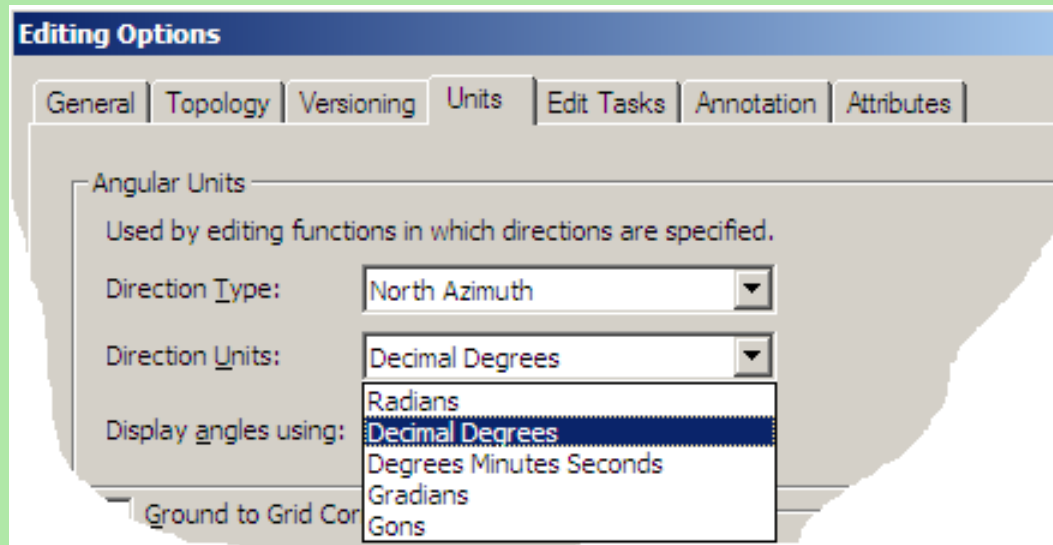


Editing Tips and Tricks

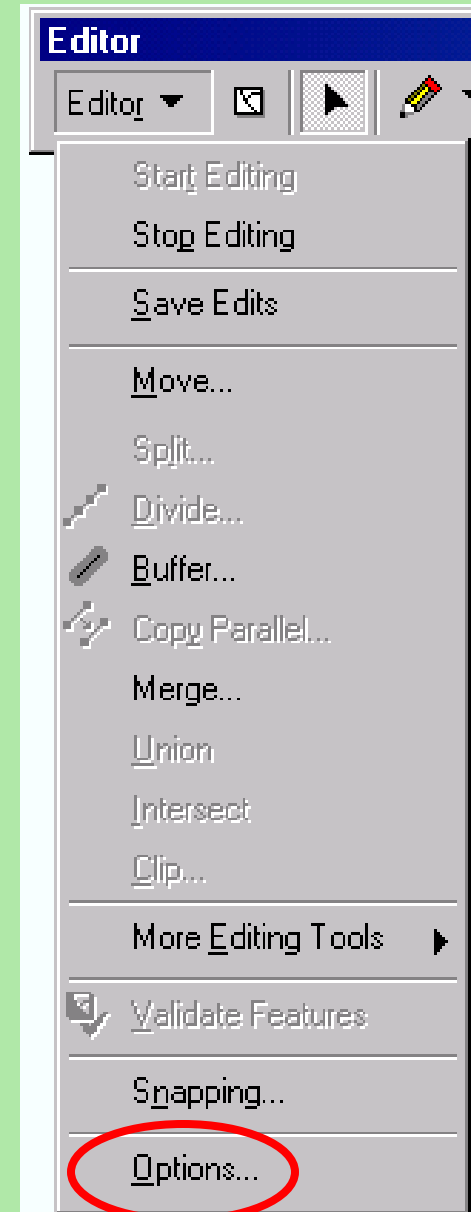
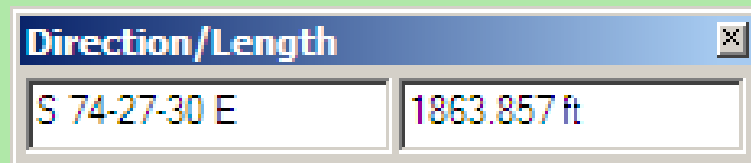
Editing Basics and Setup

Editor Menu - Options\Units

Specifies Direction Types and Units for entering Angles



Units for Distance can be changed on-the-fly by using abbreviations – m, mi, ft, ', etc.

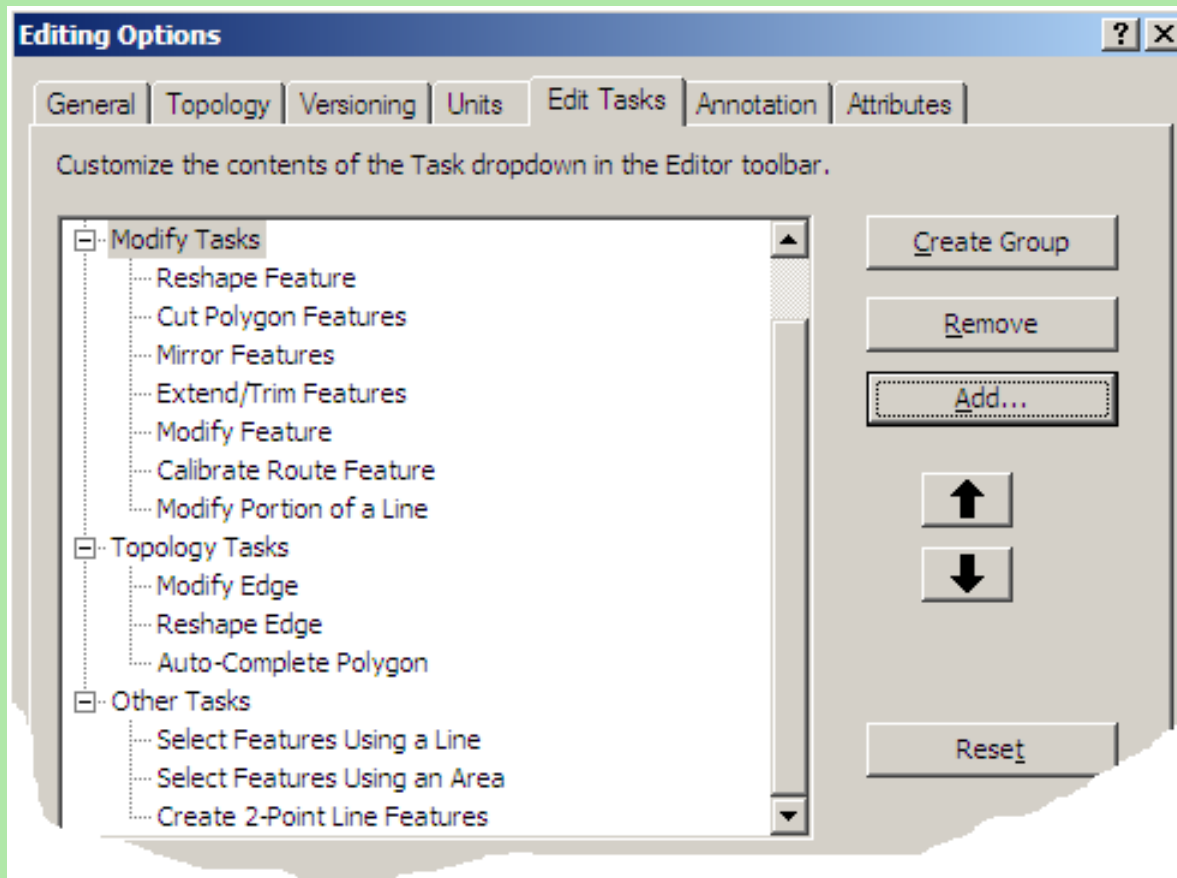


Editing Tips and Tricks

Editing Basics and Setup

Editor Menu - Options\Edit Tasks

Organize Task List



Editing Tips and Tricks

Editing Basics and Setup

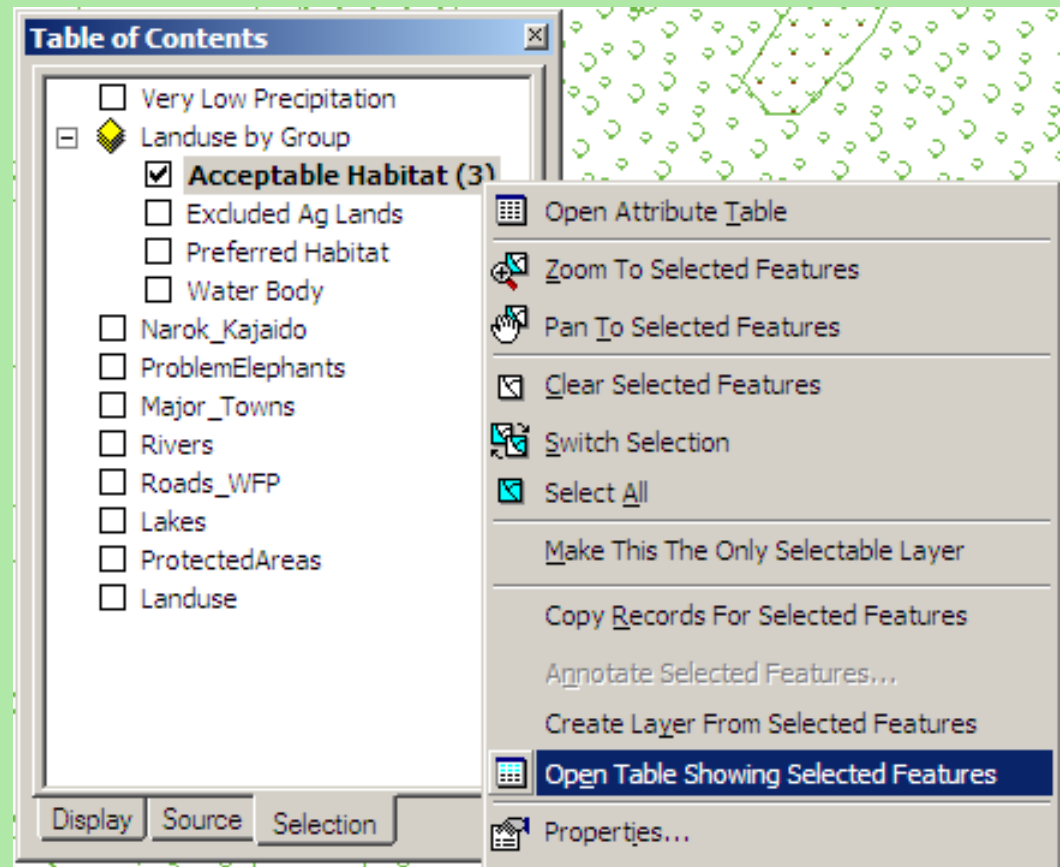
Using the Selection Tab

Quick way to set selectable layers

Shows number of selected features

Many useful context menu options – can add more

Copy Records for Selected Features copies data to clipboard to paste into Excel, etc.



Editing Tips and Tricks

Editing Basics and Setup

Editor Menu - Snapping

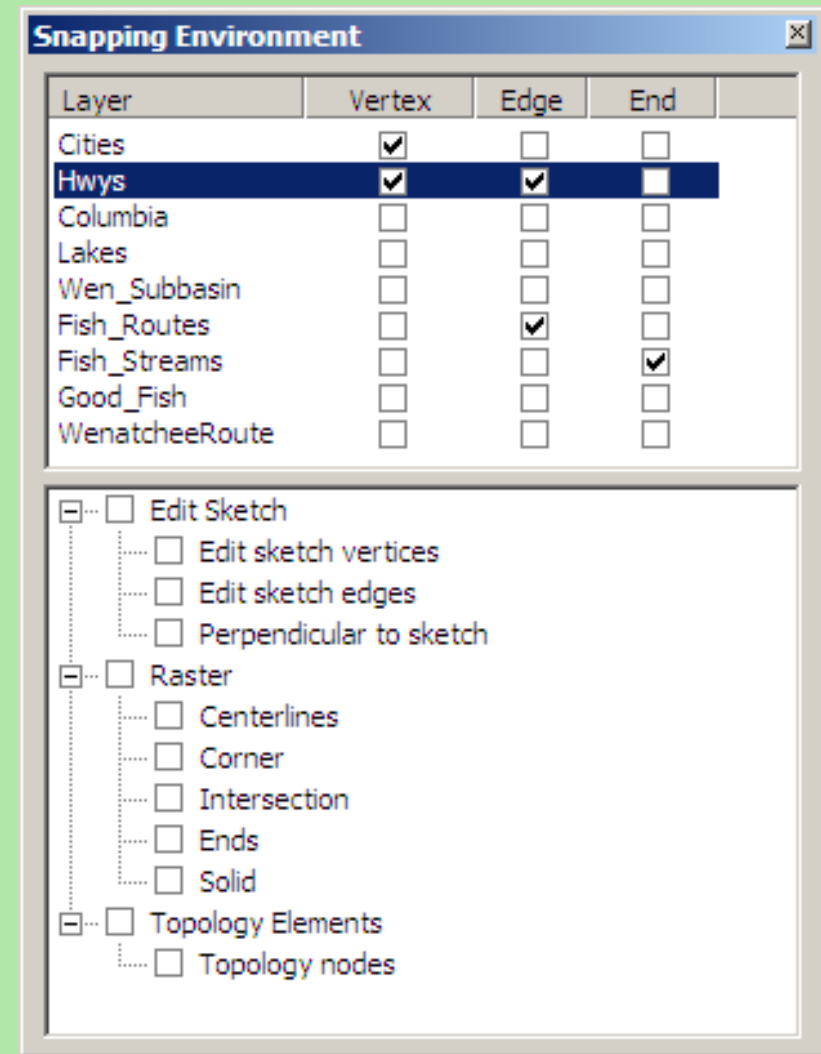
Snapping Environment dialog

Snap to Features

Snap to Sketches

Snap to Raster
– works with ArcScan

Snap to Topology Elements



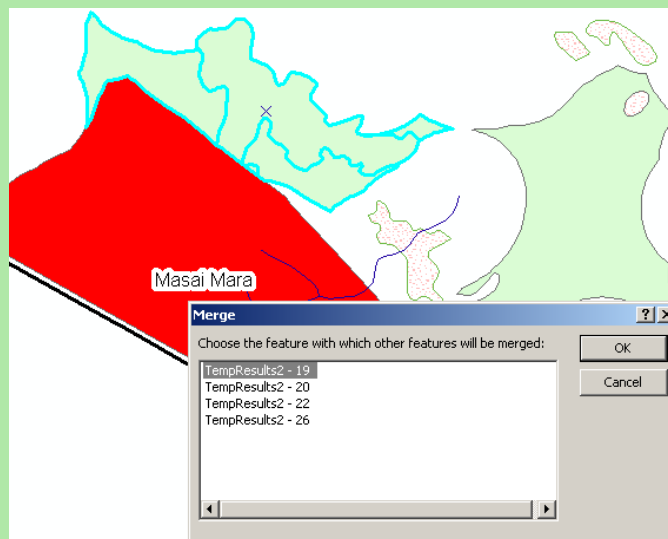
Editing Tips and Tricks

Editing Basics and Setup

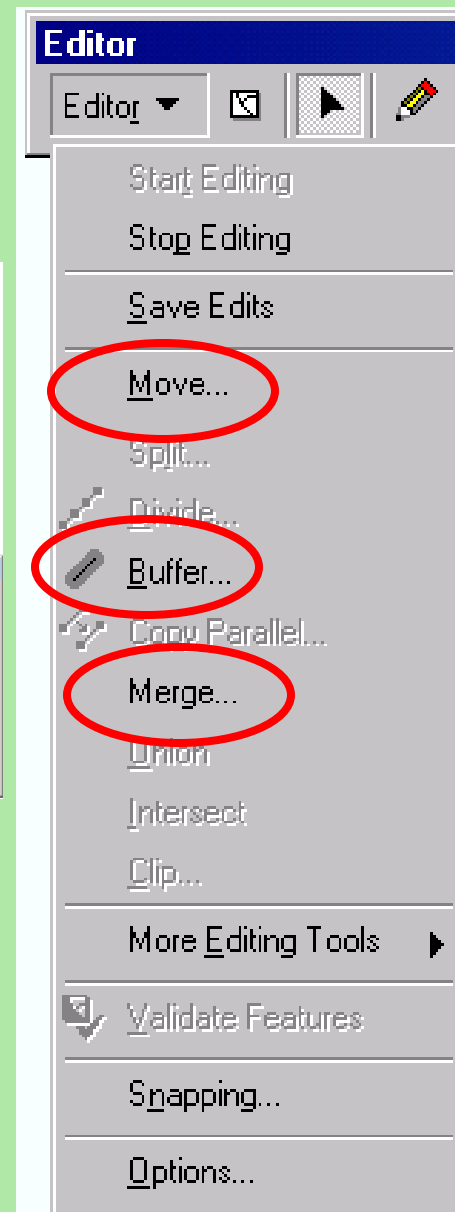
Editor Menu - Edit Commands

Move... – specify an xly offset to move selected features

Merge... – merges features in same layer; can select which feature to merge to.



Buffer... – Creates new feature; target layer must be a polygon layer.

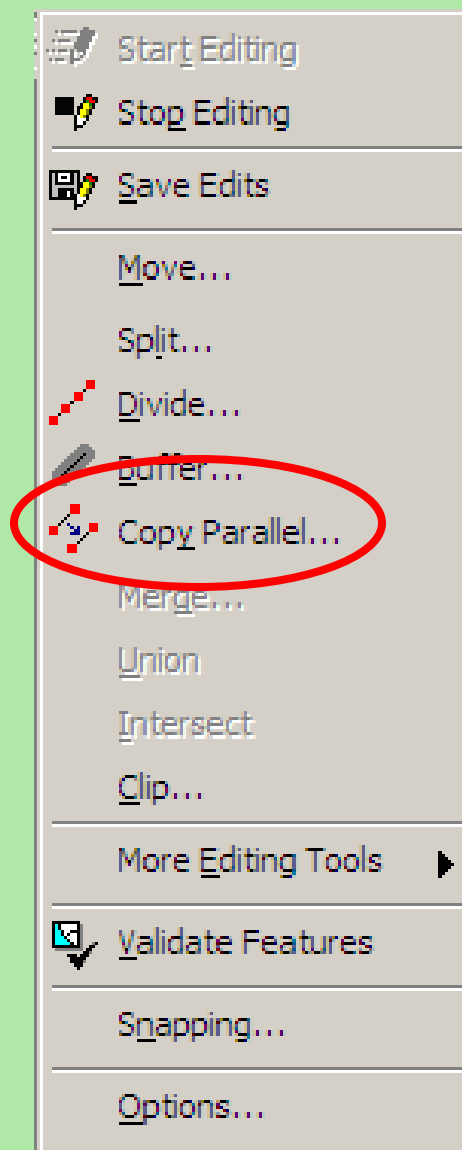
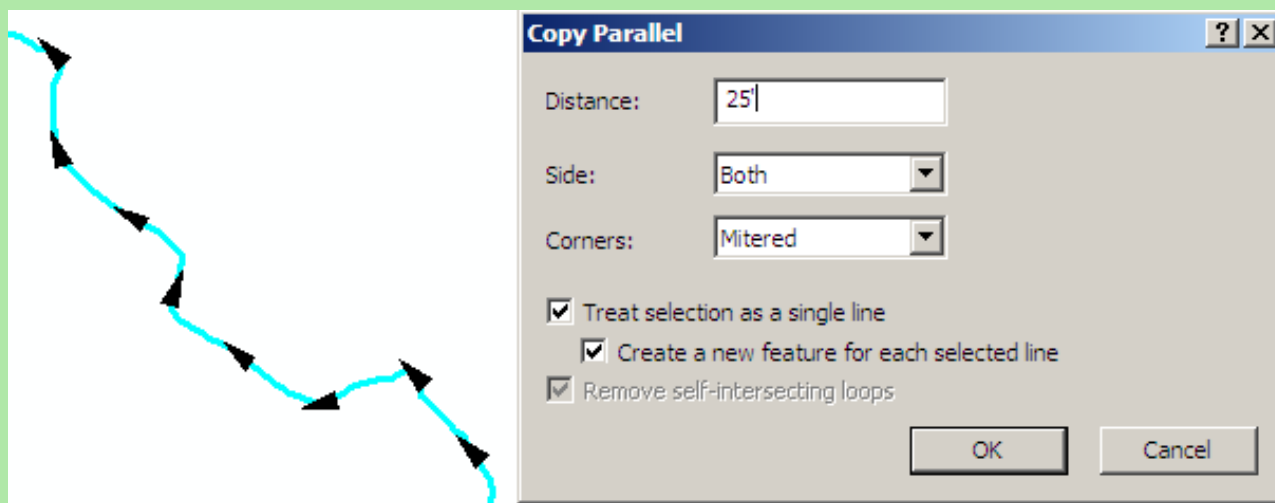


Editing Tips and Tricks

Editing Basics and Setup

Editor Menu - Edit Commands

Copy Parallel...



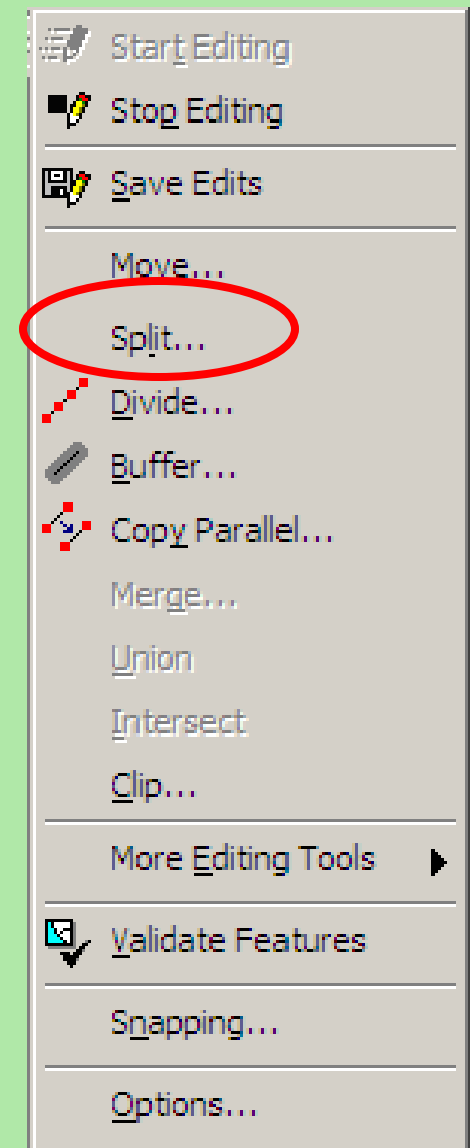
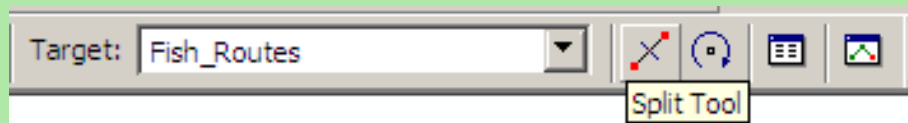
Editing Tips and Tricks

Editing Basics and Setup

Editor Menu - Edit Commands

Split... - splits a line segment at a specified distance or %

Split Tool – Splits line segment where clicked.

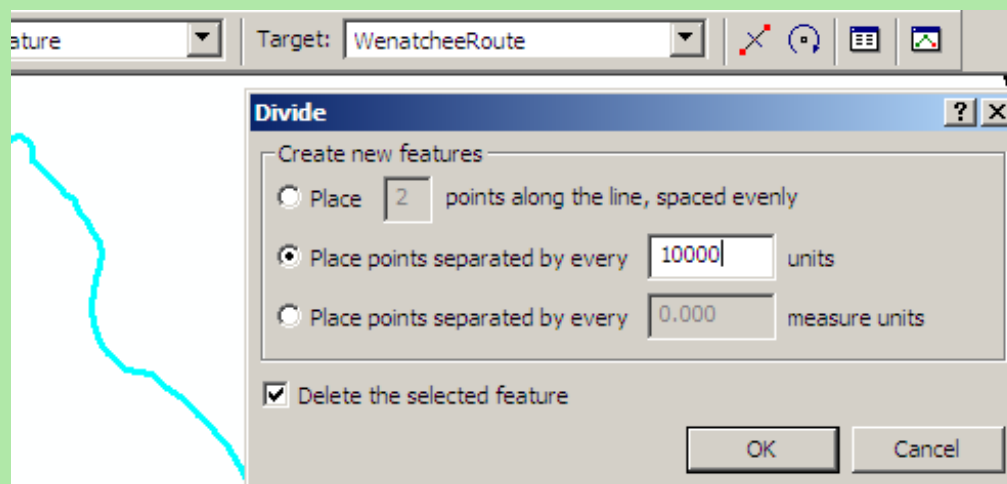


Editing Tips and Tricks

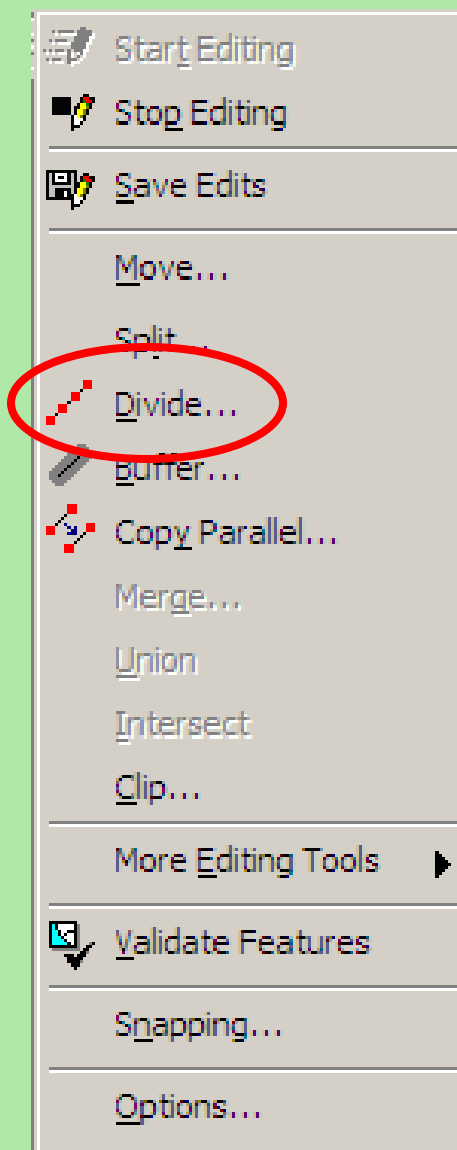
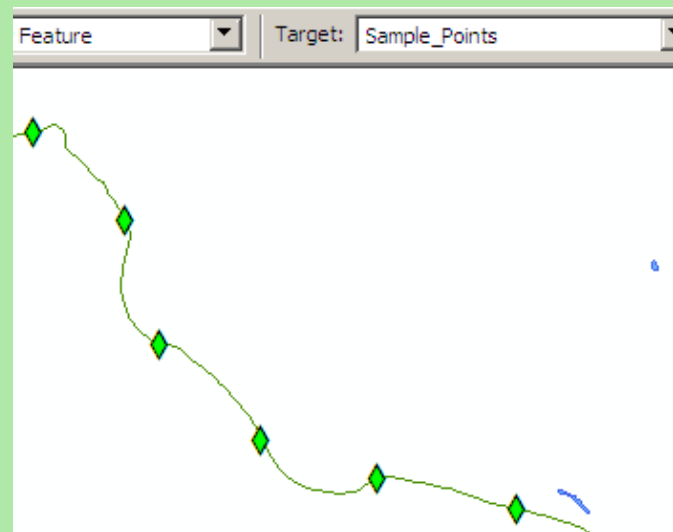
Editing Basics and Setup

Editor Menu - Edit Commands

Divide... - Splits a **line** at a specified distance or number of segments if the target layer is a **line layer**.



Places **points** along a line at a specified distance or number if the target layer is a **point layer**.

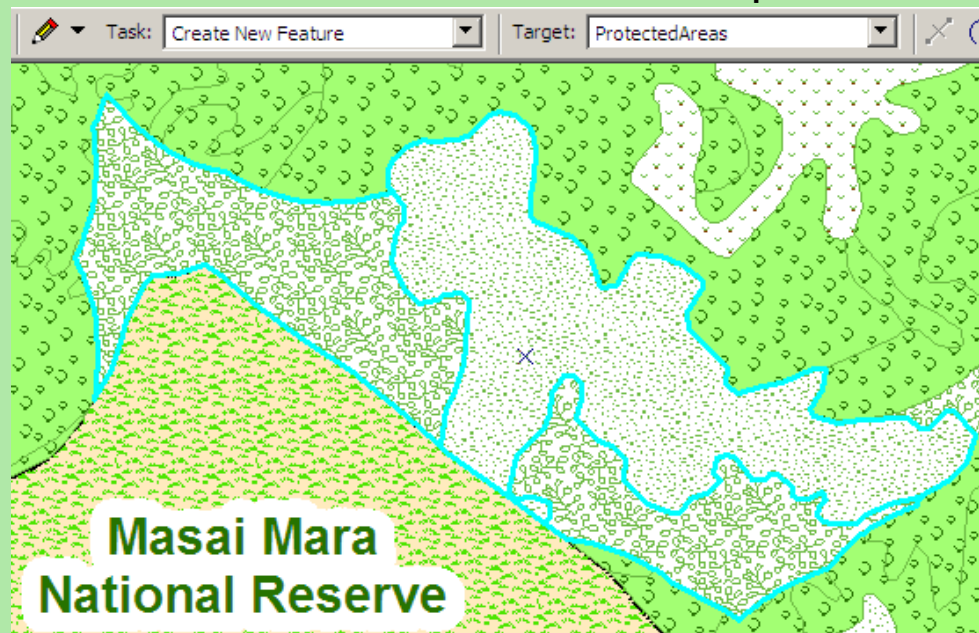


Editing Tips and Tricks

Editing Basics and Setup

Editor Menu - Edit Commands

Union - creates a single new feature in the target layer from selected features. Can create multi-part features.



Intersect - creates new feature in the target layer from intersection of selected features.

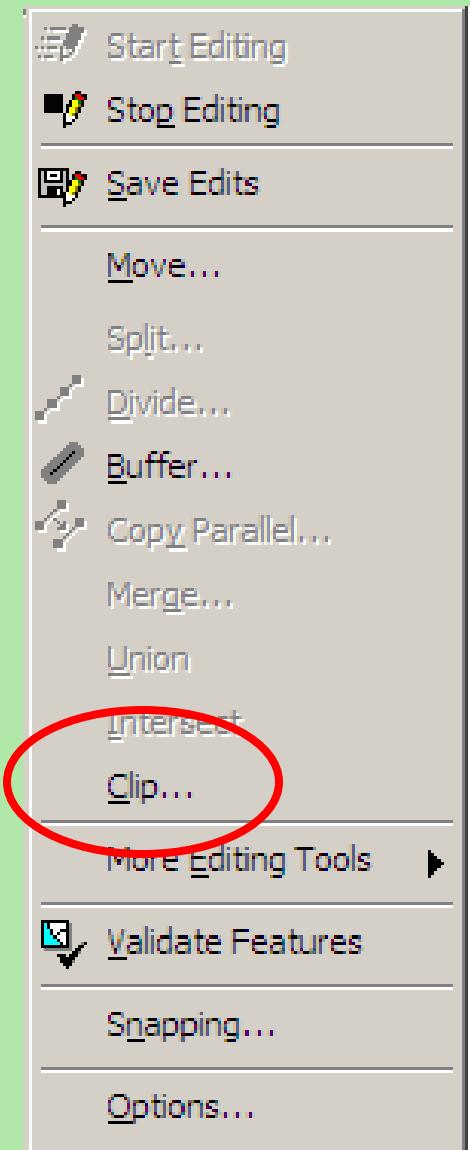
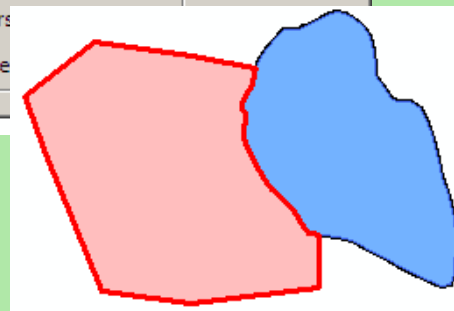
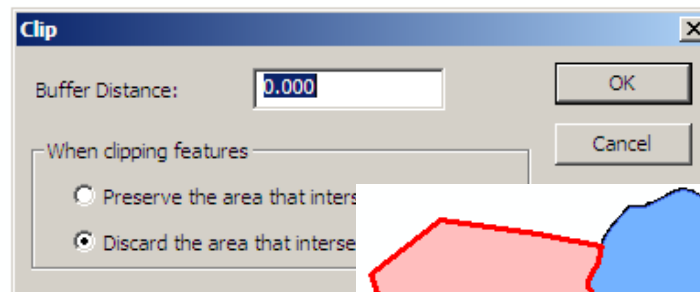
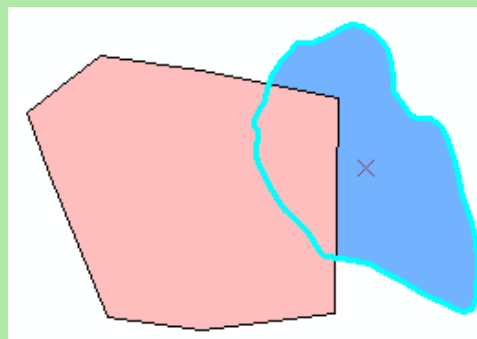
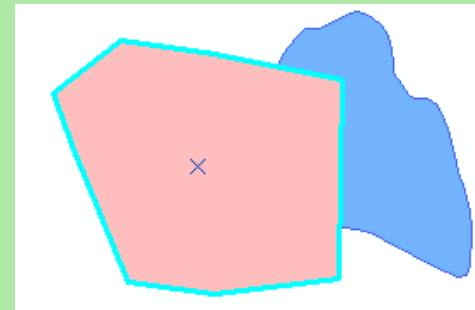
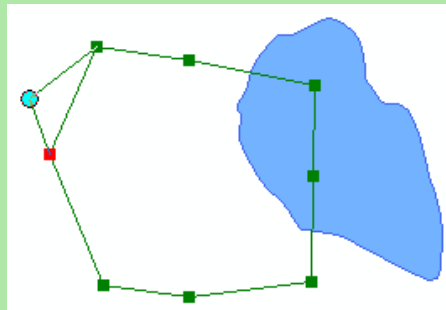
Union and Intersect only copy geometry, not attributes.

Editing Tips and Tricks

Editing Basics and Setup

Editor Menu - Edit Commands

Clip – Works with one selected feature and cuts a hole in all visible features; can be used as Auto Complete Polygon with polygons in different layers. Works with Points and Polygons.



Editing Tips and Tricks

Editing Basics and Setup

Editor Task List

Defines the current edit task

Works in connection with the Sketch tool

Create New Feature

Modify\Reshape feature

Cut Polygons

Extend\Trim

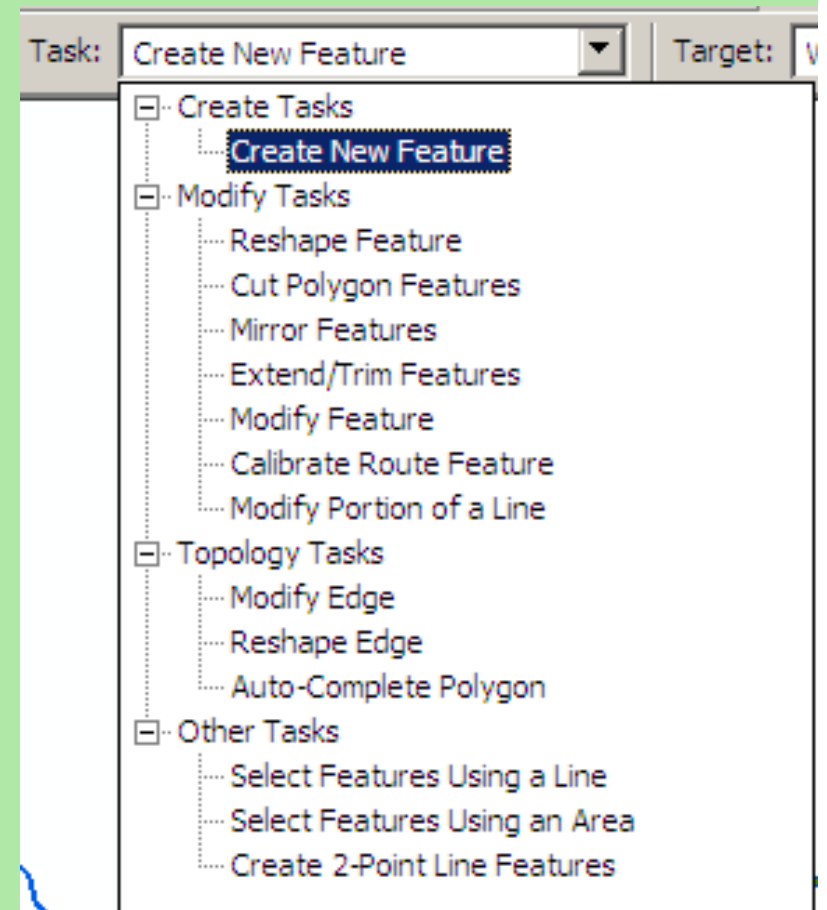
Calibrate Route\Modify Portion of a line

Modify\Reshape Edge

Auto Complete Polygon

Select features options

Create 2-Point Line Features



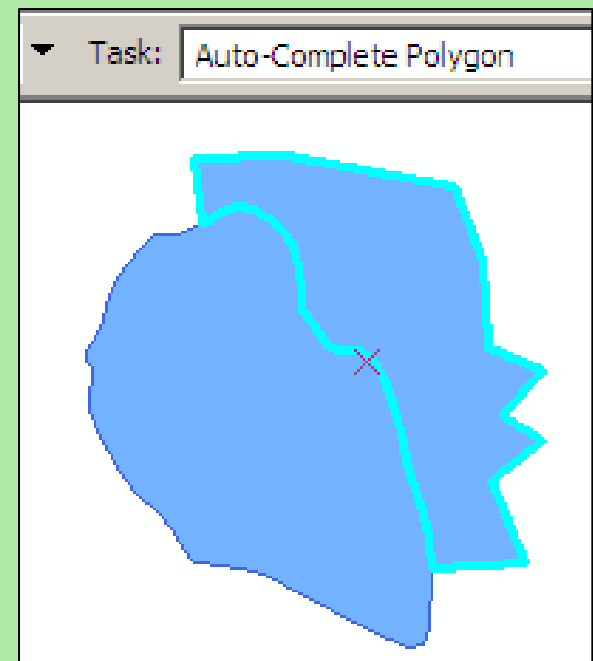
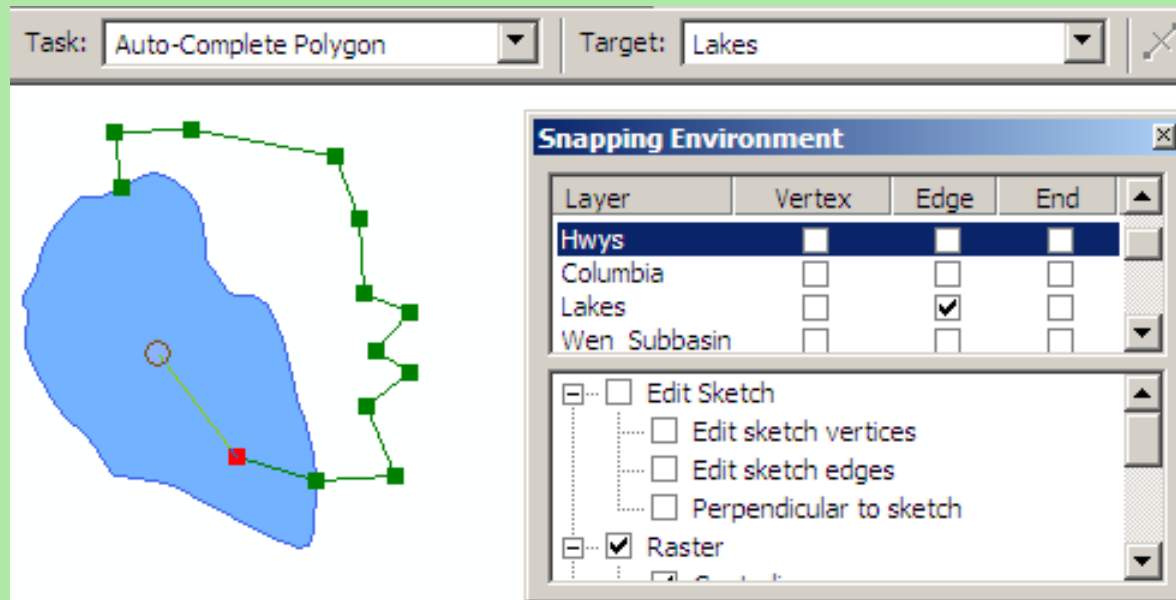
Editing Tips and Tricks

Editing Basics and Setup

Editor Task List - Auto Complete Polygon

Only works when completing to feature in the same layer

For the same effect in different layers, draw the new polygon overlapping an existing polygon, then clip the new polygon with the existing polygon



Editing Tips and Tricks

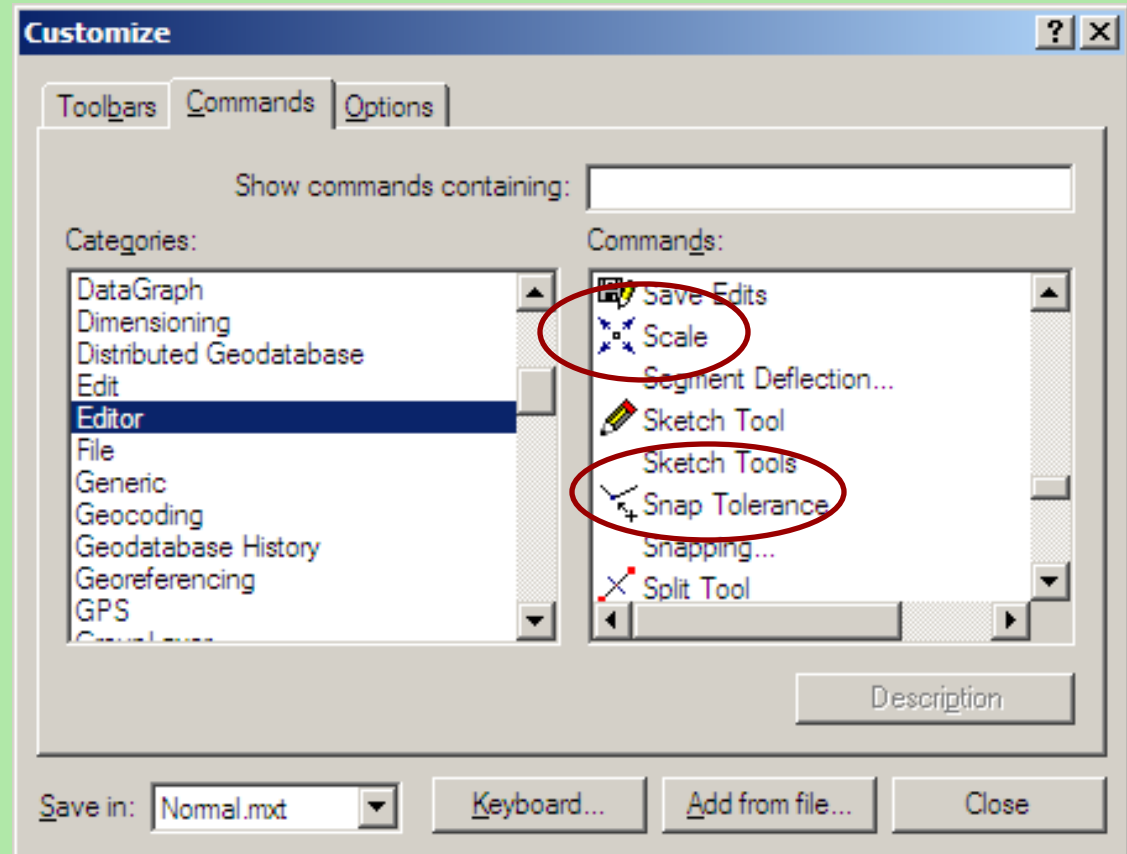
Editing Basics and Setup

Other Edit Tasks

Cut, Copy, Paste, Delete, Undo, Redo



Other tasks that are not on the Editor toolbar can be added from list of commands.



Editing Tips and Tricks

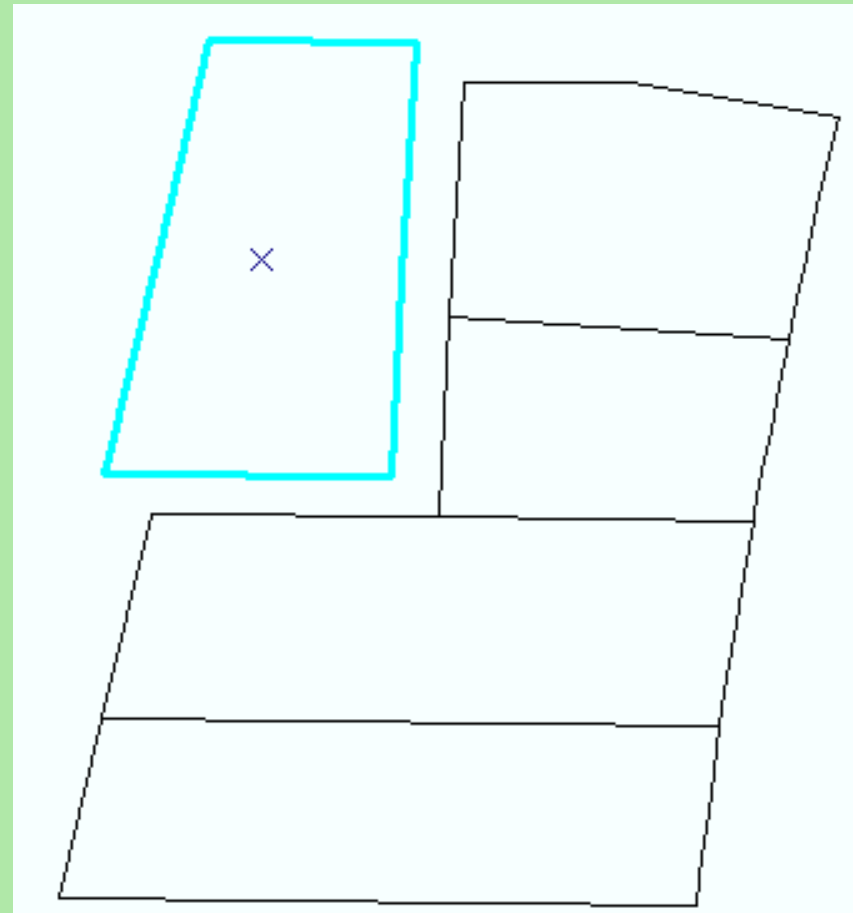
Editing Basics and Setup

Selection Anchor\Selected Features

Selection Anchor – controls how commands like Move, Scale, and Rotate operate.

Change location by moving cursor over the anchor and clicking the **<Ctrl>** key

Scale and Rotate commands let you change the anchor just by moving the cursor to the selection anchor.



Editing Tips and Tricks

Editing Basics and Setup

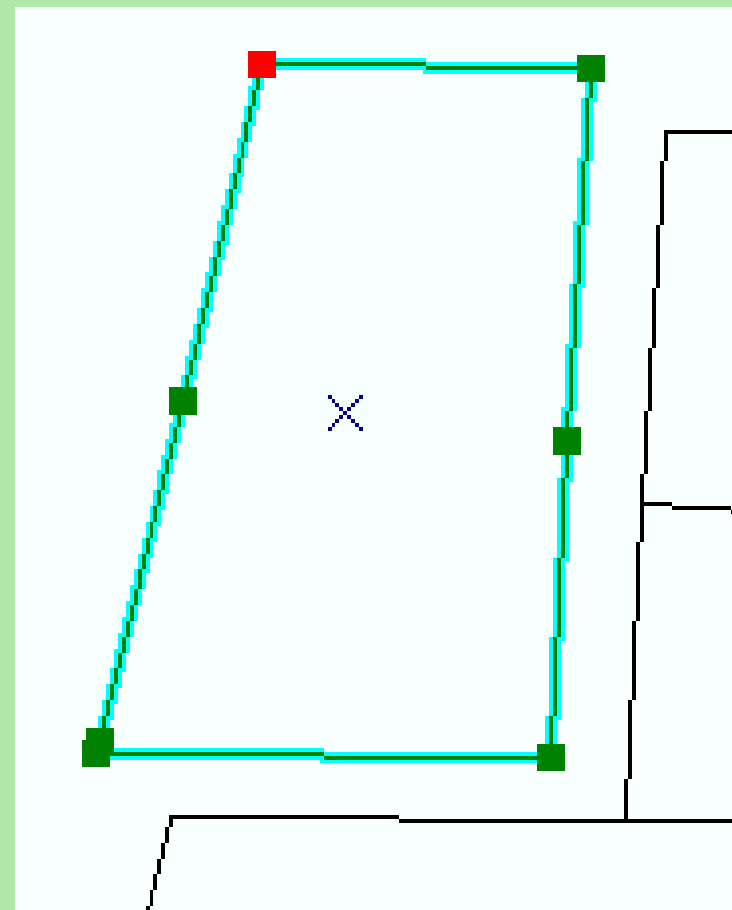
Working with Sketches

Sketches are the representation of the feature.

Sketches from existing features are highlighted in cyan with green vertexes;

Sketches for new features will display with green lines and green vertexes.

Certain tools work differently depending on whether you're selecting Sketches or Features.



Editing Tips and Tricks

Editing Basics and Setup

Working with Sketches - Sketch Tools

Used to create new features, or reshape existing features.

Sketch

Intersection – actual intersection or implied intersection

Arc\Tangent tools

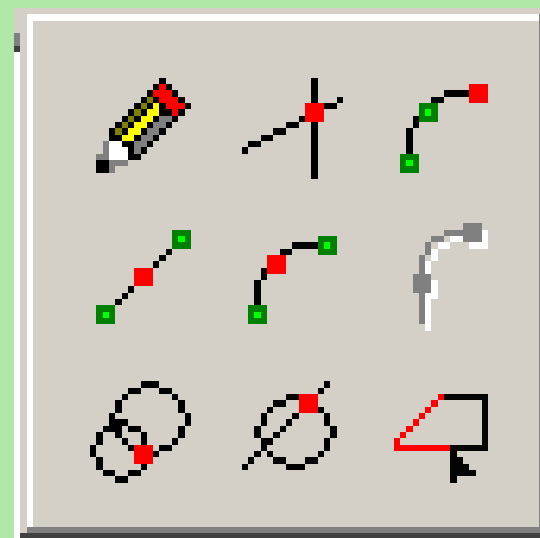
Midpoint tool

Distance-Distance

Distance-Direction

Trace

To finish a sketch – F2 key or double-click

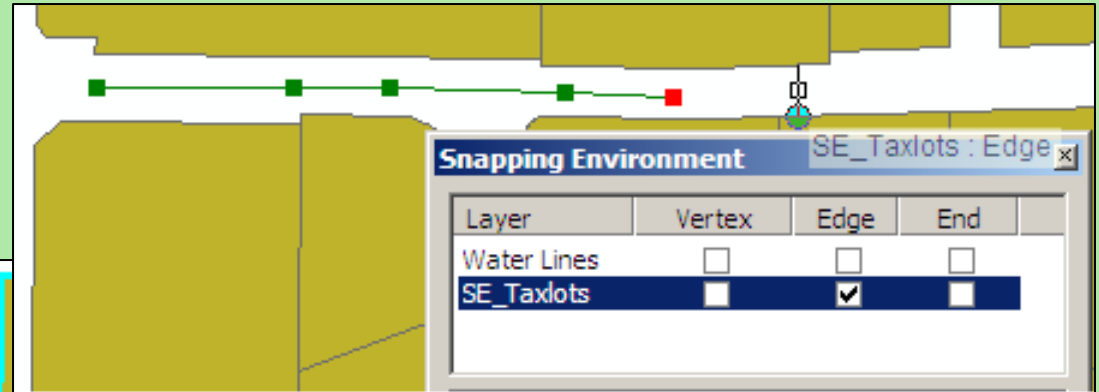


Editing Tips and Tricks

Editing Basics and Setup

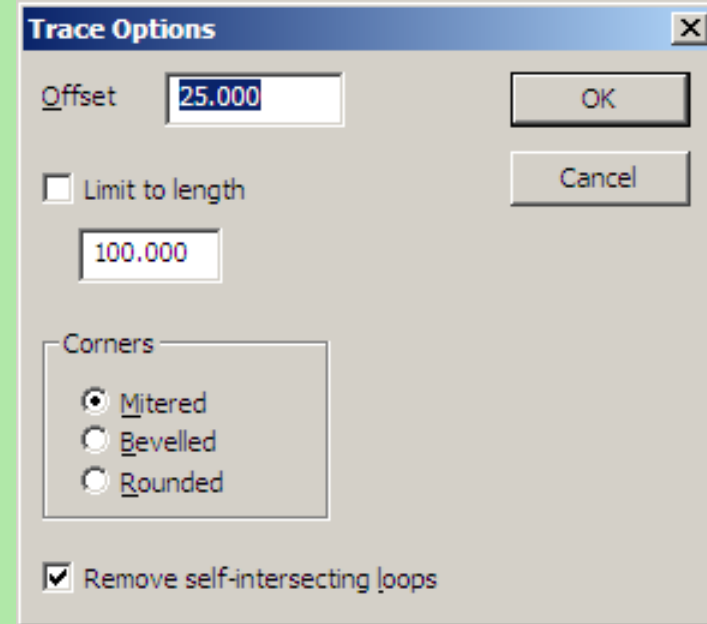
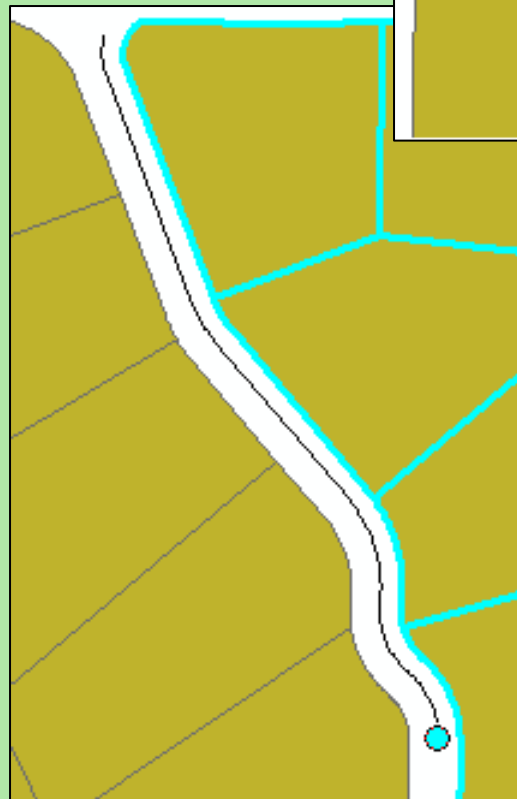
Working with Sketches - Sketch Tools

Midpoint tool



Trace

Type "O" to open trace options



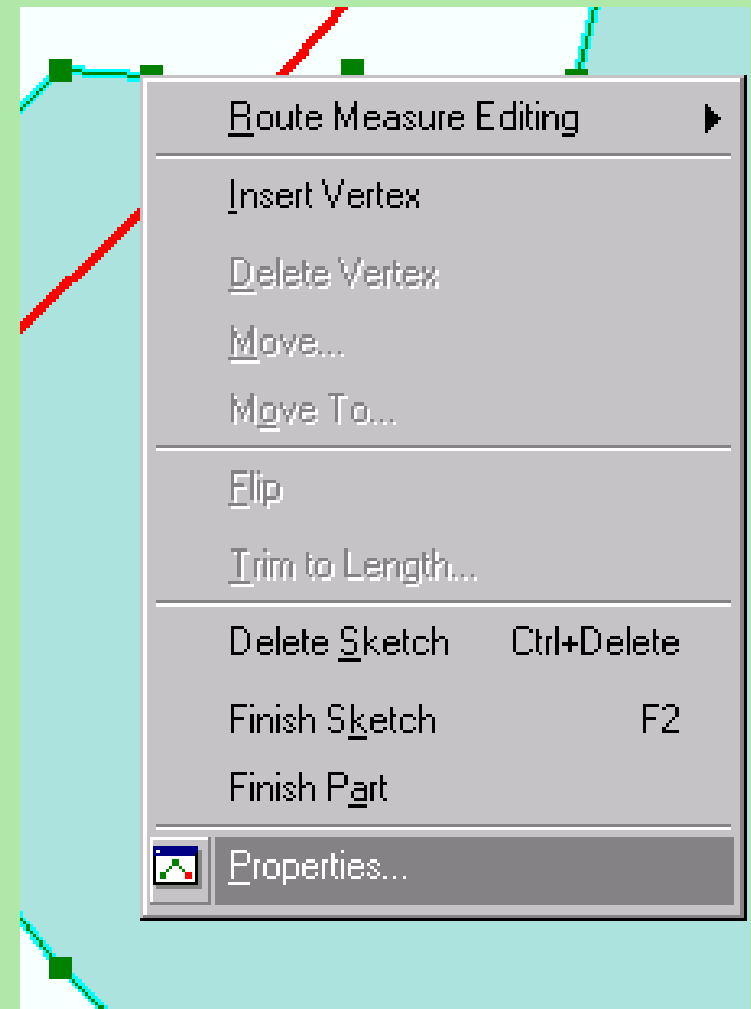
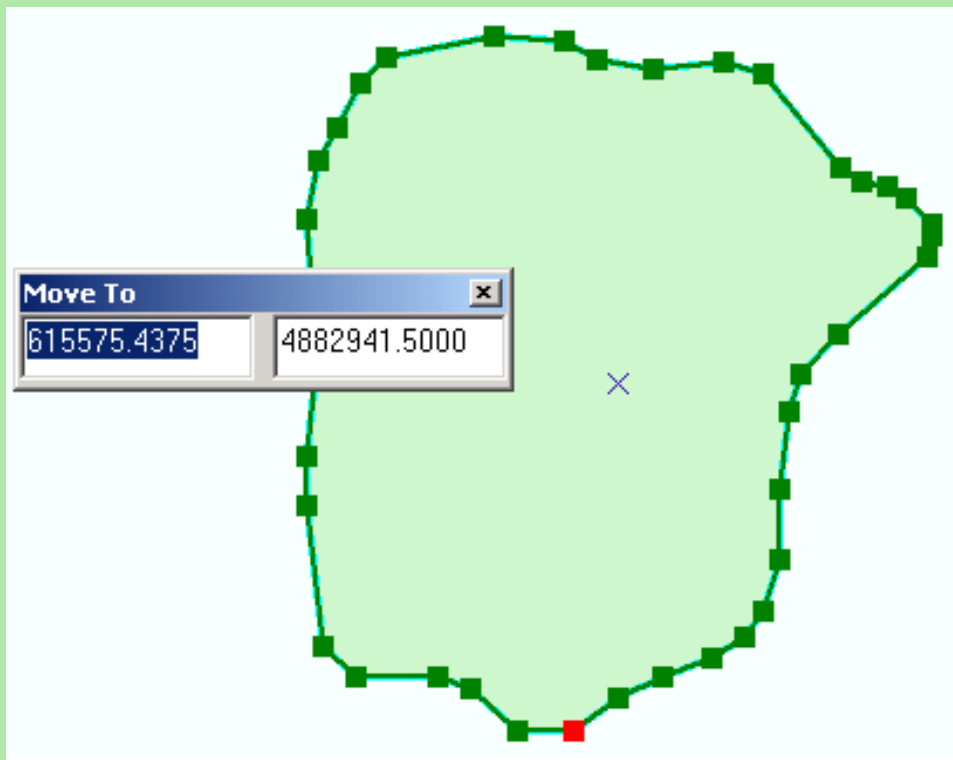
Editing Tips and Tricks

Editing Basics and Setup

Working with Sketches - Sketch Context Menu

Activate by right-clicking on a sketch segment or vertex.

Primarily used for working with vertexes or segments when modifying data.

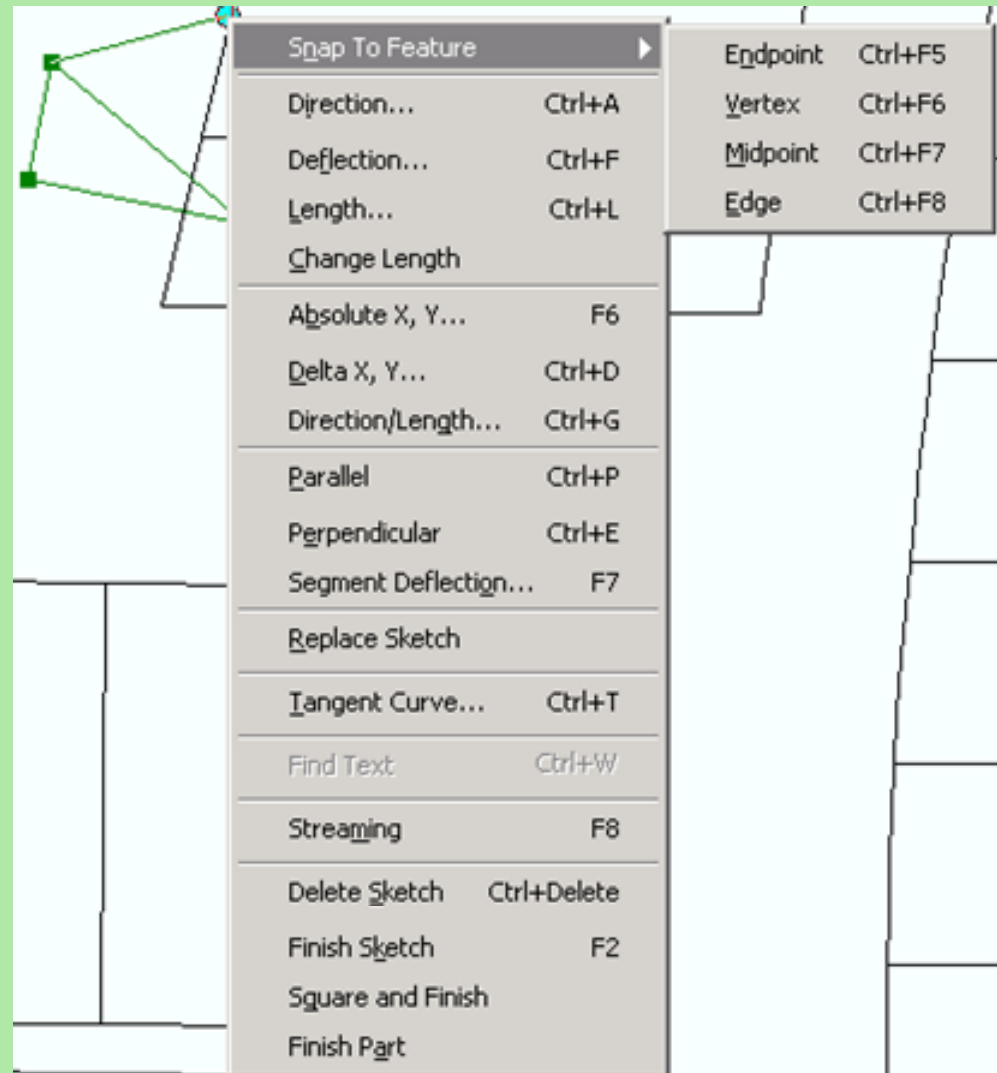


Editing Tips and Tricks

Editing Basics and Setup

Working with Sketches - Sketch Tool Context Menu

Activate by right-clicking on a feature or in space

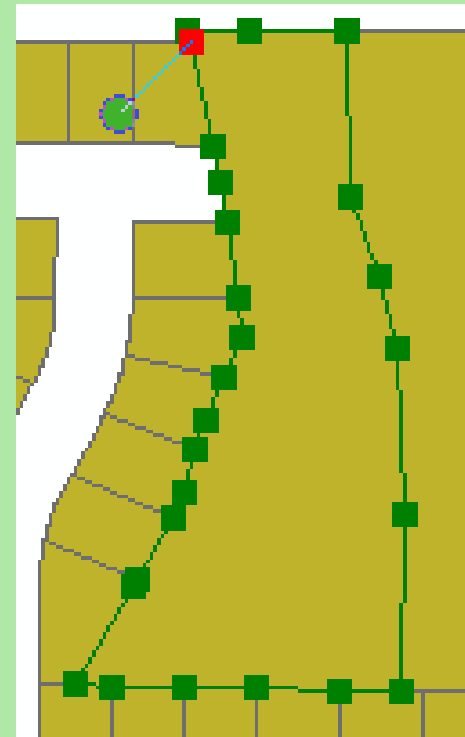
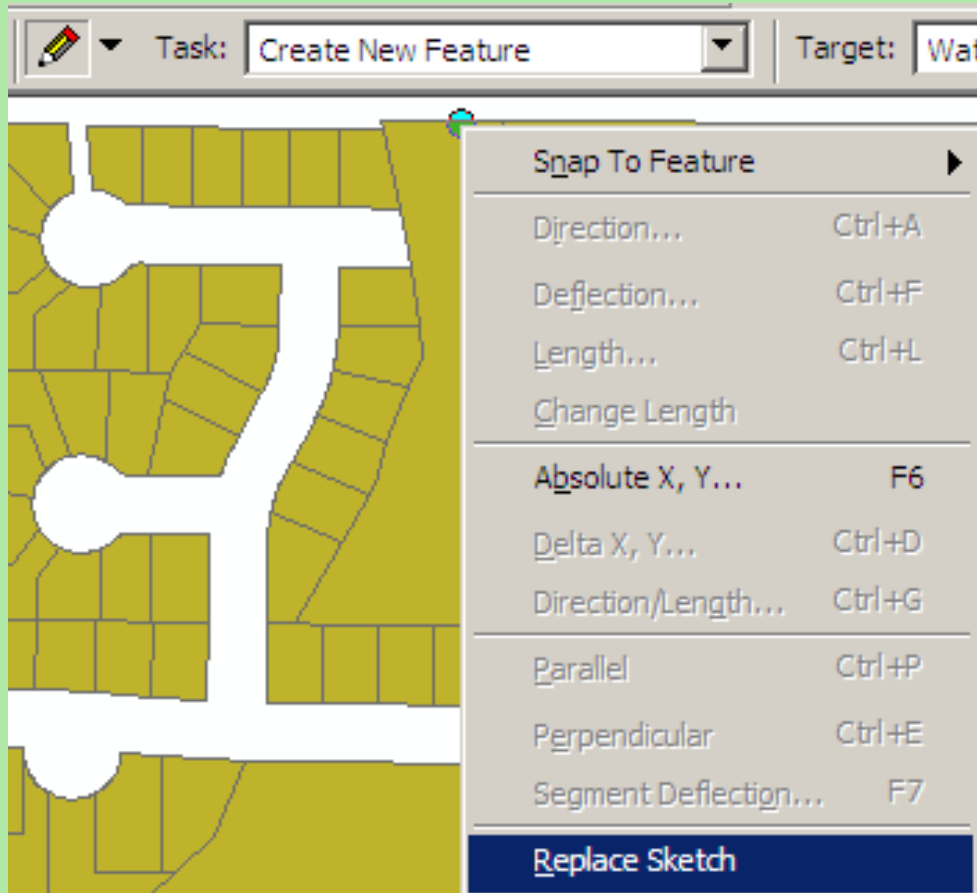


Editing Tips and Tricks

Editing Basics and Setup

Working with Sketches - Sketch Tool Context Menu

Replace Sketch – grabs vertexes from feature you right-click on and adds them to **current** sketch.

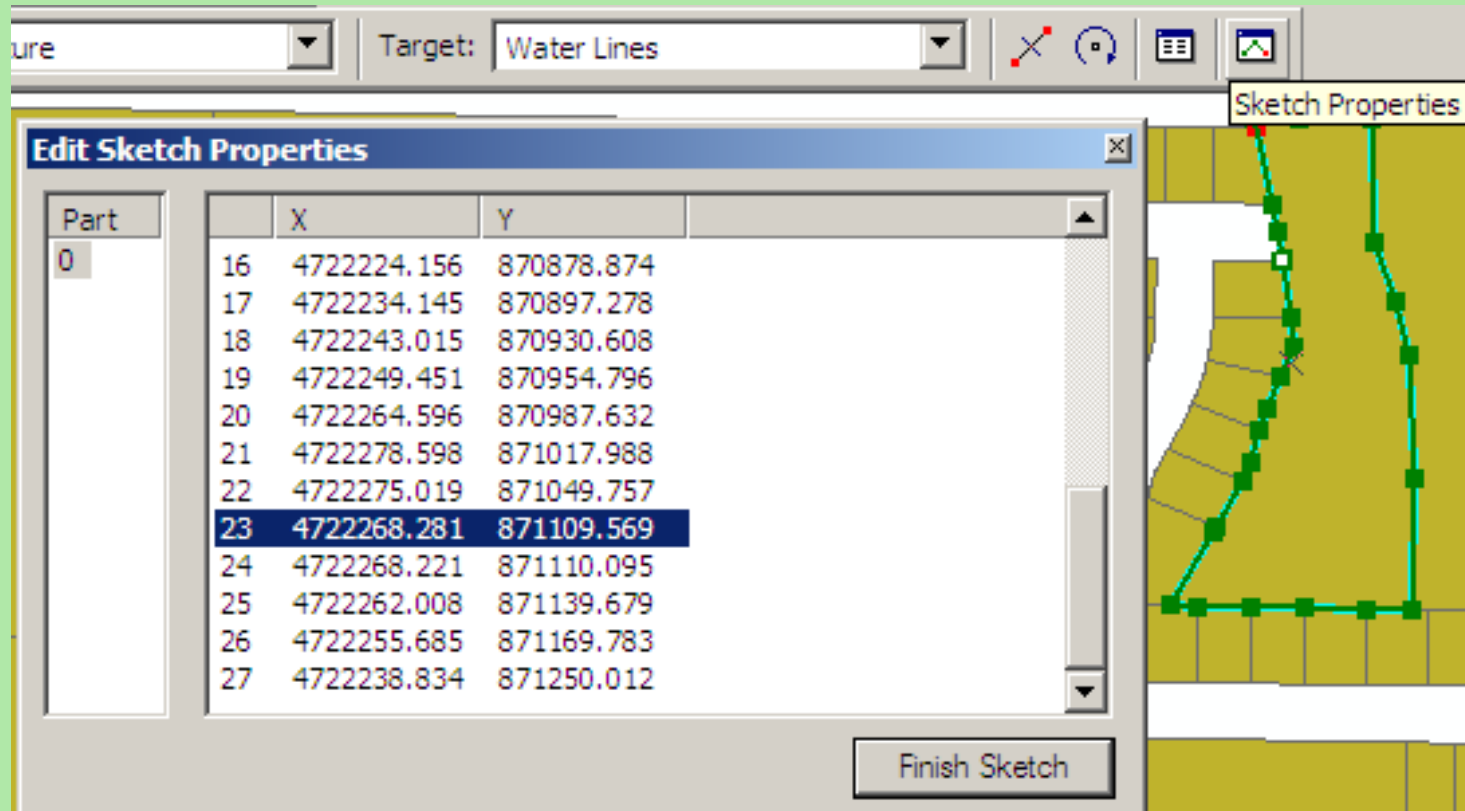


Editing Tips and Tricks

Editing Basics and Setup

Working with Sketches - Sketch Properties

Lists each vertex in a sketch; selected vertex is shown in white. Can select multiple, delete, change values.



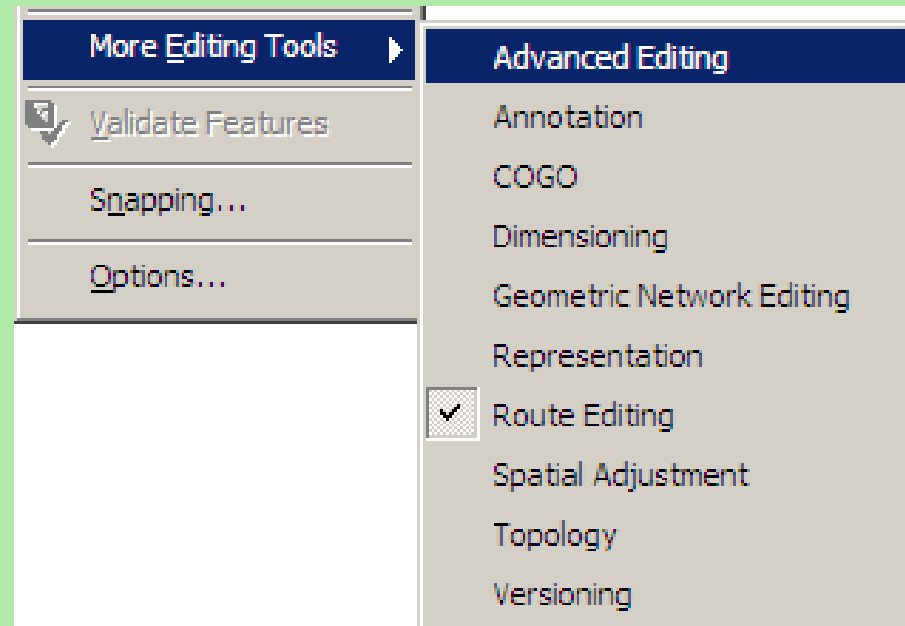
Target: Water Lines

Part	X	Y
0		
16	4722224.156	870878.874
17	4722234.145	870897.278
18	4722243.015	870930.608
19	4722249.451	870954.796
20	4722264.596	870987.632
21	4722278.598	871017.988
22	4722275.019	871049.757
23	4722268.281	871109.569
24	4722268.221	871110.095
25	4722262.008	871139.679
26	4722255.685	871169.783
27	4722238.834	871250.012

Finish Sketch

Editing Tips and Tricks

Other Editing Toolbars

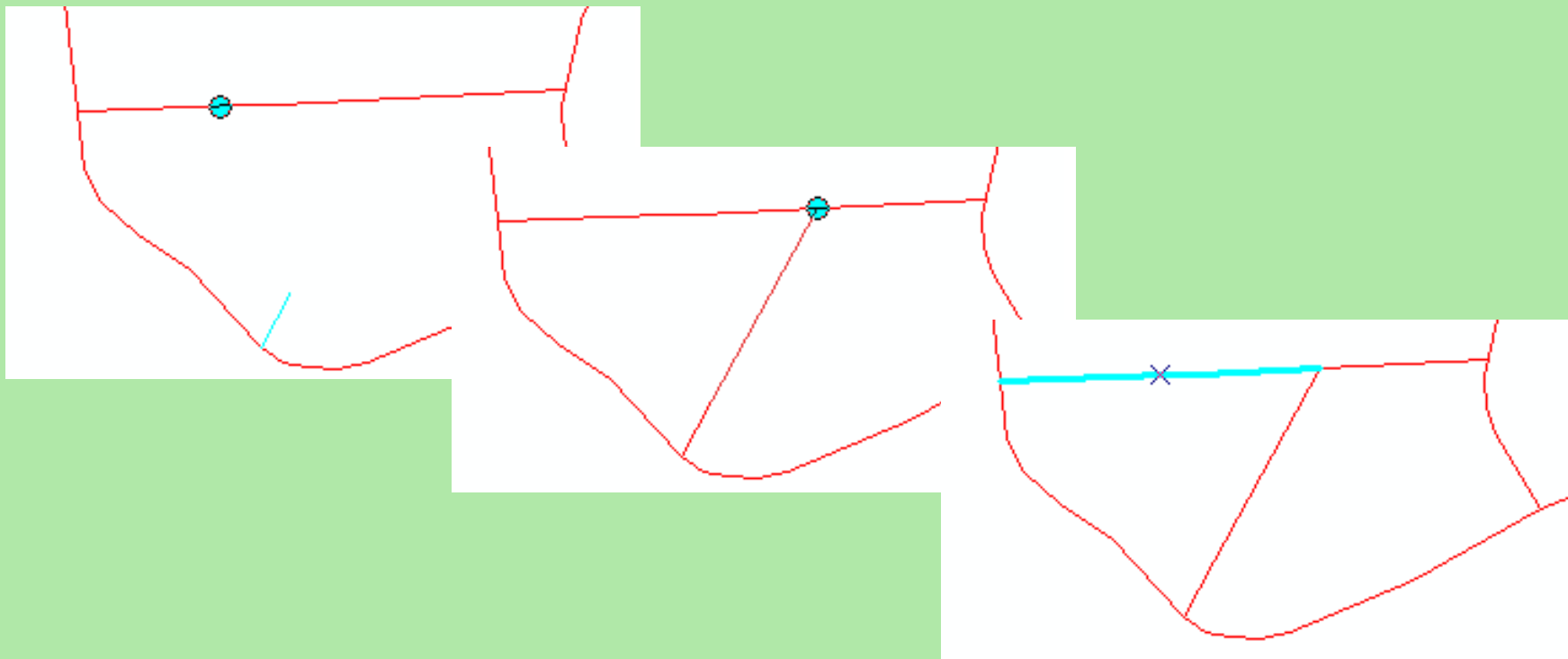


Editing Tips and Tricks

Other Editing Toolbars

Advanced Toolbar

Line Intersection – creates an intersection in a line at actual or implied intersection

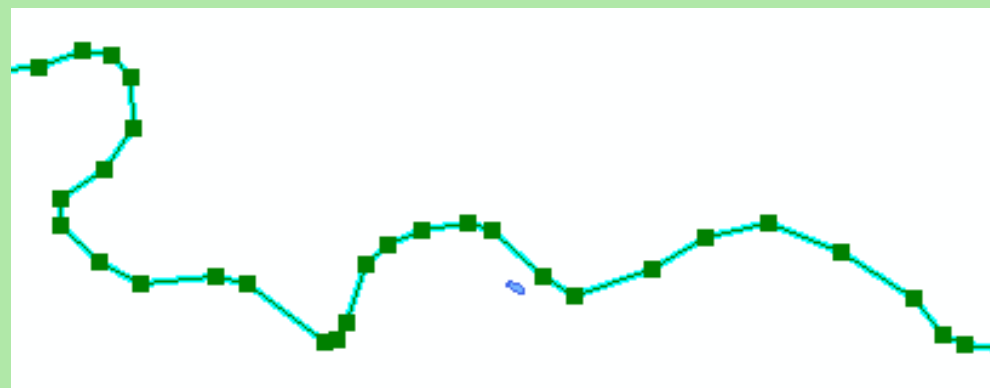
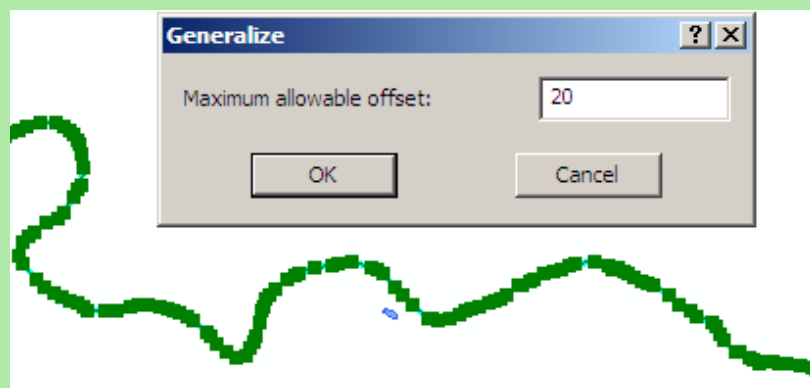


Editing Tips and Tricks

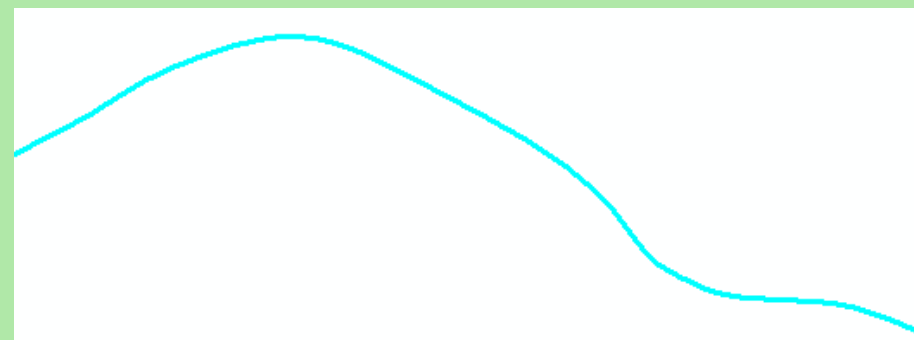
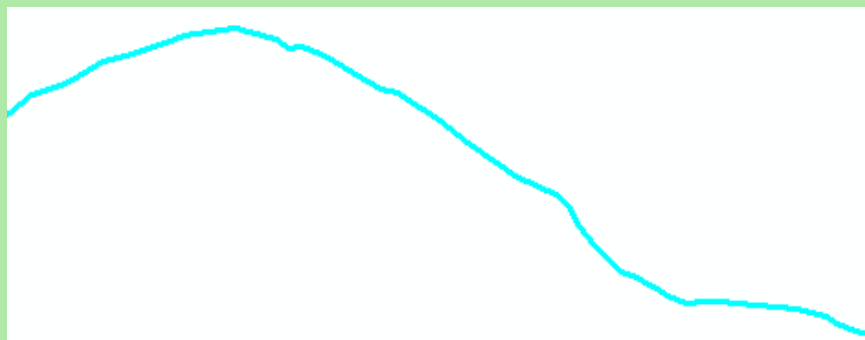
Other Editing Toolbars

Advanced Toolbar

Generalize – Weeds vertices from line and polygon features based on a tolerance



Smooth – Smooths line or polygon features based on a tolerance



Editing Tips and Tricks

Other Editing Toolbars

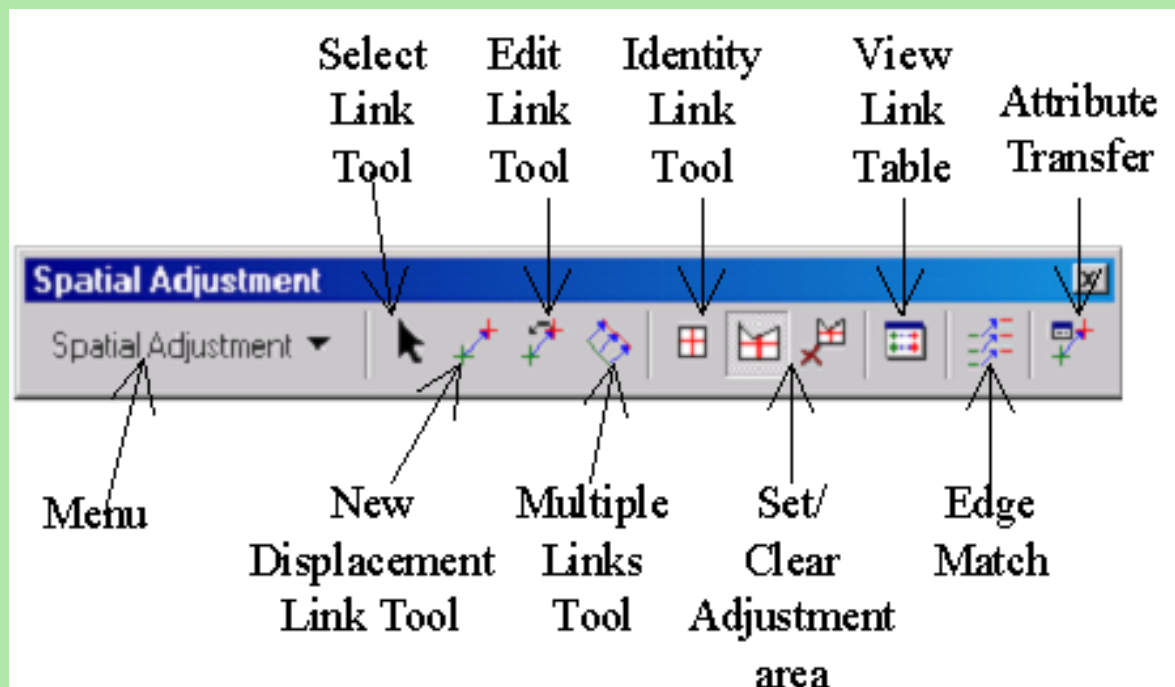
Spatial Adjustment Toolbar

Defines which data will be adjusted.

Controls how the adjustment methods will work, including adjustment area.

Provides tools for creating and managing displacement links

Sets parameters for attribute transfers



Editing Tips and Tricks

Other Editing Toolbars

Spatial Adjustment Toolbar - Spatial Adjustment Methods

Transformation - Used to convert data from digitizer or scanned units to real-world units or to shift data within a coordinate system. The adjustments set in the transformation methods apply to all features equally.

Similarity - used to adjust data between two similar coordinate systems

Will translate (move), rotate, scale features

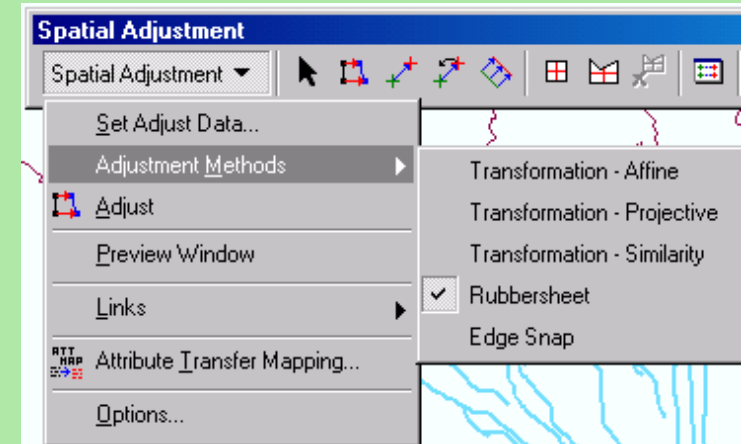
Requires minimum of 2 displacement links

Affine - allows two scale factors instead of just one as in the Similarity method.

Will translate (move), rotate, scale, and skew features

Requires minimum of 3 displacement links

Projective - specialized transformation used to transform coordinates digitized from high altitude aerial photography or aerial photographs of relatively flat terrain.



Editing Tips and Tricks

Other Editing Toolbars

Spatial Adjustment Toolbar - Rubbersheeting

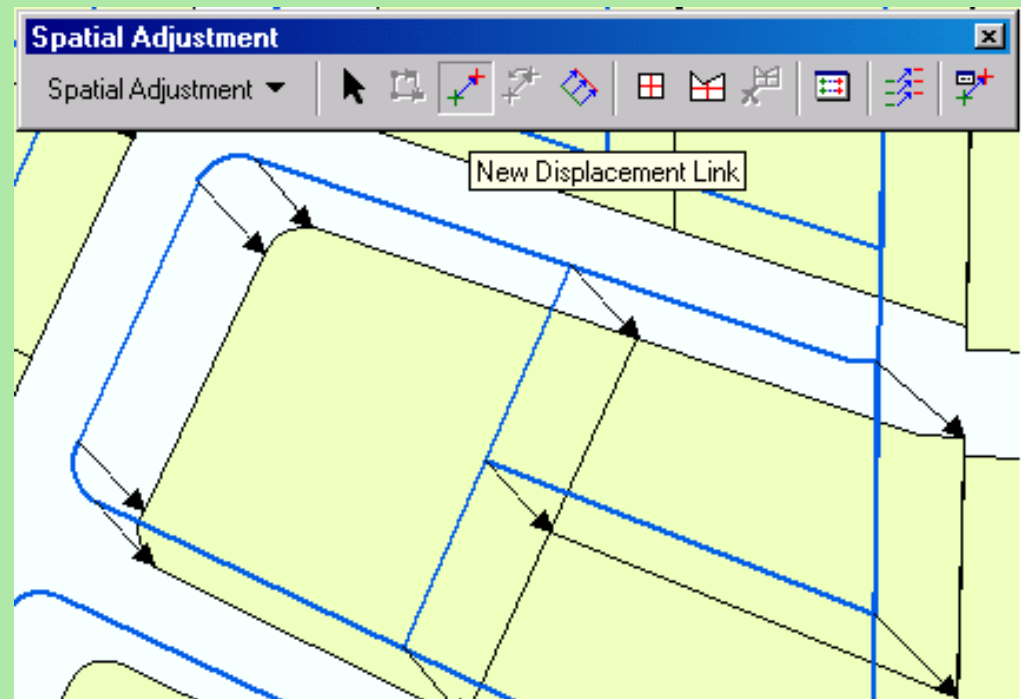
- Adjustment is applied piecewise throughout the layer or selected features, rather than equally to all features as in the transformation methods.

Features are stretched and straight lines are preserved

Features can be held in place with Identity Links

After adjustment, all displacement links become Identity links.

Adjustment can be limited to a specified area or applied to the entire extents



Editing Tips and Tricks

Other Editing Toolbars

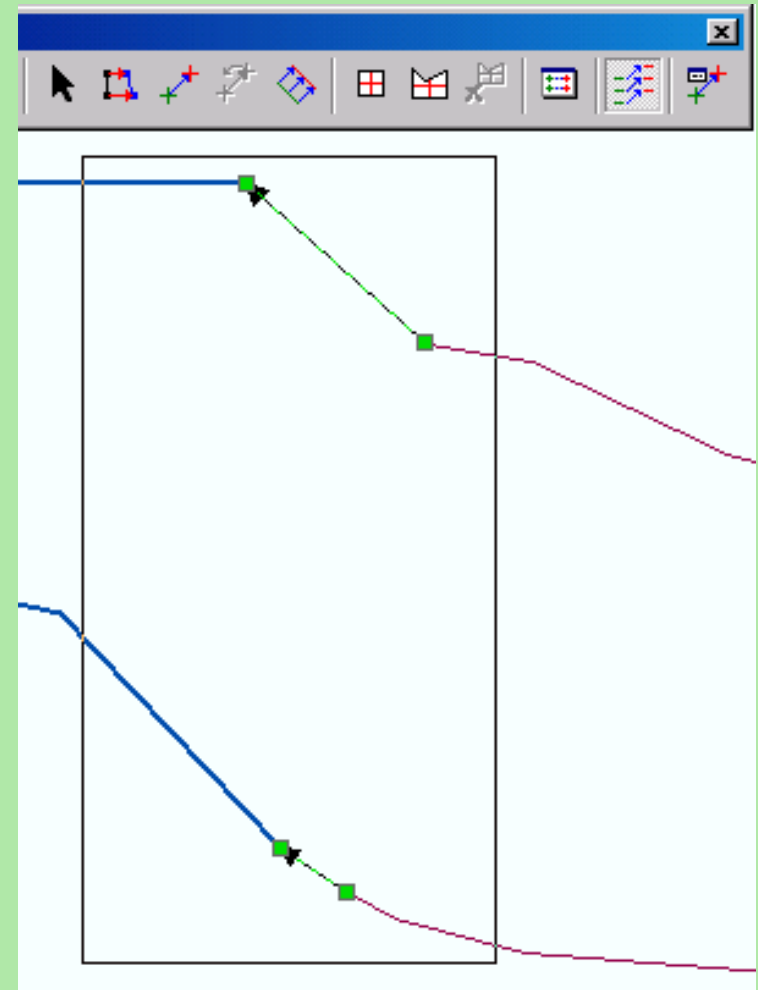
Spatial Adjustment Toolbar - Edge Snap\Edgematching

- uses Rubbersheeting methods to match features along edges of layers.

Match source layer to target layer or
match to midpoints of links

Match is based on displacement links that
can be added manually, from a file, or
automatically by drawing a window around
the features to be matched.

Edgematching can be enhanced by
specifying common attributes between
layers to use for matching



Editing Tips and Tricks

Other Editing Toolbars

Spatial Adjustment Toolbar - *Creating Displacement Links*

Displacement Links are graphic elements that show the link between source and destination

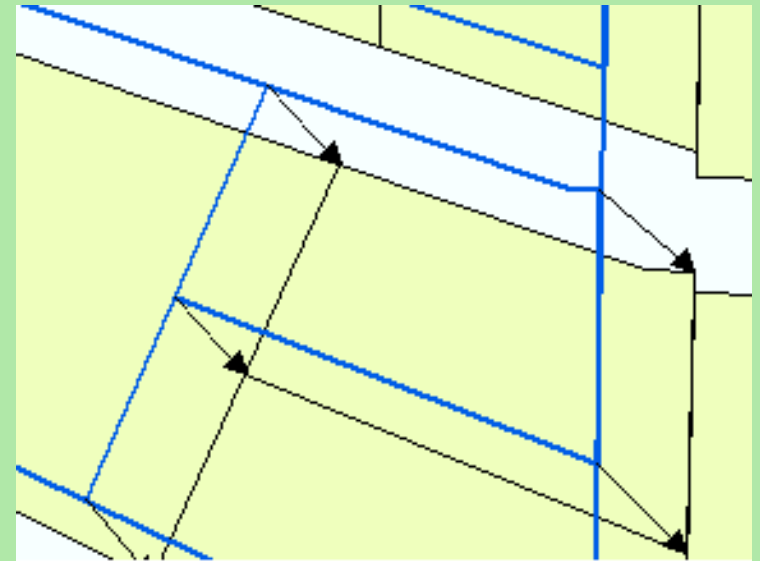
Set manually by picking location of source and destination points

Can use snaps to ensure accuracy

Load from a links file or control point file

Link file contains list of x,y coordinates for source and destination

Control point file contains the destination coordinates and possibly an id value, user adds source point manually



Editing Tips and Tricks

Other Editing Toolbars

Spatial Adjustment Toolbar - Attribute Transfer

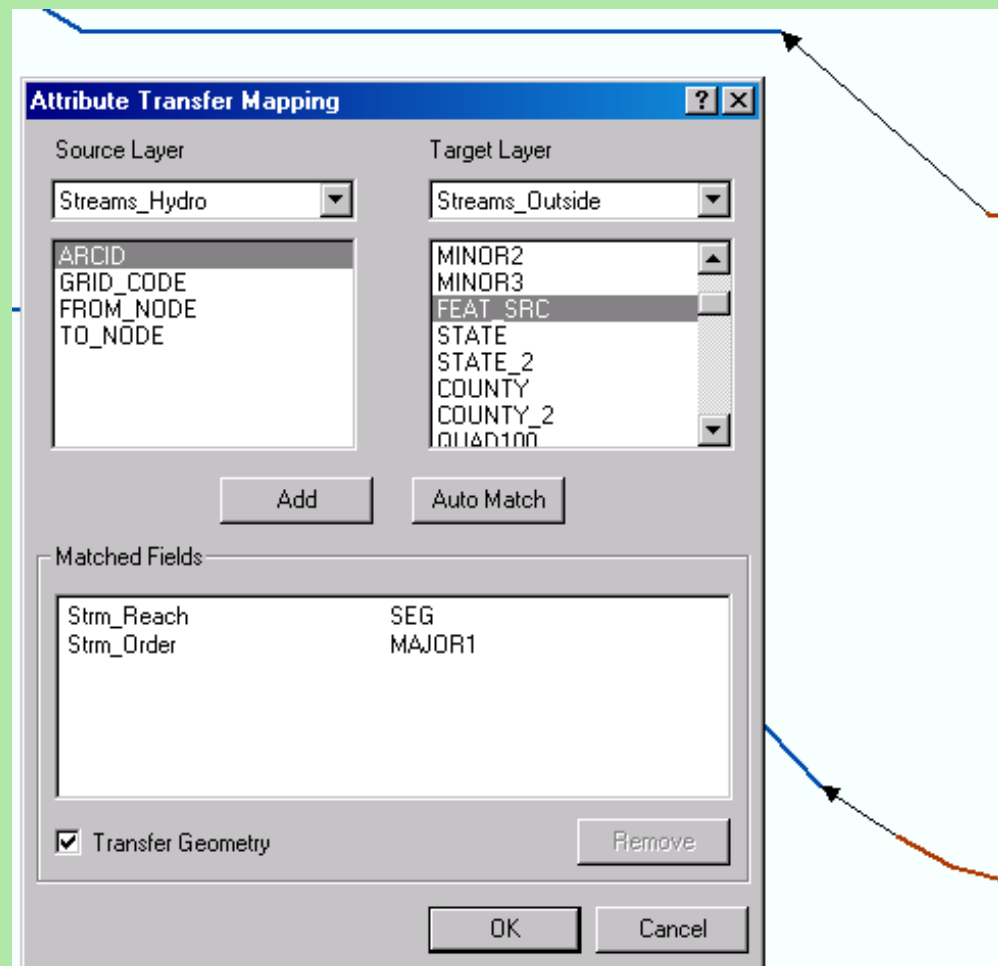
Lets the user transfer attributes and geometry between features

Indicate source and target layers or features

Attribute transfer can be between features in the same layer or in different layers.

Specify the fields to transfer

Fields can be “mapped” between layers, as long as the data type is the same

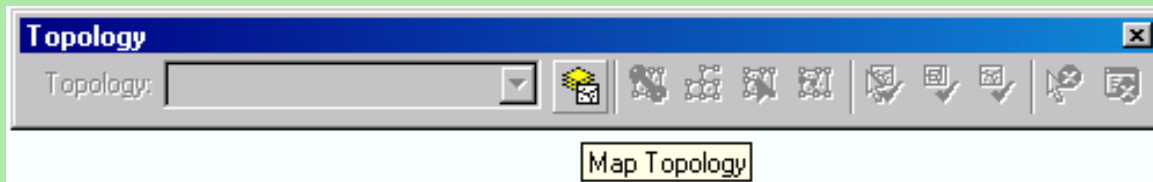


Editing Tips and Tricks

Other Editing Toolbars

Topology Toolbar and Map Topology

Map Topology - Limited topology created in ArcMap with ArcView or ArcEditor.



Works with Shapefiles as well as Geodatabase feature classes.

Cluster tolerance can be set.

Cannot use Geodatabase Topology Rules or set Ranks

Limited tools

ArcView – Topology Edit Tool & Show Shared Features

ArcEditor – Construct Features and Planarize Lines tools

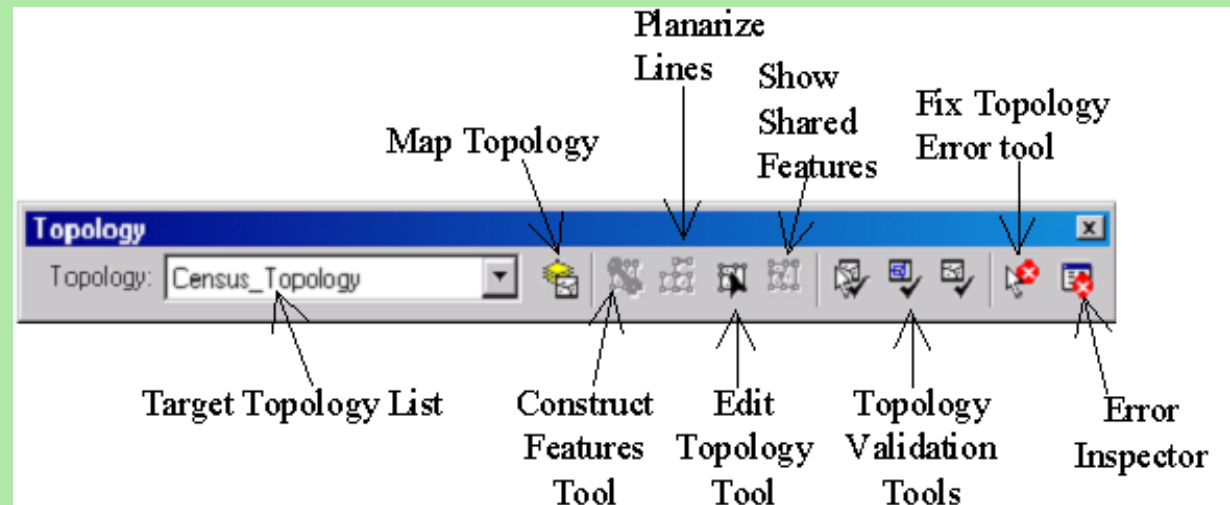
Editing Tips and Tricks

Other Editing Toolbars

Topology Toolbar

Target Topology List –
List of GDB Topologies
in the map.

Map Topology –
Creates Topology on
the fly, can be used
with ArcView for
feature classes
and shapefiles.

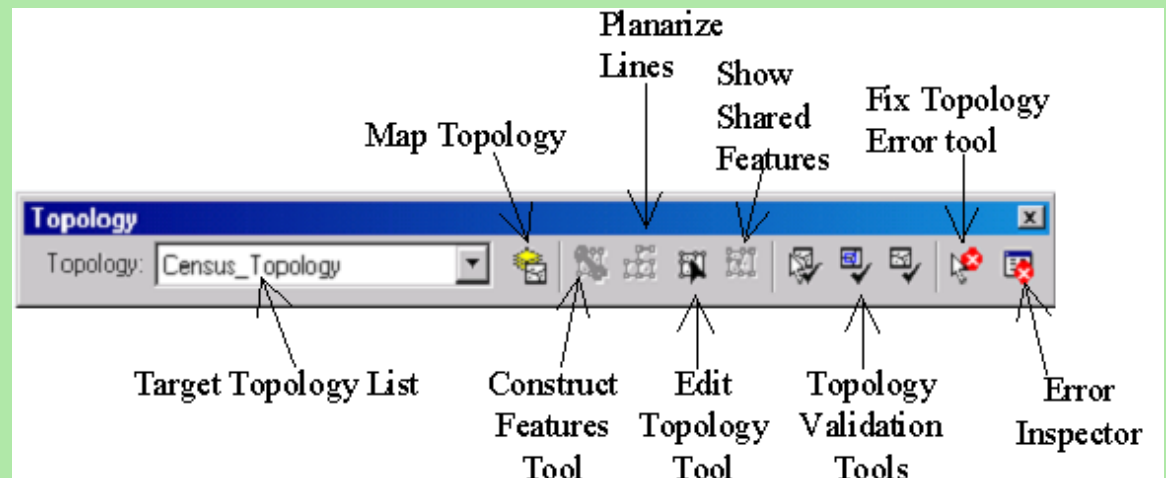


Editing Tips and Tricks

Other Editing Toolbars

Topology Toolbar

Construct Features Tool – can be used to split lines in the target layer; to create polygons from Polylines; to create Polylines from Polygons. This tool does not require topology.



Polygons can also be constructed from Polylines within a feature dataset. Optionally, you can use a point feature class to assign attributes to the polygon.

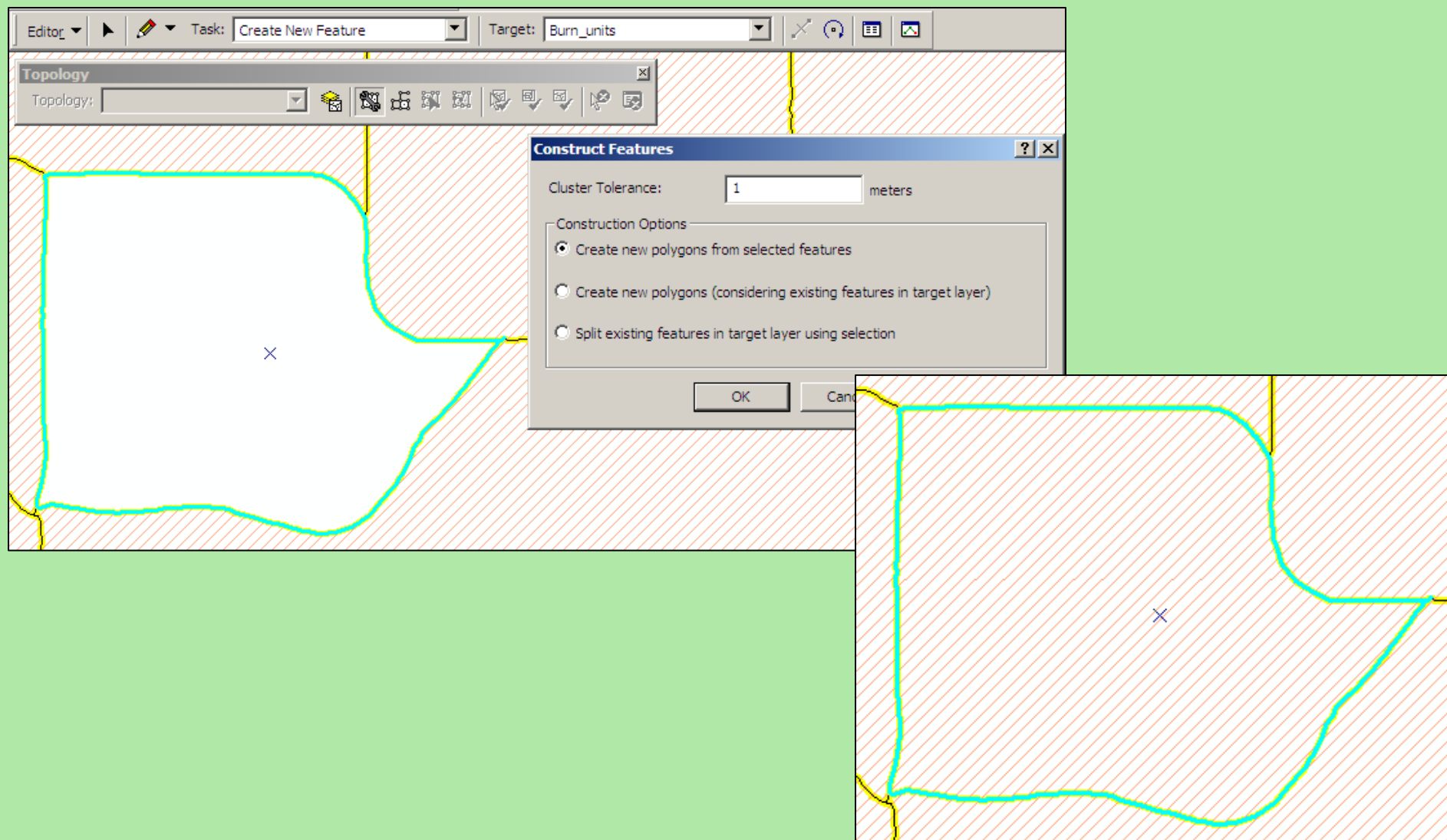
Planarize Tool – splits selected line features where they intersect from a selection of features in the same layer. This tool does not require a topology.

These two tools require ArcEditor

Editing Tips and Tricks

Other Editing Toolbars

Topology Toolbar - Construct Features Tool



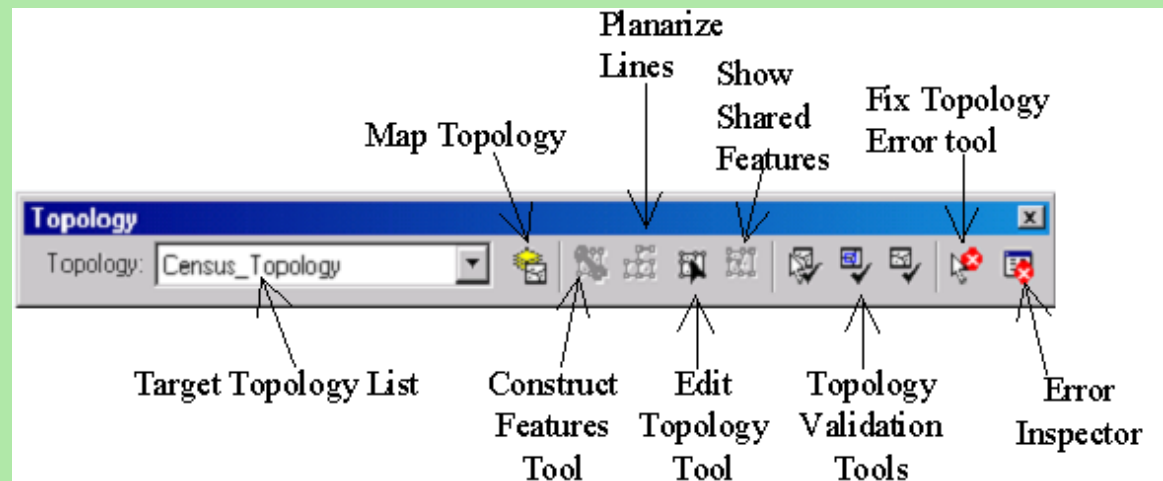
Editing Tips and Tricks

Other Editing Toolbars

Topology Toolbar

Topology Edit Tool – used to select and modify coincident edges and nodes.

Show Shared Features – Used with the map topology tools to specify which layers are to be modified.



Topology Validation Tools – Allows you to validate Geodatabase topology within ArcMap

Fix Topology Error Tool – select a GDB topology error and apply fixes.

Error Inspector – provides a tabular format for finding and fixing GDB errors.

Editing Tips and Tricks

Other Editing Toolbars

Map Topology Editing - Map Topology Geometry

Works with logical **edges** and logical **nodes**

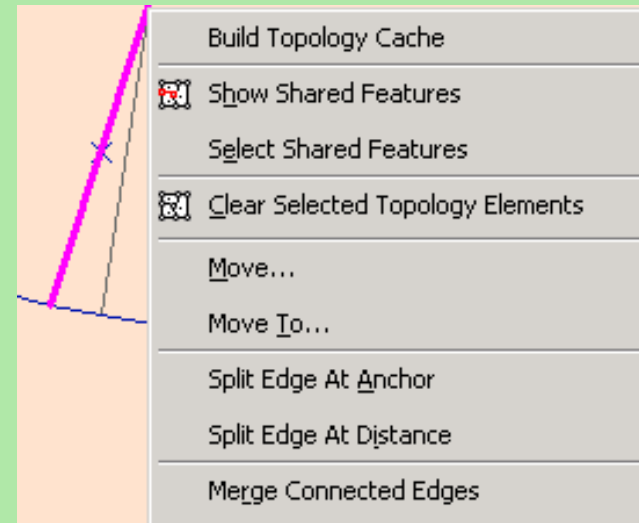


Edges – shared parts of coincident lines or polygon boundaries.

Nodes – vertices at the end of an edge or where features intersect.

Hold down the “N” key to select nodes; “E” to select edges.

Right-click on the edge and select the appropriate options.



Editing Tips and Tricks

Other Editing Toolbars

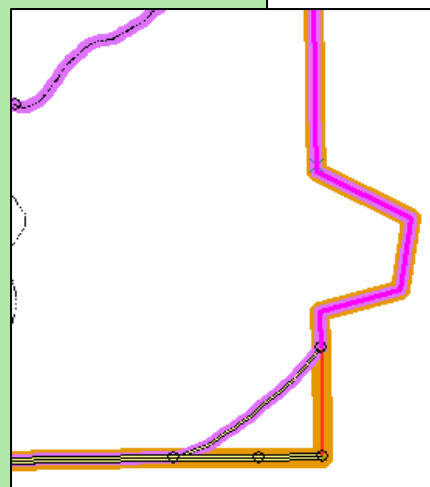
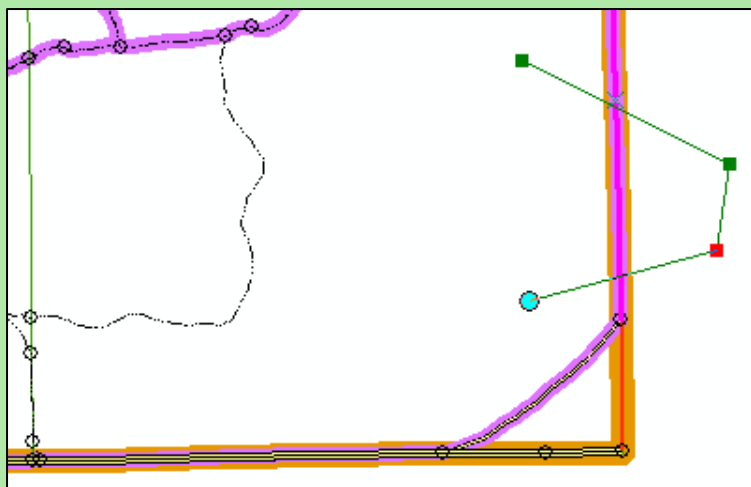
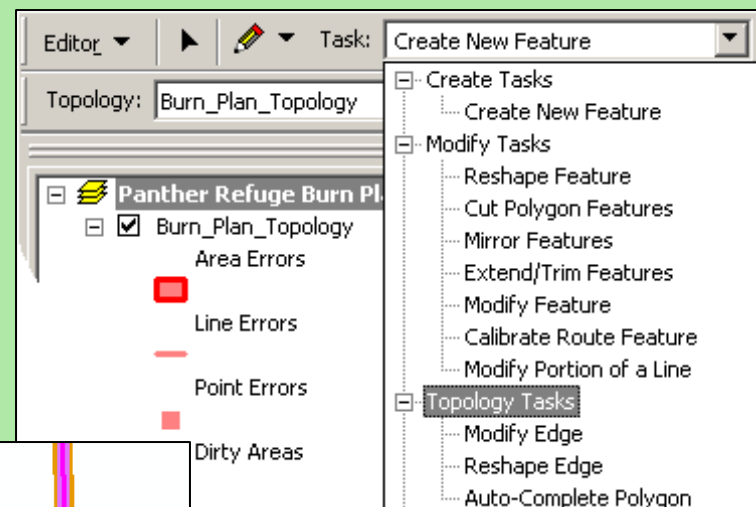
Topology Edit Tasks - tasks from the Editor Toolbar that work with map topology

Select shared features to edit with the Topology Edit tool

Reshape Edge – use Sketch tool to define how to reshape

Modify Edge – use the Topology Edit or normal Edit tool to move shared vertexes.

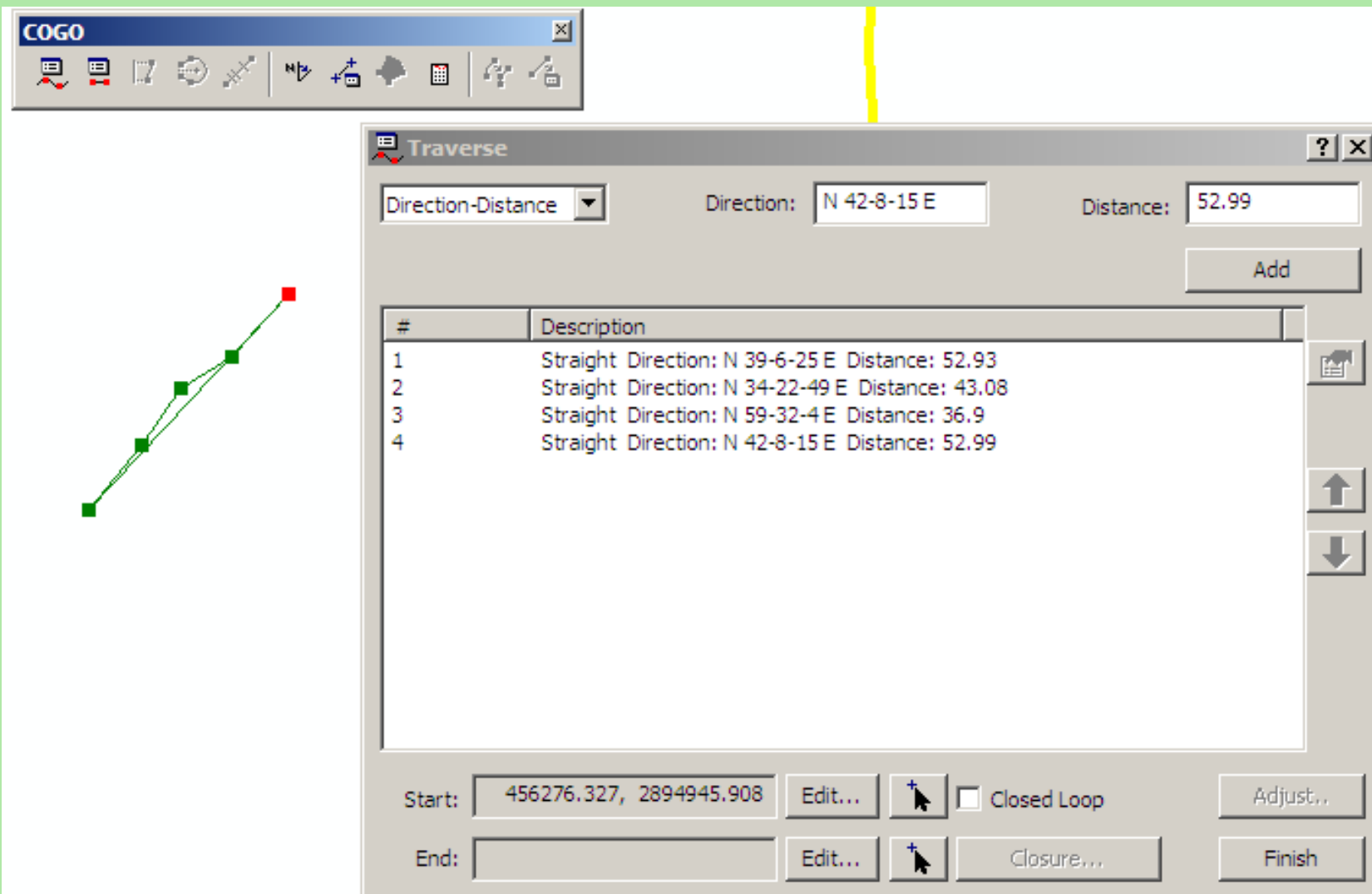
Auto-Complete Polygon – use Sketch tool to create polygons that will have a shared edge.



Editing Tips and Tricks

Other Editing Toolbars

Cogo Toolbar - working with coordinate geometry in ArcMap



COGO

Traverse

Direction-Distance Direction: N 42-8-15 E Distance: 52.99

Add

#	Description
1	Straight Direction: N 39-6-25 E Distance: 52.93
2	Straight Direction: N 34-22-49 E Distance: 43.08
3	Straight Direction: N 59-32-4 E Distance: 36.9
4	Straight Direction: N 42-8-15 E Distance: 52.99

Start: 456276.327, 2894945.908 Edit... Closed Loop Adjust...

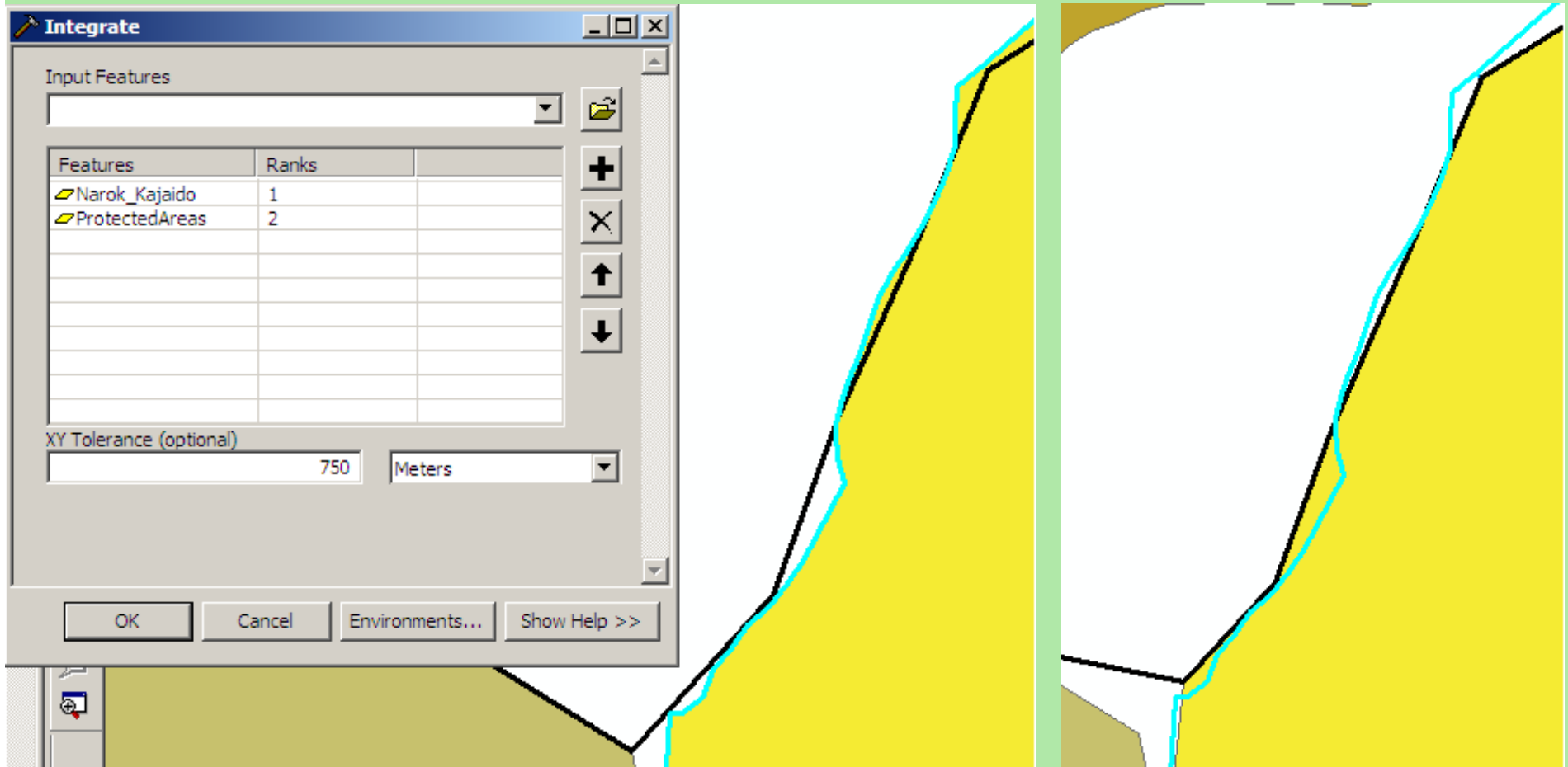
End: Edit... Closure... Finish

Editing Tips and Tricks

Bulk Editing

Integrate Tool - Data Management>Feature Classes>Integrate

Works out of an edit session, **no undo** - so work on copy of data



Editing Tips and Tricks

Keyboard Editing Shortcuts

Shortcuts common to all editing tools

Z	Zoom In
X	Zoom Out
C	Pan
V	Show vertices
Esc	Cancel
Spacebar	Suspend snapping

Edit tool

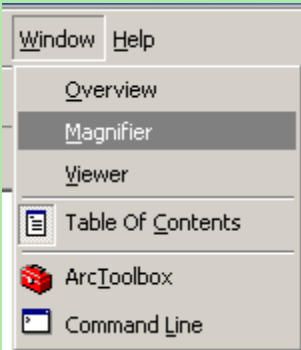
Shift	Add to\remove from selection
Ctrl	Move the selection anchor
N	Next selected feature

Trace tool

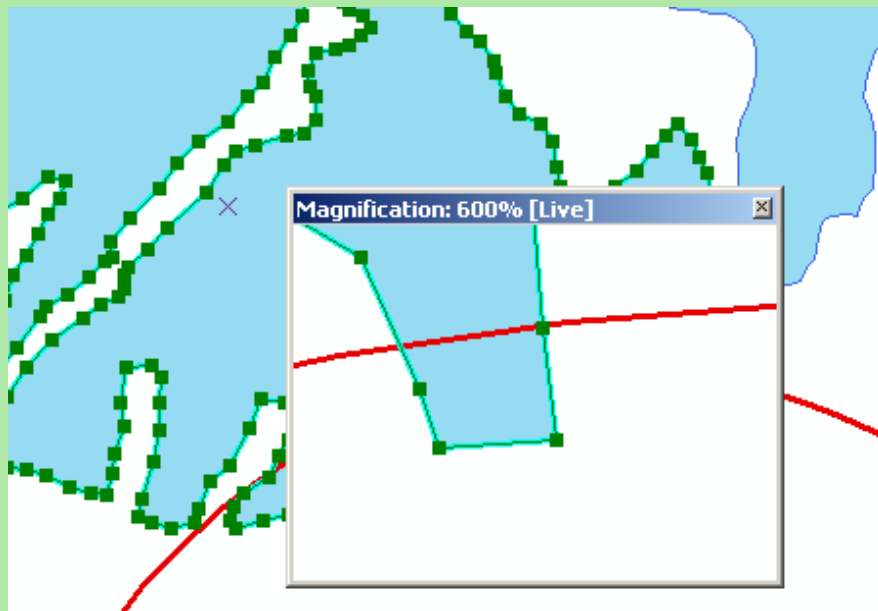
Tab	Trace the other side of an edge
O	Open Trace Options dialog box

Editing Tips and Tricks

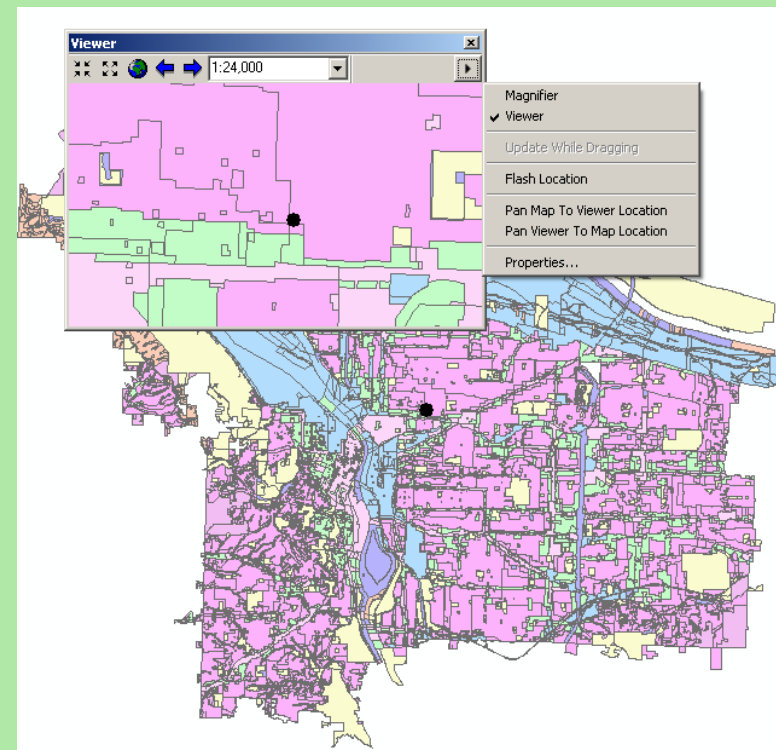
Magnify and Viewer Windows – help see your edits



Magnifier Window



Viewer Window





Editing Tips and Tricks

Editing Scenarios

Magnify and Viewer Windows

Hot Keys

Snaps

Replace sketch, reshape

Map topology

Creating and covering holes

AutoComplete Polygon

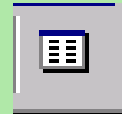
Construct Features

Spatial Adjustment

Editing Tips and Tricks

Editing Attributes

Attributes Editor – Editing Attributes in an edit session



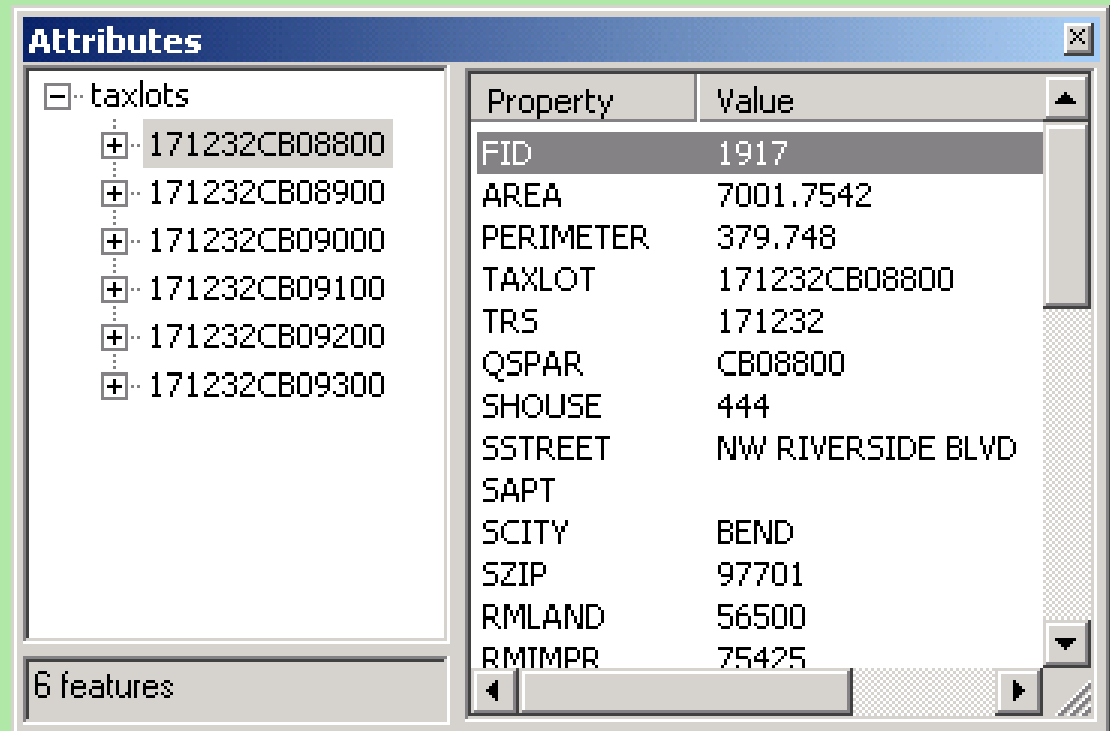
Can edit attributes individually or globally.

Selecting the layer name edits all attributes for a selected field

Selecting a record edits attributes for that record

Can copy and paste values between records

Attributes can also be edited using the Field Calculator



Attributes	
Property	Value
FID	1917
AREA	7001.7542
PERIMETER	379.748
TAXLOT	171232CB08800
TRS	171232
QSPAR	CB08800
SHOUSE	444
SSTREET	NW RIVERSIDE BLVD
SAPT	
SCITY	BEND
SZIP	97701
RMLAND	56500
RMTMPR	75425

taxlots

- 171232CB08800
- 171232CB08900
- 171232CB09000
- 171232CB09100
- 171232CB09200
- 171232CB09300

6 features

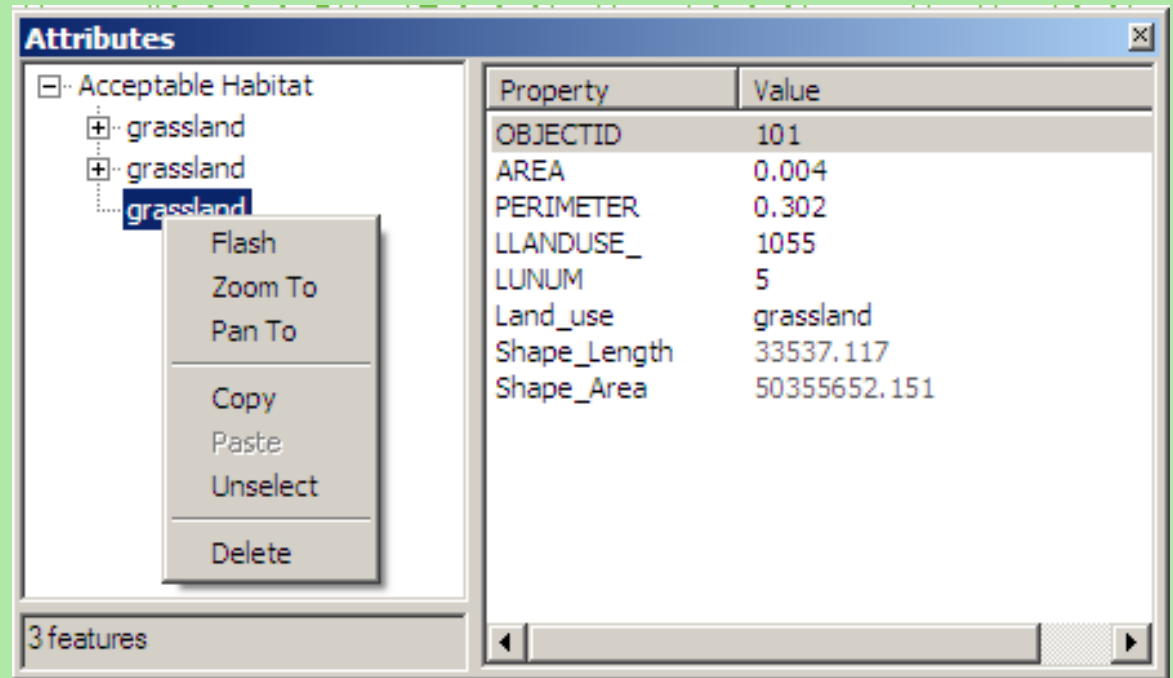
Editing Tips and Tricks

Editing Attributes

Attributes Editor – Editing Attributes in an edit session

Clicking a feature flashes the feature on the map

Use Context Menu to Zoom\Pan, Copy\Paste, Unselect, Delete



Editing Tips and Tricks

Editing Attributes

Field Calculator – Editing Attributes in the Table Window

Use for any data manipulation within a field

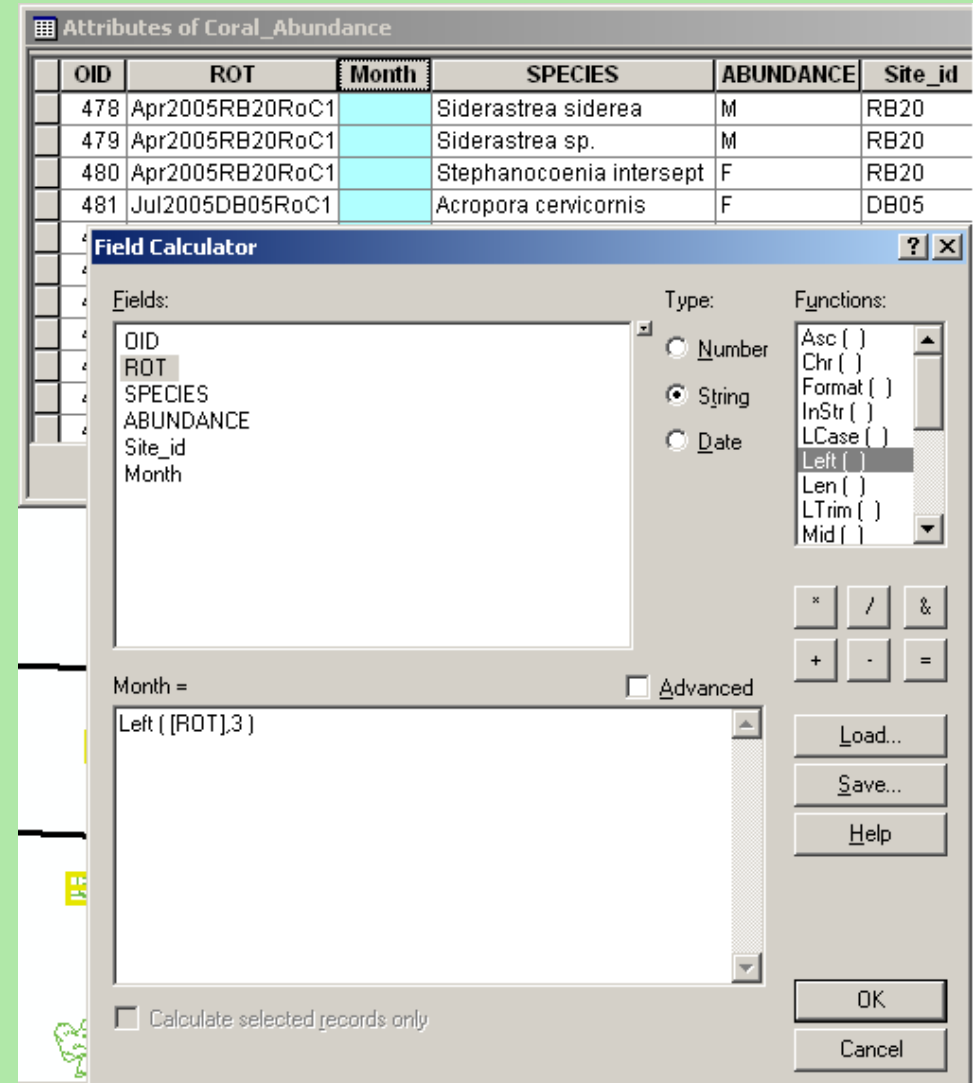
In or out of Edit session

In edit session – changes are not committed until edit session ends

“Out of edit” session is quicker

Can save and load scripts

The functions are not stored in the field - calculations need to be redone when the source data changes

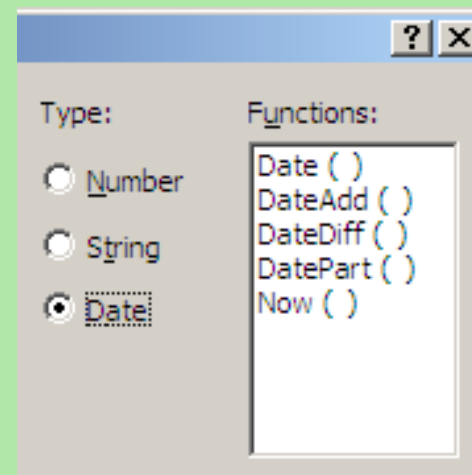
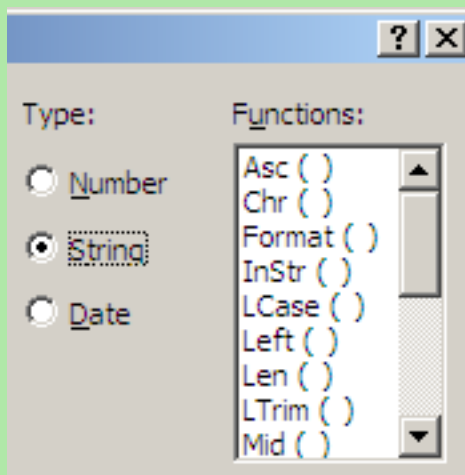
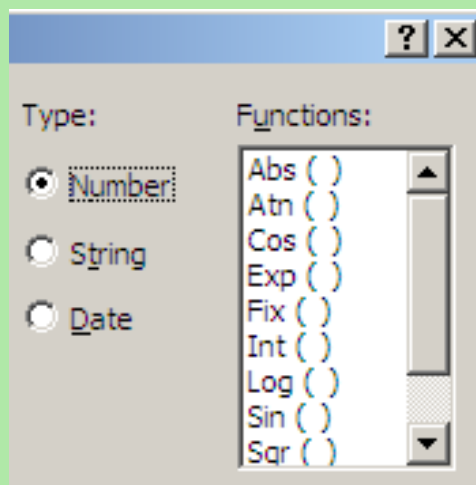


Editing Tips and Tricks

Editing Attributes

Field Calculator – Editing Attributes in the Table Window

Some VB functions are built in to the functions list.



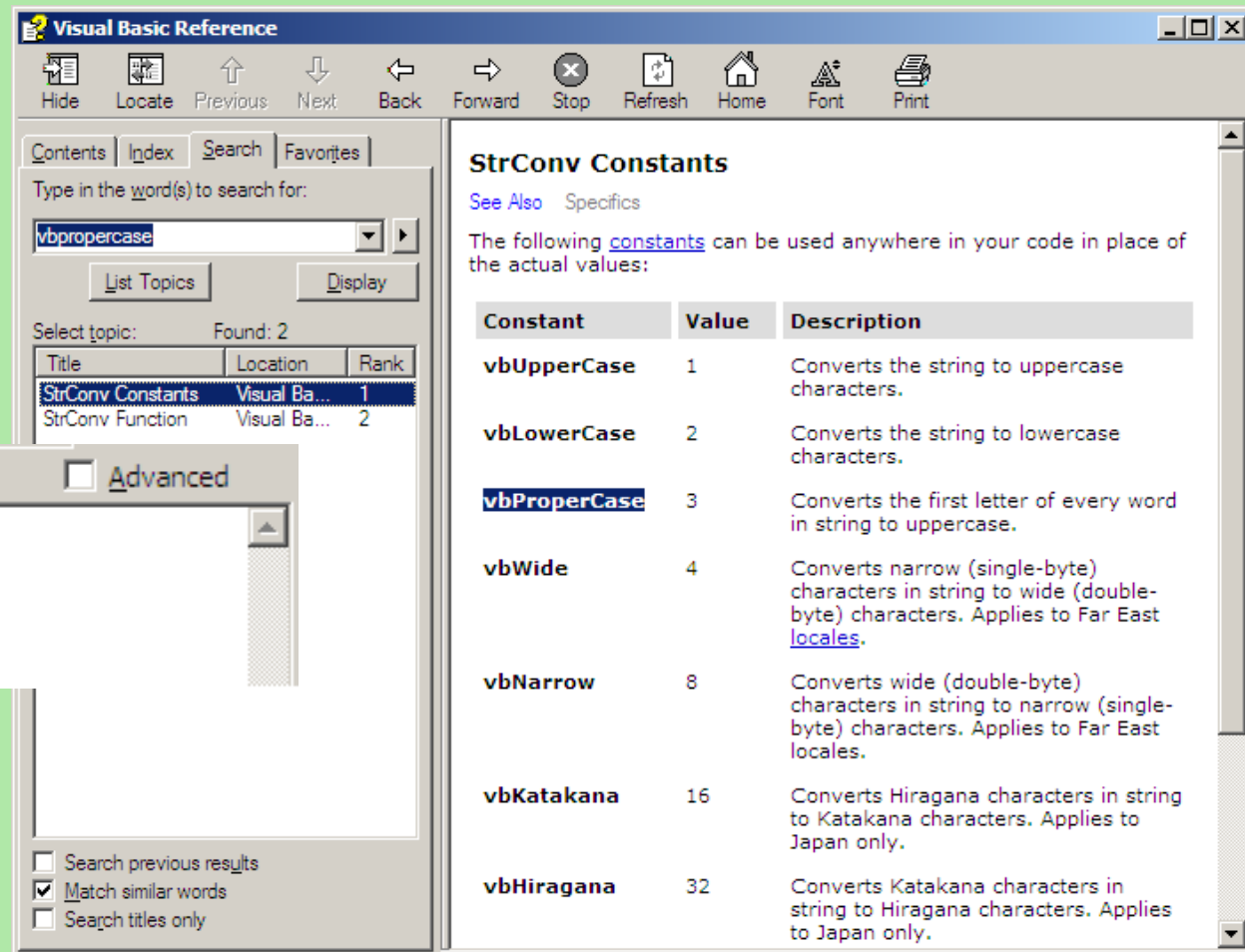
Editing Tips and Tricks

Editing Attributes

Field Calculator – Editing Attributes in the Table Window

Can use other VB functions or scripts

To get help for VB,
open VB Editor –
Tools>Macros>
Visual Basic Editor.



The screenshot shows the Visual Basic Reference window with a search for 'vbpropercase'. The search results table is as follows:

Title	Location	Rank
StrConv Constants	Visual Ba...	1
StrConv Function	Visual Ba...	2

The 'StrConv Constants' section is expanded, showing a table of constants:

Constant	Value	Description
vbUpperCase	1	Converts the string to uppercase characters.
vbLowerCase	2	Converts the string to lowercase characters.
vbProperCase	3	Converts the first letter of every word in string to uppercase.
vbWide	4	Converts narrow (single-byte) characters in string to wide (double-byte) characters. Applies to Far East locales.
vbNarrow	8	Converts wide (double-byte) characters in string to narrow (single-byte) characters. Applies to Far East locales.
vbKatakana	16	Converts Hiragana characters in string to Katakana characters. Applies to Japan only.
vbHiragana	32	Converts Katakana characters in string to Hiragana characters. Applies to Japan only.

In the foreground, a portion of the Field Calculator is visible, showing the formula: `StrConv ([AREANAME], 3)`.

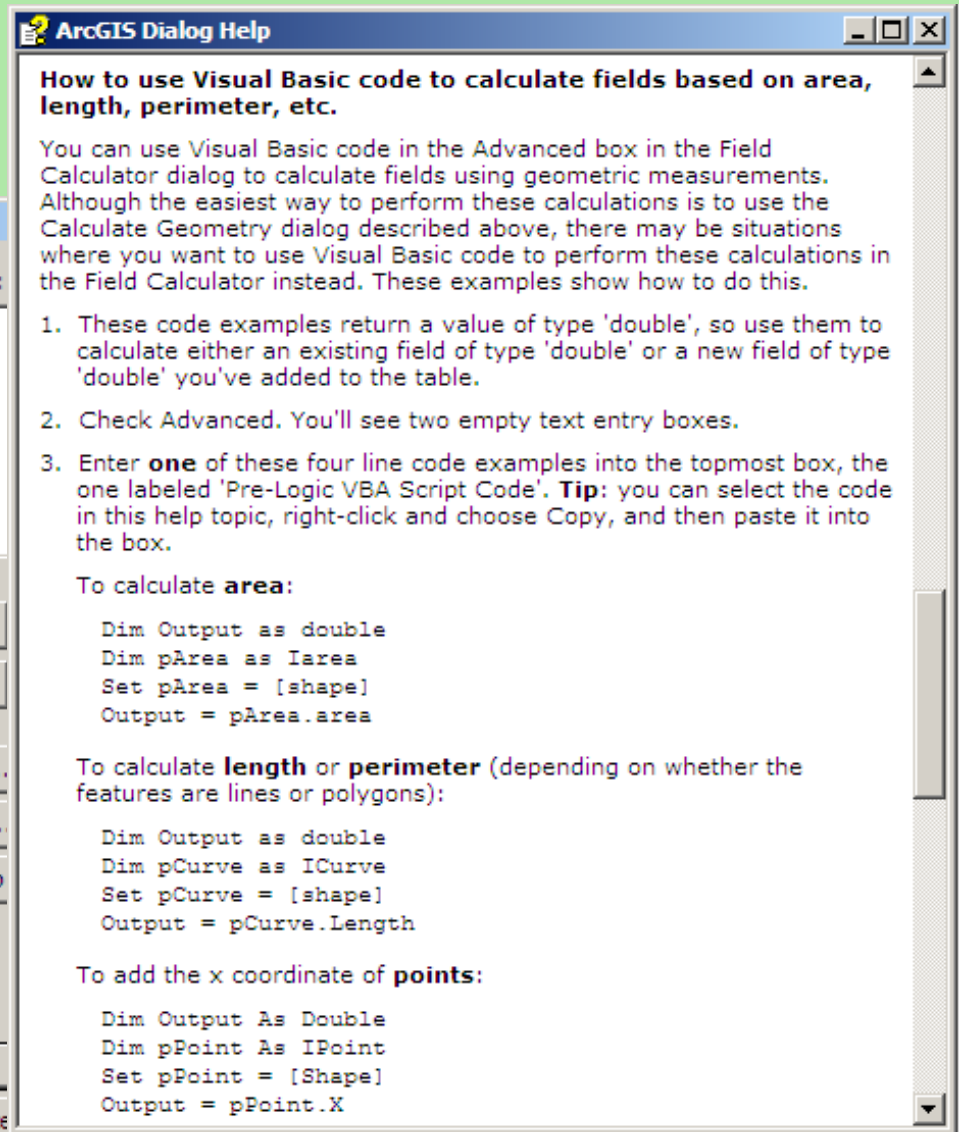
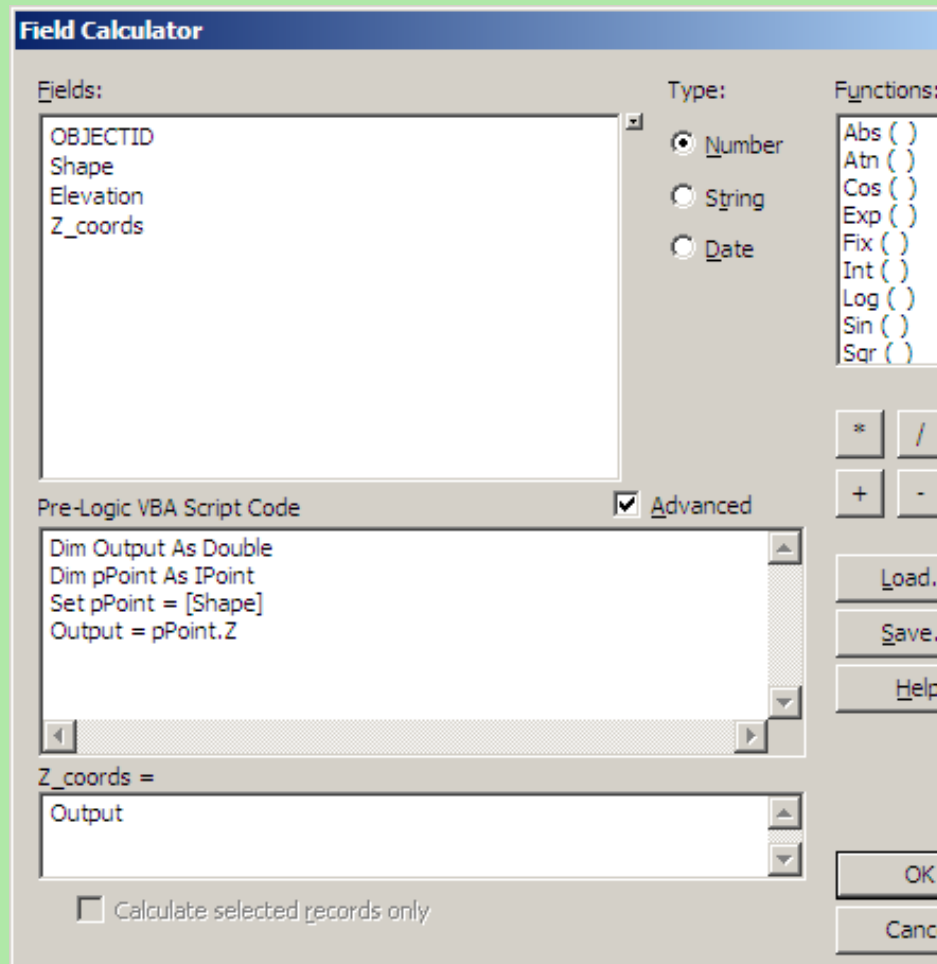
Some Excel
functions
also work

Editing Tips and Tricks

Editing Attributes

Field Calculator – Help for VB Code

Can adapt some existing examples



Editing Tips and Tricks

Editing Attributes

Field Calculator – VB examples

Split – breaks a text string and selects part of the string

Attributes of Hwys						
OBJECTID	Shape *	LENGTH	DATA	Hwy_Num	Shap	
1	Polyline	7061.48	Highway 97 and Highway 2	97	7	
2	Polyline	22940.801	Highway 97 and Highway 2	97	22	
3	Polyline	38780.801	Highway 97A	97A	38	
4	Polyline	68066.398	Highway 2	2	68	
5	Polyline	73547	Highway 97	97	34	

Record: Show: Records (0 out of 5)

Field Calculator

Fields:

OBJECTID
Shape
LENGTH
DATA
Shape_Length
Hwy_Num

Hwy_Num =

Split([DATA], " ")(1)

Editing Tips and Tricks

Editing Attributes

Field Calculator – VB examples

Replace – Search and Replace

Attributes of Hwys

OBJECTID	Shape *	LENGTH	DATA	Hwy_Num	Shape
1	Polyline	7061.48	Highway 97 and Highway 2	97	7061.48
2	Polyline	22940.801	Highway 97 and Highway 2	97	22940.801
3	Polyline	38780.801	Highway 97A	97A	38780.801
4	Polyline	68066.398	Highway 2	2	68066.398
5	Polyline	73547	Highway 97	97	73547

Record: Show: Records (0 out of 5 Selected)

Attributes of Hwys

OBJECTID	Shape *	LENGTH	DATA	Hwy_Num	Shape
1	Polyline	7061.48	Hwy 97 and Hwy 2	97	7061.48
2	Polyline	22940.801	Hwy 97 and Hwy 2	97	22940.801
3	Polyline	38780.801	Hwy 97A	97A	38780.801
4	Polyline	68066.398	Hwy 2	2	68066.398
5	Polyline	73547	Hwy 97	97	73547

Record: Show: Records (0 out of 5 Selected)

Field Calculator

Fields:

- OBJECTID
- Shape
- LENGTH
- DATA
- Shape_Length
- Hwy_Num

DATA =

Replace([DATA] , "Highway", "Hwy")

34052.757254

Editing Tips and Tricks

Editing Attributes

Field Calculator – VB examples

Trim – Remove leading spaces

Attributes of ElkPoints						
OBJEC	Incident	lat_deg	Lat_dm	Lat_dd	Long_deg	Long_dm
1	Shot	44	43.004	44.716733	119	33.406
2	Found Arrow	44	43.047	44.71745	119	33.463
3	Dead Elk	44	43.191	44.71985	119	33.488

Record: Show: Records (0 out of 3 Selected)

Attributes of ElkPoints						
OBJEC	Incident	lat_deg	Lat_dm	Lat_dd	Long_deg	Long_dm
1	Shot	44	43.004	44.716733	119	33.406
2	Found Arrow	44	43.047	44.71745	119	33.463
3	Dead Elk	44	43.191	44.71985	119	33.488

Record: Show: Records (0 out of 3 Selected)

Field Calculator

Fields:

OBJECTID
 Incident
 lat_deg
 Lat_dm
 Lat_dd
 Long_deg
 Long_dm
 Long_dd

Incident =

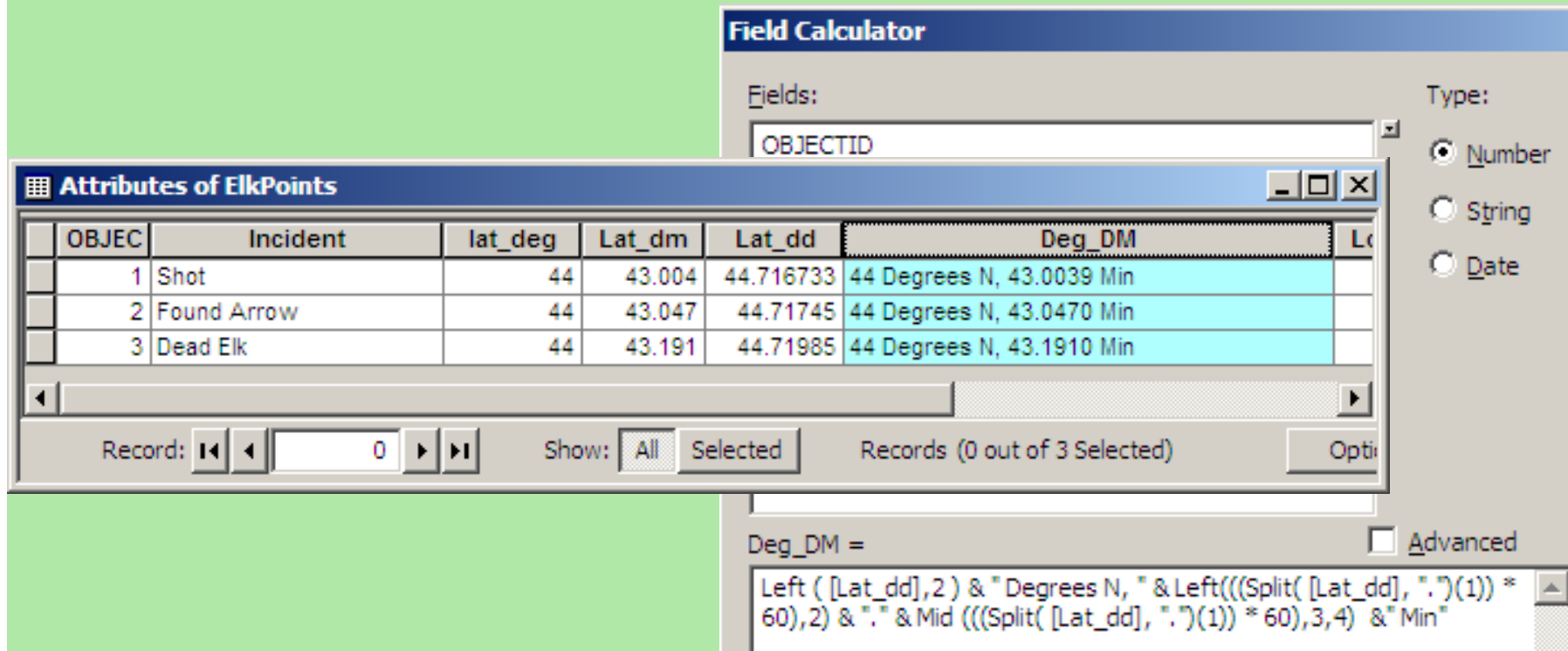
LTrim ([Incident])

Editing Tips and Tricks

Editing Attributes

Field Calculator – VB examples

Compound Calculations\Converting numbers to string with &



The screenshot shows the 'Field Calculator' dialog box with 'OBJECTID' selected in the 'Fields' list. The 'Type' is set to 'Number'. Below it, the 'Attributes of ElkPoints' dialog box is open, displaying a table of incident data. The 'Deg_DM' field is highlighted in blue. The 'Field Calculator' expression is:

```

Deg_DM =
Left ([Lat_dd],2) & " Degrees N, " & Left(((Split( [Lat_dd], ".")(1)) *
60),2) & "." & Mid (((Split( [Lat_dd], ".")(1)) * 60),3,4) & " Min"
    
```

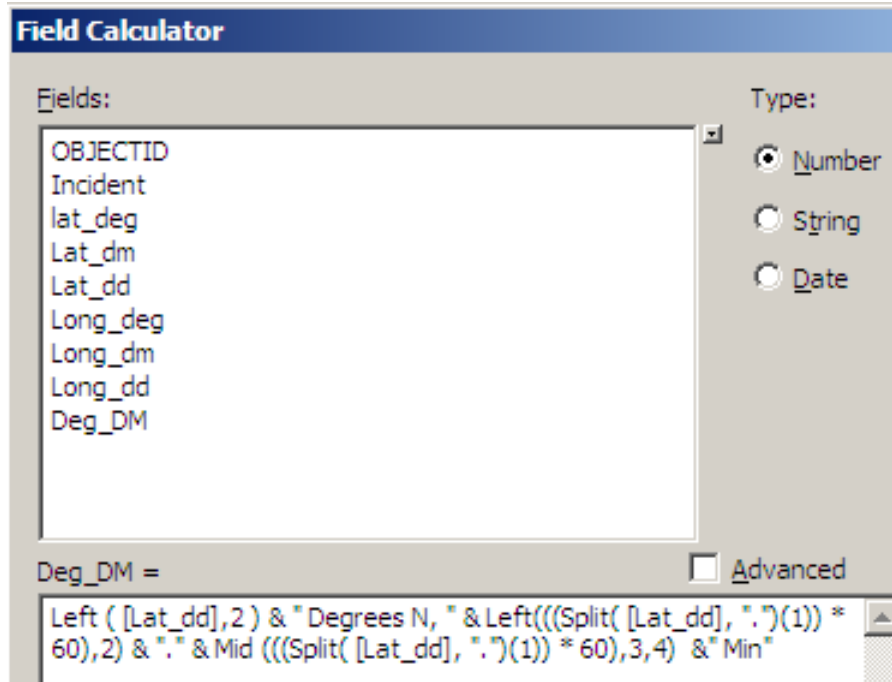
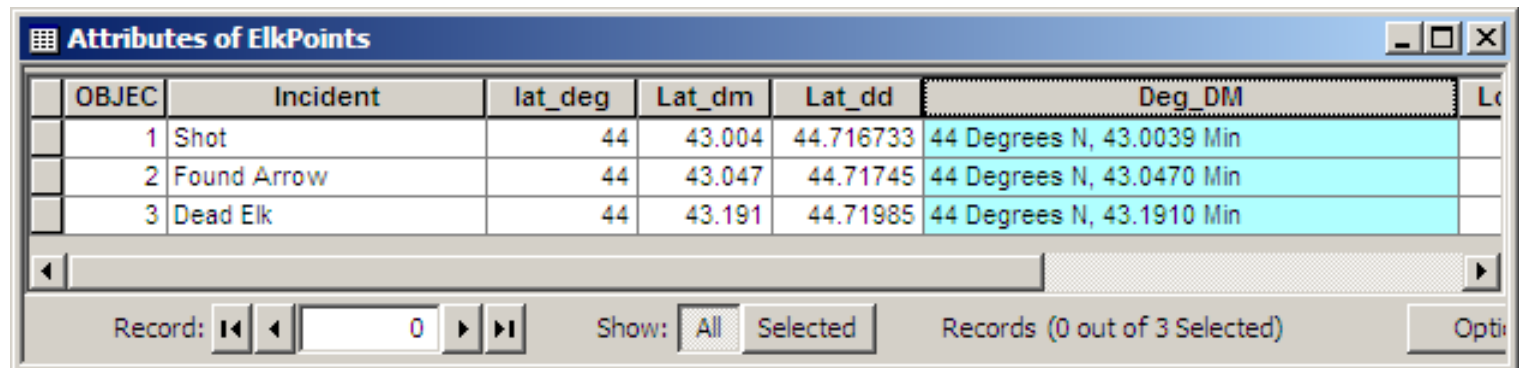
The 'Attributes of ElkPoints' table contains the following data:

OBJEC	Incident	lat_deg	Lat_dm	Lat_dd	Deg_DM
1	Shot	44	43.004	44.716733	44 Degrees N, 43.0039 Min
2	Found Arrow	44	43.047	44.71745	44 Degrees N, 43.0470 Min
3	Dead Elk	44	43.191	44.71985	44 Degrees N, 43.1910 Min

The 'Field Calculator' dialog also shows 'Type: Number' selected, and the 'Advanced' checkbox is unchecked.

Working with ArcGIS

Demonstration: Editing Attributes

OBJEC	Incident	lat_deg	Lat_dm	Lat_dd	Deg_DM	Lc
1	Shot	44	43.004	44.716733	44 Degrees N, 43.0039 Min	
2	Found Arrow	44	43.047	44.71745	44 Degrees N, 43.0470 Min	
3	Dead Elk	44	43.191	44.71985	44 Degrees N, 43.1910 Min	

Record: 0 Show: All Selected Records (0 out of 3 Selected) Opti