# **PROVEST** & Associates



## Box Elder County, UT

## Editing Parcel Fabric in ArcGIS Pro

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Images contained within are courtesy of Esri Last Updated: 11/3/2022



## Getting Familiar with the ArcGIS Pro Environment

The first step to learning about the Parcel Fabric in ArcGIS Pro is learn the software in which you'll be editing the data.

Let's start training with a couple exercises to get familiar with some basic concepts.

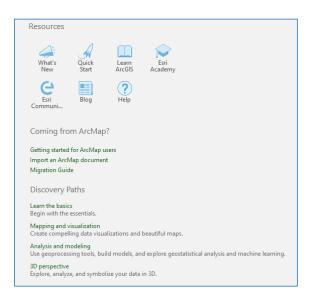
## **Project Start-Up**

## **EXERCISE:** Create a Project

• Open ArcGIS Pro

Arc <b>GIS</b> <sup>®</sup> Pro	
Open	New
Recent Projects	Blank Templates Recent Templates
C:\Data\FabricInPro\DEMO2020.aprx	Your recent templates will appear here.
	Catalog
	Global Scene
	Local Scene
	(you can save it later)

Review Resources



• Choose Start without a template option.



## Connect to Geodatabase

Let's add the **<u>file geodatabase</u>** for practice work.

• Navigate to the location of the file geodatabase that contains your practice data.

#### NOTE:

Practice data will be a file geodatabase and will use the Add Database option.

Catalog 🗸 🕂 🗙
Project Portal Favorites History
🛞 🛍 Search 👂 -
🖻 📷 Maps
Toolboxes
Databases
Pop <sup>1</sup> Add Database
▷ 😿 Styles 👌 New File <u>G</u> eodatabase
Tasks New Database Connection
Folders Rev Database Connection
Reviewer Results Connect to a database such as an enterprise
Reviewer Batch Jageodatabase. The new connection is added to the project. A new database connection file is created
Accators     In the project's home folder and is referenced by the project.
Press F1 for more help.

## Add Fabric to Map

To add the **practice parcel fabric** and its associated layers to a map . . .

- right-click the parcel fabric in the **Catalog** pane (blue icon in the list)
- click Add To New > Map.

*TIP:* You can also add the parcel fabric to a current map view or drag the parcel fabric into a map.

#### Note:

- You do NOT need to add all the parcel fabric associated layers to the map. When you add the parcel fabric to a map, associated layers are automatically added.
- Only one parcel fabric can be added to a map.
- Any non-fabric layers can be added after adding the fabric to the map.

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			4	PLSSQua	rter_Lines	
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			4	PLSSSixt	eenth_Lines	
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	100		data to	a new m	ap.	
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			r.	Rec 🗈	View Metadata	
			r.	Rec	Edit Metadata	
			₽ ₽	Rec Rec	Properties	
L				RecordH	asPlattedLotsLines	



To add **your live data**, you will likely be using a feature service connection and will use your organization Portal to access it. The steps are the same . . .

- right-click the parcel fabric in the Catalog pane (blue icon in the list)
- click Add To New > Map.

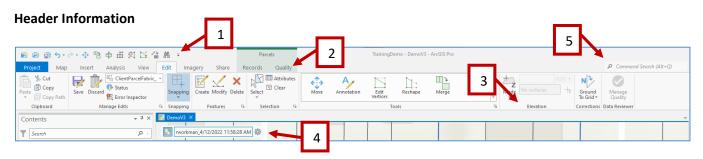
*TIP:* You can also add the parcel fabric to a current map view or drag the parcel fabric into a map.

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Image: Space of Fabric   Image: Space			🛋 Lot
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<ul> <li>Plat_Lines</li> <li>PLSS Quarter</li> <li>PLSS Quarter_Lines</li> <li>PLSS QuarterQuarter</li> <li>PLSS QuarterQuarter</li> <li>PLSS QuarterQuarter_Lines</li> <li>PLSS Section</li> <li>PLSS Section_Lines</li> </ul>			B) Plat
Image: Big State of the sector of			Plat_Lines
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B PLSS Section_Lines			PLSS QuarterQuarter_Lines
			PLSS Section
			PLSS Section_Lines
PLSS Township			PLSS Township
PLSS Township_Lines			🚱 PLSS Township_Lines
Points			Points
Plocks			Placks



## Map Overview

To reference the parts of the ribbon-based header, let's get familiar with the vocabulary.



- 1. Quick Access toolbar
- 2. Ribbons/Tabs
- 3. Groups/Modules
- 4. HUD Heads-Up Display
- 5. Command Search Bar

#### **Table of Contents**

Со	ntents	
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- List by Drawing Order
- List by Data Source
- List by Selection
- List by Editing
- List by Snapping
- List by Labeling



## **Setting Project Options**

The following sections describe the editing environment in ArcGIS Pro and the various options you can set for displaying and editing parcels.

#### **EXERCISE: Examine Options**

1. Project options – Units, General, Map & Scene, Navigation, Editing, Customizing the Ribbon

#### Units

Let's review what is currently set and examine what our other options are in the event we need to change them at any point.

This is also where we can add / remove values we may need to use along the way for editing our data.

Example: Distance units

- Chains
- Rods
- Links

Project Current Settings Units Tasks Application General	Set the units used in t ~ Distance Units Code	his project.					
Tasks Application							
Application	Code						
	Code						
		Name	Plural	Abbrev	Meters/Unit	Format	Default
General	Statute_Mile	Mile	Miles	mi ft	1609.344	12,345.12	•
	Foot			ftUS	0.3048		
Map and Scene	Foot_US	US Survey Foot				12,345.12	~
Navigation	Yard	Yard	Yards	yd	0.9144	12,345.12	
Selection	Kilometer	Kilometer	Kilometers	km	1000	12,345.12	
Editing	<pre>Meter <select code="" unit=""></select></pre>	Meter	Meters	m	1	12,345.12	
Geoprocessing	<select code="" unit=""></select>						
Share and Download							
Raster and Imagery	✓ Angular Units						
Display	Code	Name	Plural	Abbrev	Radians/Unit	Format	D
Lavout	Degrees Minutes Se	Degrees Minu	Degrees Minu	dms	0.0174532925	12.345.12	
CAD	Degree	Degree	Degrees	dd	0.0174532925	12.345.12	34123*
	Radian	Radian	Radians	ra	1	12 345.12	
Metadata	<select code="" unit=""></select>						
Indexing							
Location Referencing	Y Area Units						
Proofing	- Area onits						
Language	Code	Name	Plural	Abbrev	Meters/Unit	Format	Default
Customize the Ribbon	Square Statute Mile	Square Mile	Square Miles	saMi	2589988.110336	12,345,12	
Customize the Ribbon	Square_Statute_Mile Square Foot	Square Mile Square Foot	Square Miles Square Feet	sqMi sqFt	2589988.110336 0.09290304	12,345.12	•
	Square_Foot	Square Foot		sqFt		12,345.12	۲
Customize the Ribbon		Square Foot	Square Feet	sqFt	0.09290304	12,345.12	•
Customize the Ribbon	Square_Foot Square_Foot_US Square_Yard	Square Foot Square US Sur Square Yard	Square Feet US Square Feet Square Yards	sqFt sqFt sqVd	0.09290304 0.0929034116	12,345.12 12,345.12	•
Customize the Ribbon	Square_Foot Square_Foot_US	Square Foot Square US Sur Square Yard	Square Feet US Square Feet	sqFt sqFt sqVd	0.09290304 0.0929034116 0.83612736	12,345.12 12,345.12 12,345.12	<ul> <li>O</li> <li>O</li> <li>O</li> <li>O</li> </ul>
Customize the Ribbon	Square_Foot Square_Foot_US Square_Yard Square_Kilometer Square_Meter	Square Foot Square US Sur Square Yard Square Kilome	Square Feet US Square Feet Square Yards Square Kilome	sqFt sqFt sqVid sqKm	0.09290304 0.0929034116 0.83612736 1000000 1	12,345.12 12,345.12 12,345.12 12,345.12	
Customize the Ribbon	Square_Foot Square_Foot_US Square_Yard Square_Kilometer	Square Foot Square US Sur Square Yard Square Kilome Square Meter	Square Feet US Square Feet Square Yards Square Kilome Square Meters	sqFt sqFt sqTd sqKm sqM	0.09290304 0.0929034116 0.83612736 1000000 1	12,345.12 12,345.12 12,345.12 12,345.12 12,345.12	

#### General

Here, you can change the theme of your Pro to be either the light or dark look, change the default settings for new projects, and determine how you want Pro to start each time you open it.

Project Recovery – autosave backup after x minutes

Options		
Project	Set general options for ArcGIS Pro	
Current Settings		
Units	✓ Start ArcGIS Pro	
Tasks	Show the start page	
Application	<ul> <li>Without a project template</li> </ul>	
General	<ul> <li>With a default project</li> </ul>	
Map and Scene	Project	<b>a</b>
Navigation		
Selection	~ Create projects	
Editing	Project location	
Geoprocessing	New projects are saved in the default location	
Share and Download	New projects are saved in a custom location	
Raster and Imagery	Location	11 A
Display	Create a folder for the project	
Layout	Geodatabase	
CAD	New default geodatabase for each project	
Metadata	Same default geodatabase for all projects	
Indexing	Geodatabase	
Location Referencing	Toolbox	
Proofing	New default toolbox for each project	
Language	Same default toolbox for all projects	
Customize the Ribbon Quick Access Toolbar	Toolbox	<b>1</b>
QUICK ACCESS 1001081	> Help source	
	~ Application Theme	
	Light	
	Light	
	Dark	
	Learn more about general options	
		OK Cance
		Cancel



## Map & Scene

The most noted highlight here is the option to make newly added layers either visible or not by default.

Basemap option

Options	×
Project Current Settings	Set default options for new maps and scenes
Units Tasks Application	Vasemap     Basemap of your organization
General	Custom Basemap     None
Map and Scene Navigation Selection Editing Geoprocessing Share and Download Raster and Imagery Display Layout CAD	Add Layer     Make newly added layers visible by default     Spatial Reference     Uue spatial reference of first operational layer     Choose spatial reference     Select the Coordinate System to view the available options.     Current XY     Current Z
Metadata Indexing Location Referencing Proofing Language Customize the Ribbon Quick Access Toolbar	XY Coordinate Systems Available     Search     P     T     Fororite     Geographic coordinate system     Projected coordinate system     Vum if transformation between geographic coordinate system     correctly.     Ground Elevation Surface
	Ground Elevation Surface  Learn more about map and scene options  QK  Cancel

## Navigation

Ah, the scrolly wheel conundrum! Which way do you like your mouse to work . . . if you roll forward, are you zooming in to the data or zooming out?

Options	
Project	
Current Settings	Set options for navigating maps and scenes.
Units	Mouse wheel roll forward
Tasks	Zooms in
Application	O Zooms out
General	Transition time
Map and Scene	0.0 🗘
Navigation	0 seconds 10 seconds
Selection	✓ Enable panning gestures
Editing	Follow terrain during roam
Geoprocessing	Show distance to cursor
Share and Download	> On Screen Navigator
Raster and Imagery	- on secon nangator
Display	
Layout	
CAD	
Metadata	
Indexing	
Location Referencing	
Proofing	
Language	
Customize the Ribbon	
Quick Access Toolbar	
	Learn more about navigation options
	OK Cancel



## Editing

Several items require some deeper looks in the Editing options.

- Dynamic Constraints
- Double Click shortcut
- Editing toolbar placement
- Auto save
- Confirm save and discard edits
- Uncommitted edits behavior
- Dialog to confirm deleting data

Project Current Settings	Set options for editing and versioning
Units	✓ General
Tasks	Show dynamic constraints in the map
Application	Default direction constraint:
General	O Deflection (
Map and Scene	Default constraint for input mode:
Navigation	Direction      Distance
Selection	Enable double-click as a shortcut for the Finish button
Editing	Touch screen input for new features
Geoprocessing	
Share and Download	✓ Show feature symbology in the sketch
Raster and Imagery	Show the editing toolbar on the map
Display	Position 🔾 Left 🛞 Bottom 🔾 Right
Layout	Size 🔿 Small 🛞 Medium 🔿 Large
CAD	Magnify Toolbar
Metadata	Warn on subtype change
Indexing	Initialize default values on subtype change
Location Referencing	✓ Session
Proofing	* Session
Language	Automatically save edits
Customize the Ribbon	Time interval (minutes) 10
Quick Access Toolbar	Number of operations
	Save edits when saving project
	Show dialog to confirm save edits
	Show dialog to confirm discard edits
	Deactivate an active editing tool when saving or discarding
	All Make newly added layers editable by default
	✓ Versioning
	Learn more about options for saving edits

## Customize the Ribbon

Everyone likes to make it their own, so here is the place you can do just that . . . what is available where. Take a look and explore a bit.

Project Current Settings	Customize the Ribbon.			
Units				
Tasks	Choose commands from			
	List of Tabs	*		
Application	MAIN TABS	A	MAIN TABS	
General	Catalog		▷ Catalog	
Map and Scene	Metadata		Metadata	
Navigation	Network Diagram		Network Diagram	
Selection	▷ Insert		▷ Insert	
Editing	Analysis		Analysis	
Geoprocessing	▷ View		▷ View	
Share and Download	Fields		▷ Fields	
Raster and Imagery	Subtypes		Subtypes	
Display	Domains	Add	Domains	
	Versions		Versions	
Layout	Attribute Rules	🔶 Remove	Attribute Rules	
CAD	Contingent Values		Contingent Values	
Metadata	Georeference		Georeference	
Indexing	Georeference		Georeference	
Location Referencing	Georeference		Georeference	
Proofing	Pixel Editor		Pixel Editor	
Language	Pixel Editor		Pixel Editor	
Customize the Ribbon	Pixel Editor		Pixel Editor	
Quick Access Toolbar	<ul> <li>Manage Quality</li> <li>Map</li> </ul>		<ul> <li>Manage Quality</li> <li>Map</li> </ul>	
	<ul> <li>Stereo Map</li> <li>Insert</li> </ul>		<ul> <li>Stereo Map</li> <li>Insert</li> </ul>	
	<ul> <li>Insert</li> </ul>		v insert	
	Accelerator		New Tab New Group Rename	
	Assign	*		
			Customizations Reset -	
			Import/Export •	
	Show command IDs on ScreenTips	0		
	Learn more about customizing the ribb	ion		

## The Parcel Fabric

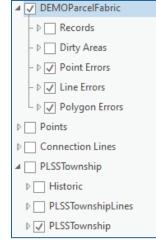
## Parcel Fabric Concept

A parcel fabric is a 'continuous surface' of parcels – picture it as a geometric network of parcels. It is a seamless network of connected parcel boundaries because every parcel is either linked or connected to other parcels or control.

Parcel Fabric in ArcGIS Pro introduced the concept that the parcel fabric is the controller dataset that controls simple feature classes and a geodatabase topology.

The parcel fabric is created as a controller dataset that manages the following feature classes and topology:

- Records feature class
- Geodatabase topology
- Points feature class
- Connection lines feature class
- Parcel type feature classes
  - Polygon feature class
  - o Line feature class
  - Historic group layer



## Parcel Editing Dataset

A Parcel Fabric MUST be located within a feature dataset.

For clarity, Pro-West often uses the LGIM dataset name of "ParcelEditing" to ensure everyone knows exactly for what purpose that dataset is used.

In ArcGIS Pro, when a parcel fabric is created or upgraded, several items are automatically created:

- The Parcel Fabric itself the blue icon
- Connection lines
- Points
- Records
- Topology
- Relationship Classes (not visible in Contents)
- Validation feature classes/table in the root GDB

ParcelEditing
 GDB\_ValidationLineErrors
 GDB\_ValidationObjectErrors
 GDB\_ValidationPointErrors

- GDB\_ValidationPolygonErrors
  - \_.....

Catalog

Search
4 1 ParcelEditing

Project Portal Favorites History

Construction
 ConstructionPoints
 Discrepancy\_Points

Encumbrance
 Encumbrance\_Lines
 HistoricPlats
 LotAnno

A ParcelAnno

PlattedBlocks
 PlattedBlocks\_Lines
 PlattedLots
 PlattedLots\_Lines

PLSSQuarter

PLSSQuarter\_Lines
 PLSSSection
 PLSSSection\_Lines
 PLSSSection\_Lines
 PLSSSixteenth

PLSSSixteenth\_Lines

PLSSTownship\_Lines
 PopeMNParcelFabric

PopeMNParcelFabric\_Conne

PopeMNParcelFabric\_Points

PopeMNParcelFabric Records

HI PopeMNParcelFabric\_Topology

RecordHasPlattedBlocks

Let's dive in!



#### Fields

The attribute fields are configurable based on the needs of the client, the attributes in the current client data, and any recommendations made by Pro-West.

- Fields in the data can be added, removed, or edited within the Catalog pane as desired.
- Fields from one feature class can also be copied and pasted into another feature class.
- It is NOT recommended to edit or remove default Parcel Fabric fields as those are set up for a variety of purposes.
  - If you wish not to see all the fields when working in ArcGIS Pro, you have the ability to hide them in the Design > Fields view using the "Visible" column of checkboxes.

#### **EXERCISE: Explore Fields**

- Add a new field manually and test Copy/Paste from another feature class
  - Set Visibility
  - Set Highlighting
- Examples:
  - Doc # field,
  - $\circ$  Doc Type field,
  - o Comments,
  - o alt PIN field,

Cur	rrent Layer	TaxParce		*							
4	✓ Visible	Read Only	Field Name	Alias	Data Type	Allow NULL	Highlight	Number Format	Domain	Default	Lengt
		1	OBJECTID	OBJECTID	Object ID			Jumeric			
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	$\checkmark$		Name	Name	Text	$\checkmark$					25
	$\checkmark$		ParcelSubtype	Parcel Subtype	Long	$\checkmark$		Numeric			
	$\checkmark$		CreatedByRecord	Created By Record	Guid	$\checkmark$					
	$\checkmark$		RetiredByRecord	Retired By Record	Guid	$\checkmark$					
	$\checkmark$		StatedArea	Stated Area	Double	$\checkmark$		Numeric			
	$\checkmark$		StatedAreaUnit	Stated Area Unit	Long	$\checkmark$		Numeric	PF_AreaUnits		
	$\checkmark$		CalculatedArea	Calculated Area	Double	$\checkmark$		Numeric			
	$\checkmark$		MiscloseRatio	Misclose Ratio	Double	$\checkmark$		Numeric			
	$\checkmark$		MiscloseDistance	Misclose Distance	Double	$\checkmark$		Numeric			
	$\checkmark$	$\checkmark$	created_user	Created By	Text	1					2
	$\checkmark$	$\checkmark$	create_date	Created Date	Date	$\checkmark$					
	$\checkmark$	$\checkmark$	last_edited_user	Modified By	Text	1					2
	$\checkmark$	$\checkmark$	last_edited_date	Modified Date	Date	~					
	$\checkmark$	$\checkmark$	Shape_Length	Shape_Length	Double	1		Numeric			
	$\checkmark$	$\checkmark$	Shape_Area	Shape_Area	Double	~		Numeric			
	$\checkmark$	$\checkmark$	GlobalID	GlobalID	Global ID						
ľ	J		IsSeed	Is Seed	Long	~		Numeric	PF_YesNo	No	



## Domains

When a parcel fabric is created in ArcGIS Pro, the following domains are added to the geodatabase:

Parcel fabric domain	Name	Description
PF_AdjustmentConstraint		<ul> <li>Whether points should move in an LSA (are the control points or not?)</li> <li>XY free, Z constrained (regular parcel point)</li> <li>XYZ constrained (control point that won't move in an LSA)</li> </ul>
IPF AreaUnits	Parcel Fabric Area Units	The units used for stated area. Examples include: Acre Square Foot
PF_COGOType	Parcel Fabric COGO Type	<ul> <li>The COGO dimensions type.</li> <li>From Measurements / Entered if the dimensions match the measurements on the record.</li> <li>From Geometry if the dimensions are generated from the line geometry.</li> <li>Computed if the dimensions are derived from other dimensions, for example, parcel merge.</li> </ul>
IPE LabelPosition		Indicates if the label position is to the left or right of the parcel line or is centered over the parcel line
PF_YesNo	Parcel Fabric Yes No	True or false. 0=No, 1=Yes

Client domains can be added and configured as well to accommodate their needs. The final list of domains can be found in the Data Dictionary.

#### **UPGRADE TIP:**

If the data is upgraded from an existing ArcMap parcel fabric, any domains in use will be transferred to the ArcGIS Pro parcel fabric and applied.

Domains in the geodatabase can be added, removed, or edited to work with your data as desired. It is NOT recommended to remove default Parcel Fabric domains as those are used for a variety of purposes. It is also NOT recommended to remove any domain values from a default domain. If you wish, you may add values to an existing domain to fit your specific needs.

### **EXERCISE: Explore Domains**

- Create a domain apply to a field (ex: Doc Type)
- Copy/Paste a domain
- Add/delete values from a domain (example: CSM)



## Layer Properties

Double click any of the items in the Table of Contents and the Layer Properties for that item will be shown. There are many tabs that have options to alter the behavior and appearance of the item.

#### General Tab: Name & Scale

The first tab, General, is where you can change the name of the item as it will appear in the TOC.

Additionally, the General tab is where the control is set for the scale at which the layer is visible. This is very helpful when dealing with datasets with varying sizes and properties.

General	Name
Metadata	TaxParcel
Source Elevation Selection Display Cache Definition Query Time	Visibility range Do not show layer when zoomed In beyond (maximum scale) < <u>(None&gt;</u> * Out beyond (minimum scale) < <u>(None&gt;</u> *
Range Indexes Joins Relates Page Query	Layer should be refreshed periodically

#### **Definition Query Tab**

**The Definition Query tab** allows for only very specific data to be visible from the overall source layer. The query can be created with the 'New definition query...' button or by editing the existing query.

Layer Properties: Taxl	Parcel ×
General Metadata Source	Definition Queries + New definition query •
Elevation Selection Display	SQL
Cache Definition Query Time Range	And * OBJECTID * is equal tx * * * *
Indexes Joins Relates Page Query	1 Queries Active definition query: Query 1 🗐
	QK Cancel

#### Joins & Relates Tabs

Note the relationships in which each feature class participates.

neral •tadata	Relate : Reo	ordHasTaxParcel	 
ource	Cardinality	One to many	
vation	Primary key	GlobalID	
ction	Foreign key	CreatedByRecord	
lay	Relations	ship class : TaxParcel	
ie			
tion Query			
s			
Query			

130

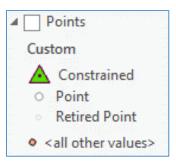


## What is the Points feature class?

<u>Points</u> represent parcel corners, end points of connection lines, and stand-alone cadastral reference features such as control points.

#### **UPGRADE TIP:**

Upon an upgrade from an existing ArcMap parcel fabric, any Control Points are migrated to the Points feature class and are attributed in the **Is Fixed** field as "Yes". All other fabric points are migrated to the Points feature class with **Is Fixed** as "No".



Attribute field alias	Data type	Description					
Name	Text	Name of the point or control point.					
Created By Record	Guid	Global ID of the record that created this point.					
Retired By Record	Guid	Global ID of the record that retired this point. The point becomes historic if all adjacent parcels are historic.					
Is Fixed Long		Indicates whether the point is a parcel point or a control point. Fixed points have coordinates that cannot be changed. The field uses the system-added PF_YesNo domain.					
Adjustment Constraint Long		Used in LSA to determine the amount of influence the point can have. A system-added domain indicates if XYZ are fully constrained or if XY are free					
Preserve Long		Used in LSA to determine whether the point can move (not control) or stay where it is at (control).					
Ellipse Major	Double	Feedback mechanism					
Ellipse Minor	Double	Feedback mechanism					
Ellipse Direction	Double	Feedback mechanism					
х	Double	X-coordinate of the point.					
Y	Double	Y-coordinate of the point.					
Z	Double	Z-coordinate of the point.					
XY Accuracy	Double	Horizontal positional accuracy.					
Z Accuracy	Double	Vertical accuracy.					
XY Uncertainty	Double						
GlobalID	Global ID	Global ID of the point. <u>Global IDs</u> uniquely identify features in a geodatabase.					

The Points class is enabled with editor tracking and has the following system-added attribute fields:

## **EXERCISE: Explore Control**

• Create a new control point



## What are Connection Lines?

<u>Connection lines</u> are used to define measurements between points that are not parcel boundaries.

For example, connection lines are lines that connect parcel points across roads or lines that connect parcel points to control points.

Connection lines can be used for a variety of reasons:

- To label ROW width (as shown)
- To see Origin to POB traverse
- To represent centerline or other line features that will not have a polygon in the parcel fabric

The Connection Lines feature class is a <u>COGO-enabled</u> lines feature class and is enabled with editor tracking.

#### **UPGRADE TIP:**

If the ArcGIS Pro parcel fabric data was upgraded from an existing ArcMap parcel fabric, certain features were added to the Connection Lines feature class.

- Connection lines
- Precise Connection lines

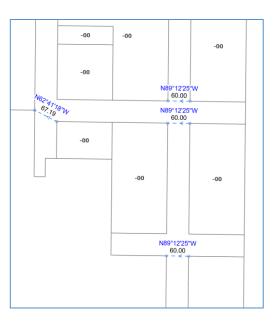
- Origin to POB lines
- Unclosed parcels

Since lines in an ArcMap parcel fabric are associated with Plans, when upgraded to ArcGIS Pro, the **Created By Record** field of the Connection Lines feature class is populated with the Global ID of the transferred associated Record.

Consider adding a new field and creating a new domain – both 'ConnectionType' – if knowing which lines are which type of connection is important.

### **EXERCISE: Explore Connection Lines**

- Create a connection line to generate a label.
- What other scenarios could you use this?





## What are Parcel Type feature classes?

Parcels are added to the parcel fabric as parcel types.

A parcel type is defined by a polygon and a line feature class. Both the parcel polygons and the lines are associated with the legal record that created them.

Parcel types can have different schemas (attribute fields and related tables) and can participate in different geodatabase topology rules and attribute rules.

Examples of parcel types are Tax parcels and Subdivision parcels.

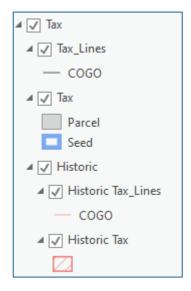
**<u>UPGRADE TIP</u>**: When an existing fabric is upgraded, the IrParcelType domain is used to generate the Parcel Types in ArcGIS Pro.

- If there are features for a value, then a Parcel Type is created.
- If there are no features for a value, then it is not created.

#### Parcel polygon feature class

The parcel polygon feature class is enabled with editor tracking and has the following systemadded attribute fields:

Attribute field alias	Data type	Description
Name	Text	Parcel name or identification number (PIN).
Parcel Subtype	Long	Used for adding subtypes. Use the <u>Add Subtype</u> geoprocessing tool to add a subtype.
Created By Record	Guid	Global ID of the <u>record</u> that created this parcel.
Retired By Record	Guid	Global ID of the <u>record</u> that retired this parcel. The parcel is historic.
Stated Area	Double	Area stated on the legal record.
Stated Area Unit	Long	Units of the area stated on the legal record. The field uses the system-added PF_ArealUnits domain.
Calculated Area	Double	Area of the polygon shape.
Misclose Ratio	Double	Ratio of the parcel's misclose distance to the parcel perimeter.
Misclose Distance	Double	Distance between the start point and end point of the parcel traverse.
Global ID	Global ID	Global ID of the parcel polygon. <u>Global IDs</u> uniquely identify features in a geodatabase.
ls Seed	Long	Indicates whether the parcel is a seed parcel. The field uses the system-added PF_YesNo domain.
Validation Status	Short	Reports whether the feature has been validated or not and if there are errors associated with previous validations





#### Parcel <u>line</u> feature class

The parcel line feature class is a <u>COGO-enabled</u> feature class, is enabled with editor tracking, and has the following system-added attribute fields:

Attribute field alias	Data type	Description
Created By Record	Guid	Global ID of the <u>record</u> that created this parcel line.
Retired By Record	Guid	Global ID of the <u>record</u> that retired this parcel line. The line is historic.
Direction (COGO-enabled field) Double		The direction (bearing) of the line from its start point to its endpoint.
Distance (COGO-enabled field)	Double	The distance between the start and endpoint of the line.
Radius (COGO-enabled field)	Double	The distance between the curved line and the curve center point.
Arc Length (COGO-enabled field)	Double	The arc distance between the start and endpoint of the curved line.
Radius2 (COGO-enabled field)	Double	Stores a curve parameter for spiral curves.
COGO Type	Long	The COGO dimensions type. Dimensions can be derived from geometry, computed, or entered from measurements on the record. The field uses the system-added PF_COGOTYPE domain.
ls COGO Ground	Long	Indicates whether the COGO dimensions are on the ground or on the grid. The field uses the system-added PF_YesNo domain.
COGO Accuracy	Long	Indicates the accuracy of the dimensions of the line. The field uses the system-added PF_COGOAccuracy domain.
Rotation	Double	Angle the line is rotated to fit to the parcel fabric.
Scale	Double	Amount the line is scaled to fit to the parcel fabric.
Parent Line ID	Guid	Global ID of the parent line that was split to create this line.
Direction Accuracy	Double	Based on the survey, the direction accuracy of the value in the COGO direction field. The default value is 30 seconds indicating that the direction is accurate up to 30 seconds.
Distance Accuracy	Double	Based on the survey, the distance accuracy of the value in the COGO distance field. The default value is 0.5 ft indicating that the distance is accurate up to half a foot.
Label Position	Long	Position of the line that the label will appear. This field uses the PF_LabelPosition system-added domain.
Validation Status	Short	Reports whether the feature has been validated or not and if there are errors associated with previous validations
GlobalID	Global ID	Global ID of the parcel line. <u>Global IDs</u> uniquely identify features in a geodatabase.



#### **Historic Group Layer**

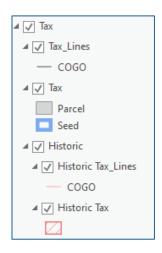
For many organizations, the ability to automatically maintain and archive parcel history is a primary reason for the migration to the parcel fabric. The history of the parcel is as much a part of the legal record as new survey information.

#### Historic parcels

The parcel fabric tracks parcel history with both Record date (date on record of survey) and system date (date parcel changes were entered into the database).

When an existing parcel is replaced by parcels created in a new Record, the existing parcel and its lines become historic and the active Record is coded into the RetiredByRecord field.

In showing the historic features in a map, the feature is controlled by the definition query:



Layer Properties: Hist	oric TaxParcel	×
General Metadata	Definition Queries	+ New definition query -
Source	Query 1	
Elevation	RetiredByRecord IS NOT NULL	Edit
Selection		
Display		
Cache		
Definition Query		
Time		
Range		

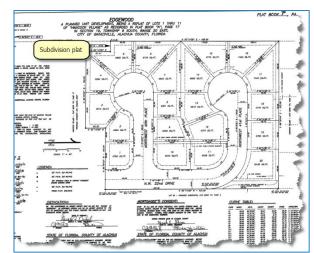
## **EXERCISE:** Explore your parcel types



## What are Records?

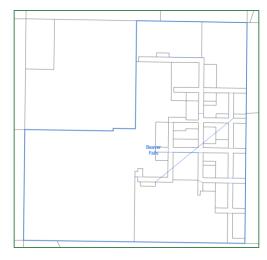
The parcel fabric organizes parcel data based on the original recorded data, typically plans, plats, or records of survey. Plans, plats, or records of survey are **legal documents** used by surveyors and engineers to describe and map the findings of their fieldwork.

Parcels are created and edited in response to changes in the legal record. Changes in the legal record are typically reflected in the submission of a new record of survey.



The **<u>Records</u>** feature class stores manually entered information about the legal parcel record such as the record date and record type.

A single polygon feature with a unique record name is stored for every legal record added to the parcel fabric. The record spatial feature is a polygon feature that automatically matches the cumulative geometry of all the parcels associated with it.



The **<u>Records</u>** feature class is a polygon feature class that stores the following information:

- A single record feature for every legal record added to the parcel fabric.
- A GlobalID for every record, which is referenced by all the parcel features associated with the record. The Created By Record field of the parcel features stores the GlobalID of the associated parcel record.
- The geometry of the record, which is the record footprint. The record footprint or polygon matches the cumulative geometry of all the parcels associated with it.
- Unique record names that allow for integration and association with external recording systems.

In addition to a drawing of the survey measurements, Records contain other information that can be added as attribute fields withing the Records feature class such as the following:

- Legal description of the surveyed area
- Easement and right-of-way description



- Type of document
- Landownership information
- Approval statements
- Name of the surveyor
- Legal date the plan was recorded
- Survey date
- Plan units

#### **UPGRADE TIP:**

If the data was upgraded from an existing ArcMap parcel fabric, the Plans table is migrated into the Records feature class and is given the spatial area of the parcels associated with the original Plan. All Plans table attribute fields are migrated to the Records feature class as well.

Attribute field alias	Data type	Description
Name	Text	Name of record, plan, deed, or other legal document. The name must be unique.
Record Type	Long	Stores the user-defined type of the record, for example, a plan or deed. Add your own record type domain to this field.
Recorded Date	Date	The date the legal record was recorded. This is typically stated on the record document.
Parcel Count	Long	The number of parcels currently assigned to a record
Retired Parcel Count	Long	The number of parcels currently retired by a record
GlobalID	Global ID	GlobalID of the record. <u>Global IDs</u> uniquely identify features in a geodatabase. Parcel features are associated with records by referencing the record GlobalIDs in their attribute fields.

The following are the system-added attribute fields by default:

## **EXERCISE:** Explore Records

- Can you add any other fields to the Records that you might want to reference?
  - Examples might be: Surveyor, Survey Company, Document number, etc.
- Do we need to add a Record Type domain?



## Record-driven vs. Quality-driven Workflows

In addition to the structural parcel fabric features, the parcel fabric was designed with both **Record-driven** and **Quality-driven** workflows in mind. These two themes are the systems that dictate and manage the behavior of the Parcel Fabric.

#### **Record-driven Workflows**

What do we mean when we say the Parcel Fabric is a Record-driven system?

The Parcel Fabric demands the inclusion of Records for many of the functions and tools. It was designed that way to mirror the legal record system. Records in the Parcel Fabric are representing your legal records within your parcel management system. History is also tracked within the Parcel Fabric through Records in the form of Historic Parcels.

Legal records should be a unique document such as:

- Deed
- Plat
- Plan
- Survey record

Legal documents are what drive changes in your parcels and in your Parcel Fabric. Some examples of those changes that translate into workflows withing the Parcel Fabric are:

- Splits
- Merges
- New Subdivisions

#### **Quality-driven Workflows**

What do we mean when we say the Parcel Fabric is a **Quality-driven** system?

Quality-driven workflows do not require a Record to be executed. Within the Parcel Fabric, quality is managed through several components. Some of those components are:

- Topology
- Attribute Rules
- Consistency Checks
- Weighted Least Squares Adjustments (LSAs)
- Versioning



## The Editing Environment

## **Editing Ribbon**

Project Map	Insert Analysis View E	dit Im	agery Share	Records	Quality										P Comman	d Search (Alt+Q)
Paste	Save Discard Corrollar Cor	H Snapping	Create Modify De	lete Select		<b>↔</b> Move	Annotation	Edit Vertices	Reshape	Merge	Split	4 + +	Mode No surfaces	Ground To Grid +	Manage Quality	
Clipboard	Manage Edits 🖙	Snapping	Features	Selection	n G			Т	ols			5	Elevation	Correction	Data Reviewer	

## Manage Edits Group

#### Save / Discard:

An edit session is automatically started when you modify or create data. The edit session stops when you save or discard your edits.

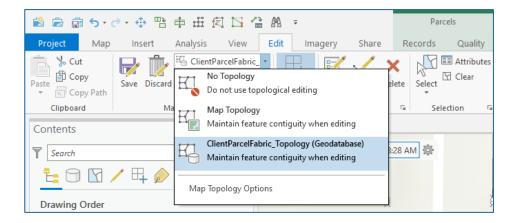
- To save your edits, click **Save** 😾 on the **Edit** or **Records** ribbon.
- The edit session resumes when you make subsequent edits until you save or discard those edits.

#### Topology

Data editing can use any tool, but how those features **<u>behave</u>** is based on the type of topology set forth on the Edit ribbon. Topology is the concept of keeping features in alignment with the use of rules. ArcGIS Pro has 3 options:

#### No Topology

When this option is selected, there is nothing controlling the behavior of the data – no rubberbanding to hold things together. All features are free to move as you wish. This is an option to use **SPARINGLY** when there is something very specific that needs to be completed.



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#### Map Topology

Map topology can be used to maintain coincidence with all <u>visible</u> adjacent features. Features that are not visible while edits are being made will not be automatically maintained. The Align Edge tool employs Map topology when completing that task.

#### Parcel Fabric Topology

Topological integrity between parcel features is maintained using parcel fabric topology, which is automatically turned on when a parcel fabric layer is added to the map. Parcel fabric topology automatically maintains coincidence with all adjacent features when individual parcel features are edited.

## **EXERCISE:** Explore topology

• Try the various options with moving items around. Note the rubber-banding.

#### **Review Editing Status**

Parcel fabric layers have different <u>editable states</u> depending on the database in which they reside and the database connection. With your parcel fabric layers added to the map, click **List By Editing** in the **Contents** pane to view the layer editing states.

Parcel fabric layers can have the following editable states:

- Editable
- Editable with warnings
  - when the map is in a different projection from that of the parcel fabric layers
  - when the parcel fabric layer is being edited on the default version (edits cannot be undone).
- Not editable 🖖
  - they were added directly to the map from an enterprise geodatabase connection
  - if they're connected to a traditional-versioned geodatabase and published as a feature service.

Hover over the edit state icons next to the layers to see a description of the error or warning.

You can also click **Status** in the **Manage Edits** group on the **Edit** ribbon to view the editing states of layers in different maps in the project.



## Snapping

#### **Enable snapping**

😫 🖻 🗟 5 •	e • 💠 🕆 🗄	R I A A	Ŧ		Parc	els
Project Map	Insert Analys	is View Edit	Imagery	Share	Records	Quality
Paste Cut Copy Copy Copy Path	Save Discard	entParcelFabric_  tus or Inspector	napping Crea	te Modify Del	л <sup>1</sup> -2 Г	∃ Attributes ♂ Clear
Clipboard	Manage E	lits 🗔 Si	napping	Features	Sele	ction 🗔

To enable snapping, do the following:

- 1. Click **Snapping**  $\square_{+}$  in the **Snapping** group on the **Edit** ribbon.
- 2. Click the **Snapping** drop-down arrow to enable or disable snap agents such as **Point** ○, **Endpoint** ⊞, and **Edge** □.

#### Tip:

**Snapping**  $\square_+$  is also available on the status bar located at the bottom of an active map.

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EXERCISE: Explore the snapping options and practice a snap or two



## **Create Features**

Creating new features can happen in a number of ways – Tasks, new parcel tool, join from CAD, etc. In addition, feature templates are utilized in the parcel fabric just as they would be in typical geodatabases.

#### What are Feature Templates?

Feature templates can help maximize editing efficiency and minimize attribution error. For example, when creating parcels, you might use templates on your lines sublayer that set different accuracy and category values for different line types that you have defined. Any additional attributes that you add to fabric tables can also be automatically populated with specific values through a feature template.

Features are created via feature templates which define all the information required to create a feature:

- the layer where a feature will be stored,
- the attributes a feature is created with, and
- the default tool used to create that feature.

Templates are automatically created for each layer in the current editing workspace.

#### To Access the Feature Template:

- Navigate to the Create Features pane to see the list of visible feature types.
- Click on one of the layers listed to see the current template features tools associated to the template are shown.
- Click the blue arrow on the right side to see more information regarding the active feature template.

Create Features	<del>*</del> ↓ ×
Search	
Templates Favorites	
1 Click here to see templates not listed.	×
✓ TaxParcel : TaxParcel	
■ Parcel	Þ
Seed	

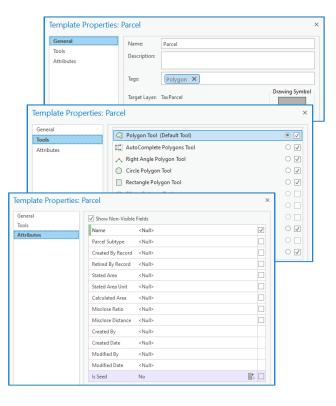
Here, you can enter attribute values for the current feature to be created.



• To modify the template, click the stack tool (Active Template Options) in the upper right corner, and choose Properties.

Here, you can change the name of the template, add a description, Select the tools to be associated with template, and set which attribute fields will prompt for an attribute value.

Create Features	· · · · · · · · · · · · · · · · · · ·	ųΧ	
$(\in$	Active Template	Ξ	
■ Parcel			
Enter attributes for fe	atures you are about to create.		
Name	<null></null>		
Parcel Subtype	<null></null>		
Created By Record	<null></null>		
Retired By Record	<null></null>		
Stated Area	<null></null>		
Stated Area Unit	<null></null>		
Calculated Area	<null></null>		
Misclose Ratio	<null></null>		
Misclose Distance	<null></null>		
Is Seed	No	<b>1</b>	



## **EXERCISE: Explore & Edit feature templates**

## Ground to Grid

The <u>Ground to Grid</u> tool corrects for distance and direction measurement differences between ground/field measurements and the grid measurements in your map defined by a coordinate system. The tool does this by interactively applying an offset angle for the direction and a multiplication factor for the distance.

To set the distance and direction factors, choose one of three options:

- 1. Type in both the ground direction and distance corrections if you know them.
- 2. Type in the ground direction and distance and draw the grid line in the map.
- 3. Draw both the ground line and the grid line.

## **EXERCISE: Set Ground to Grid Corrections**

Ground To Grid -	Manage Quality				
Corrections					
N Gro	ound to Grid Co	rrections are Off			
✓ Direc	✓ Direction Offset: 0-21-39 dms ▼				
🗸 Dista	✓ Distance Factor:				
Cor	Constant scale				
⊖ Cor	○ Compute from elevation mode				
Interactive Correction Change					
Enter the ground line and draw the grid line					
- <u>-</u>	Draw the ground line and the grid line				





## **Records Ribbon**

Project	Map Insert Analysis View	v Edit Imagery Sh	hare Records	Quality					👂 Command Sea
Save Discard	Show All	Select Features		lerge Clip	Divide	Duplicate Parcels	Set Historic	Set Current T Current Copy Create Build Modify Lines To Seeds * X Delete	/ Show Switch Align
Manage Edits	Records	Selection G			Tools			Construct	Alignment

## Work with the Manage Records pane

Parcel fabric records are created and managed using the **Manage Records** pane. To open the **Manage Records** pane, do one of the following:

- click the New drop-down arrow in the Records group on the Parcels ribbon and click Manage.
- Click the settings icon in the heads-up display and click Manage Records

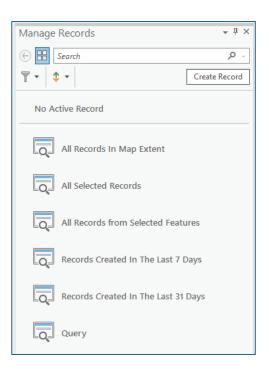


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When the **Manage Records** pane is first opened, search query options are displayed for searching for parcel records. If there is an active record in the map, it is displayed in bold in the upper portion of the pane.

You can do the following in the **Manage Records** pane:

- Create a parcel record.
- Search for parcel records.
- View and edit parcel record properties.
- Set a parcel record as active.
- Assign a parcel record to a selection of parcel features.
- Open the Records attribute table.
- Delete records.





## Record polygons

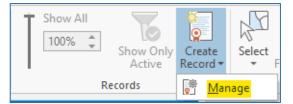
Each parcel record has a Record polygon. The Record polygon is the footprint of the legal record and should match the cumulative geometry of all the parcels associated with it.

When a parcel record is first created, it has no geometry. Record polygons are generated when parcels are created and associated with the active record or when existing parcel features are <u>manually assigned to a parcel record</u>. The Record polygon is updated whenever parcels are added to or removed from the record.

Let's work through some scenarios and see the results . . .

#### **EXERCISE: Creating a new Record**

Parcel records are created and managed in the Manage Records pane. To open the Manage Records pane, click the Create Record in dropdown arrow in the Records group on the Parcels ribbon and click Manage.



When you create a record, you can populate fields in the Records feature class with information about the legal document. The following table lists the system fields in the Records feature class:

1. Click **Create Record** in the **Records** group on the **Parcels** ribbon.

Alternatively open the Manage Records pane and click Create Record.

2. In the **Manage Records** pane, type a name for the record or accept the default name.

The name should represent the legal record name, for example, Heritage Estates Subdivision.

Create Record	
Name	Heritage Estates Subdivision
Record Type	New Subdivision
Recorded Date	6/1/2021 12:00:00 AM

3. Choose a record type for the **Record Type** field.

If you want to store and assign record types, create your own record type <u>domain</u> for your parcel fabric. Examples of record types are merge or split. Once the domain is created, open the Records attribute table and assign the domain to the **Record Type** field.



Tip:

You can open the Records attribute table from the Records sublayer under the parcel fabric layer in the **Contents** pane. Right-click the Records sublayer and click **Attribute Table**. You can also add new attribute fields to the Records attribute table, and they will appear under **New Record** in the **Manage Records** pane.

4. Populate the remaining fields with information about your record and click **Create** to create the record.

The newly created record is automatically set as the active record in the map.

The record's heads-up-display (HUD) box in the upper left corner of the map view displays the active record.



New parcel features will automatically be associated with the active record in the map.

Question: Does your new Record have a Record Polygon? Why or why not?

### **EXERCISE:** Search for parcel fabric records

Search for parcel records by clicking one of the following automatic queries:

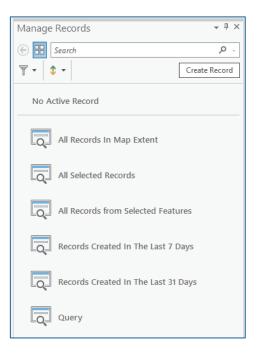
- All Records In Map Extent
- All Selected Records
- All Records from Selected Features
- Records Created In The Last 7 Days
- Records Created In The Last 31 Days

To create a custom search query, click the **Query** search option and click **Add Clause** on the **Query** dialog box.

To clear the results of a search query, click **Delete**  $\times$  next to the search text in the records text box. Click the back button  $\bigcirc$  to return to the list of search options.

Manage Records	≁ Å ×
🕞 🔠 [Query]	×
▼ - \$ -	Create Record

Question: What information do you see about a record?





## **EXERCISE: View & Edit record properties**

Use one of the searches to find a preexisting record. Select the record to view the properties of that record.

Review the tools in the Properties of the selected record.

Determine what attributes you can or cannot edit.

#### Questions:

- What can't you edit?
- Do you feel you would benefit by adding attributes to the Records?

### **EXERCISE: Set the active parcel record**

When a <u>parcel record</u> is created, it is automatically set as the active record in the map. A different record can be set as active in the **Manage Records** pane.

- 1. Click the **New** drop-down arrow **b** in the **Records** group on the **Parcels** ribbon and click **Manage**.
- 2. In the **Manage Records** pane, use a search query to search for the record you want to set as active. Select the record from the results list and click **Set Active Record** in next to the record name.

The active record is displayed in bold in the top portion of the **Manage Records** pane and is also displayed in the record's heads-up-display (HUD) box in the map view.

A parcel record can be active or inactive when editing parcel data. If no record is active in the map, any parcel features that are created will not be associated with any parcel record.

No active record is recommended for fixing data and other quality-driven edits.

3. To exit an active record, click the active record toggle button on the record's HUD box. Use this toggle button to move in and out of the active record.

#### Display parcels in the active record only

To display parcel features in the active record only, click **Show Only Active** in the **Records** group on the **Parcels** ribbon. The command can be turned on or off.







If **Show Only Active** is turned off, you can set the transparency of parcels that are not part of the active record by dragging the transparency slider under **Show All**. Parcels that are not part of the active record can be made less transparent, while parcels that are part of the active record will display as normal.

#### Questions:

- When would you use an active record?
- When wouldn't you use an active record?
- Why?

## **EXERCISE:** Assigning a RECORD to a group of parcels

You can assign a parcel record to a selection of parcel features. The following parcel features have a Created By Record attribute field and can be assigned to a parcel record:

- Parcel type polygons
- Parcel type lines

- Points
- Connection lines

To assign a parcel record to a selection of parcel features, complete the following steps:

- 1. Click the **New** drop-down arrow in the **Records** group on the **Parcels** ribbon and click **Manage** to open the **Manage Records** pane.
- 2. Use a search query to search for the parcel record.
- 3. In the list of search results, select and right-click the parcel record and click Assign Selection To Record .

The Created By Record attribute field of the selected parcel features will be populated with the GlobalID of the associated record, and a record polygon will be created to match the geometry of the added parcel features.

If the parcel features are already associated with a parcel record, they will be reassigned to the chosen record. The Created By Record field will be updated with the GlobalID of the reassigned parcel record, and the record polygon will be regenerated to match the geometry of the parcel features.

#### Tip:

Turn on the Records sublayer under the parcel fabric layer in the **Contents** pane to display the record polygons.

#### Question:

• When would you need to apply this exercise?



## Parcel Edit Tools

	Parcel Tools
Tool	Description
Change Parcel Type	Move the selected parcels to the parcel type chosen on the Change Parcel Type dialog box.
Duplicate Parcels	Duplicate the selected parcels to the parcel type chosen on the Duplicate Parcels dialog box.
Set Historic	Sets all selected parcels as historic. All selected parcels will be retired by current active record.
Set Current	Sets all selected parcels as current. All selected parcels will have the retired by record ID cleared.
Copy Lines To	Copy selected parcels or lines to the parcel type chosen on the Copy Lines to dialog box. Use lines to create new features.
Create Seeds	Create parcel seeds from lines forming enclosed loops in the map extent.
Shrink To Seeds	Create parcel seeds from selected parcels.
Build Extent	Build Parcels in the map extent.
Build Active	Build parcels in the active record.
Delete Parcels	Delete the selected Parcels.
↑ → Align Parcels	Show the Align Parcels Pane. This allows you to make adjacent parcels coincident using an alignment tolerance and links.
Merge Points	Merge two or more selected fabric points.
∫→/ Merge Boundaries	Merge collinear parcel lines into a single line.
Simplify By Straight Li	Simplify polygons and lines by replacing multiple consecutive segments with single or fewer segments.



	Alignment Tools			
Tool	Description			
Move	Move the selected feature(s).			
Rotate	Rotate the selected feature(s).			
Scale	Scale the selected feature(s).			
Annotation	Edit Annotation features(s).			
Align Edge	Align a topological edge to its nearest face by clicking.			
Align Features	Close gaps between adjacent polyline or polygon features using a traced line and a buffer tolerance.			

	Reshape Tools			
Tool	Description			
Edit Vertices	Add, move, or delete vertices and segments for the selected feature.			
Reshape	Reshape an existing line or polygon features by drawing the new shape and crossing the existing feature in at least 2 places.			
Continue Feature	Continue sketching the selected feature.			
Extend or Trim	Extend or trim polyline features and terminate them where they touch another feature.			
Fillet	Create a tangent curve connecting 2 segments.			
Line Intersection	Split lines where they intersect.			



	Divide Tools
Tool	Description
Planarize	Split selected line features where they intersect and remove any coincident line segments.
Clip	Clip all editable and visible features that touch or are within a buffered distance from selected feature(s).
Explode	Separate selected multipart features into individual features. These parts become independent features and are assigned identical attributes.
Split	Divide a polygon or polyline into 2 features along a splitting line you create across the feature. Click a polyline segment to divide the feature without using a splitting line.
Divide	Divide line(s) or a polygon feature.

Construct Tools		
Tool	Description	
∭ ↓ Merge	Merge 2 or more features into an existing feature or union 2 or more features into a new feature.	
Copy Parallel	Create parallel offset copies of selected line features.	
Mirror	Reflect selected features around a line.	

Attribute Tools		
Tool	Description	
Sequential Numbering	Sequentially number polygons or lines along a sketch.	
Transfer Attributes	Copy attribute values from one feature to another.	

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	COGO Tools		
Tool	Description		
Traverse	Create features by entering a traverse.		
Update COGO	Update COGO attributes for selected lines to populate Direction and Distance values.		
Cul-de-sac	Create a cul-de-sac for a selected street centerline. The last segment of the line can be used to create an offset cul-de-sac.		
Split Into COGO Lines	Split selected line features at each vertex, creating a new feature for every segment. COGO-enabled lines will have their COGO attributes calculated.		

	Validate Tools		
Tool	Description		
Validate All	Identify topology errors and symbolize them on layers in the current map.		
Validate Extent	Identify topology errors and symbolize them on layers in the current map extent.		
Validate Specified E	Identify topology errors and symbolize them on layers in a specified map extent.		
Error	Show the Error inspector. This enables you to find, sort and fix errors.		
Fix Error	Topology fix operations for a selected error.		

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### Alignments

### Align parcels in a workflow

You can use the following tools to align parcel features:

- Align Parcels Transform parcels using links. The Align Parcels tool uses the Rubbersheet (Linear) transformation method.
- Align Features Align and reposition individual parcel lines. This tool allows you more control over the placement of boundaries when aligning parcels.

#### Note:

This tool does not merge coincident points when aligning parcel boundaries.

Parcels can be aligned using the following workflows:

- Align selected parcels to surrounding parcel boundaries. This workflow is commonly used when aligning new parcels to existing parcels. New parcels are transformed and aligned to existing, surrounding parcels in the parcel fabric.
- Align individual parcel lines. Individual parcel lines can be repositioned to match a created alignment path. You can use this workflow in addition to the aligning parcels workflow.
- Align existing parcels to selected parcels. This workflow is commonly used when aligning existing parcels to the positions of new parcels. The position of the new parcels is held fixed, and surrounding boundaries are transformed to the fixed parcels location.





### Align Parcels: Align selected parcels to surrounding boundaries

To align parcels to surrounding boundaries, parcel boundaries must lie within the specified alignment buffer. If necessary, select and <u>move or rotate</u> the parcel features you want to align so that they lie within a close proximity to their surrounding boundaries. Click the **Select** tool <sup>W</sup> in the **Selection** group on the **Parcels** ribbon to select parcel features.

#### Tip:

If you created parcels in a new active record, click **Menu** on the records HUD (Heads-Up-Display) and click **Select Features In Active Record** to select all the parcel features created in the active record.

1. Select the parcels you want to align and click **Align Parcels** in the **Alignment** group on the **Parcels** ribbon to open the **Align Parcels** pane.

The alignment buffer is displayed as an orange transparent buffer drawn around the new parcel boundaries. If the surrounding parcel boundaries and points do not lie within the alignment buffer, enter a larger tolerance in the **Alignment Buffer Value** text box in the **Alignment** group on the **Parcels** ribbon.

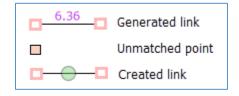
#### Tip:

Click **Show** in the **Alignment** group on the **Parcels** ribbon to turn the display of the alignment buffer on or off.

- 2. 1Click **Generate links within tolerance** in the **Align Parcels** pane to detect and create links between selected parcel points and their matching points in the surrounding parcels.

In some cases, generating links may not detect matching points. You must manually create a link for these points.

Links are symbolized differently to distinguish manually created links from generated links. Manually created link lines are displayed with a green circle on the line. Parcel points that have no generated links are symbolized with a transparent pink square overlapping the point.



#### Note:

At least two links are needed to align parcels. The best alignment results are achieved when as many points as possible are matched with existing points.

4. Optionally click **Add anchor points**  $\blacksquare$  to add an anchor point to a parcel point.



If an anchor point is added to a parcel point, it will be held as fixed in the alignment and will not move. Additionally, <u>fixed parcel fabric points</u> behave in the same way as anchor points and do not need the addition of an anchor point. Fixed parcel fabric points such as control points do not move in a parcel alignment.

5. Under Alignment in the Align Parcels pane, type a snap tolerance.

The snap tolerance is used to resolve gaps and overlaps that result from unmatched points. The snap tolerance is applied after the alignment process. Examples of unmatched points are those points that should snap to adjacent parcel lines.

#### Tip:

You can set the snap tolerance to 0 and refine individual boundary alignment using the Align lines to a created path workflow below.

6. Click **Align** to align the parcels.

If you need to perform further alignment of individual lines, proceed to the Align lines to a created path workflow below.



### Align Features: Align lines to a created path

You can use this workflow to align all the boundaries of a selected parcel or only align individual parcel boundaries. For example, after aligning a parcel using the Align Parcels tool, you can use this workflow to align an individual curve on the parcel that did not exactly match the curve on the surrounding boundaries.

#### Note:

The Align Features tool does not merge coincident points when aligning parcel boundaries.

To align parcel lines using a created path, follow these steps:

- 1. Select the parcel that has the lines you want to align and click the **Align Parcels** dropdown arrow in the **Alignment** group on the **Parcels** ribbon and click **Align Features**  $\mathbb{A}$ .
- 2. In the Align Features pane, choose Draw the alignment path and or Create alignment path from selected parcels .

To align all parcel boundaries, choose **Create alignment path from selected parcels**. An alignment path is created on the adjacent boundaries that lie closest to the selected parcels.

To align individual boundaries of the parcel, clear the parcel selection and choose **Draw the alignment path**.

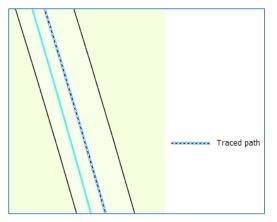
3. If you choose to draw the alignment path, decide whether you want to trace a path along existing boundaries lines or use editing tools to draw a new location for all the boundaries. Boundaries will align to the traced path or the alignment path you draw.

#### Tip:

Trace an alignment path along existing boundaries when you want to hold those boundaries as fixed in the alignment. When drawing a new alignment path, all boundaries in the alignment tolerance move to the drawn path.

- 4. To trace the alignment path along existing boundaries, do the following:
  - 1. Click to snap to the line you want to align and drag the pointer along its boundary.
  - 2. Click an end point to finish the trace.
  - 3. If necessary, change the alignment tolerance in the **Alignment Tolerance** text box to ensure that the lines being aligned lie within the tolerance.



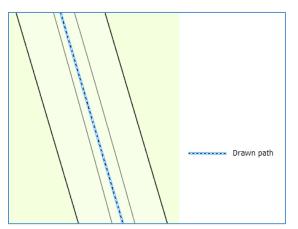


Align the boundary to the path traced on the adjacent boundary

- 5. To draw a new alignment path using editing tools, do the following:
  - 1. Choose a tool from the Construction toolbar at the bottom of the map view and draw an alignment path.

For example, you can use the **Line** / and **Arc Segment** for tools to construct a new path. All boundaries in the adjustment tolerance will move to the drawn path.

2. If necessary, change the alignment tolerance in the **Alignment Tolerance** text box to ensure that the lines being aligned lie within the tolerance.



Align both adjacent boundaries to the drawn path.

6. If necessary, choose an <u>alignment method</u>.

### Tip:

The **Snap line ends to path** method minimizes the creation of new vertices and is well suited for the alignment of most parcel boundaries.

7. Click **Align** to align the lines.



### Align Features: Align existing parcels to new parcels

You can align existing parcels to the boundaries of newer, more recently created parcels. An example of this type of alignment is when new parcels have been created using monuments or control points as corner points or points of beginning. Existing parcels must be aligned to the location of these parcels.

To align surrounding parcels to the fixed location of selected parcels, click **Switch** [1] in the **Alignment** group on the **Parcels** ribbon to switch the selection to the surrounding parcels. Transform and align the surrounding parcels as described in the Align selected parcels to existing boundaries workflow above.

Alternatively create an alignment path to align boundaries. To hold a parcel as fixed and create an alignment path for surrounding parcels, do the following:

- 1. Select the parcels you want to hold as fixed. These are the newer, more recently created parcels.
- 2. Click **Switch** in the **Alignment** group on the **Parcels** ribbon to switch the selection to the surrounding parcels.
- 3. Click the Align Parcels drop-down arrow in the Alignment group on the Parcels ribbon and click Align Features .
- 4. In the Align Features pane, click Create alignment path from selected parcels.

An alignment path is created on the adjacent boundaries that lie closest to the selected parcels. In this case, an alignment path is created on the parcel that will be held as fixed.

- 5. Ensure that all boundaries being aligned lie within the adjustment tolerance. If necessary, change the adjustment tolerance.
- 6. If necessary, choose an <u>alignment method</u>.

#### Tip:

The **Snap line ends to path** method minimizes the creation of new vertices and is well suited for the alignment of most parcel boundaries.

7. Click **Align** to align the lines.



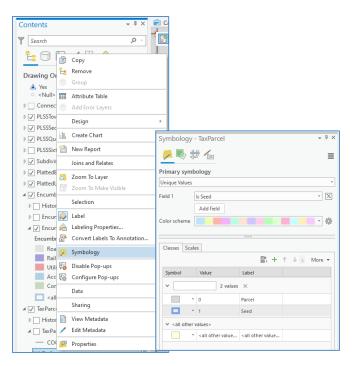
# Symbology and Labeling

### **Basic Symbology**

To access the Symbology pane, right click the desired layer in the TOC and choose Symbology.

Basics: Changing Symbology Based on Unique Values

- Select Unique Values under Primary Symbology
- In the Field 1 box select an attribute field from the dropdown box
- Click Add All Values button if this is the first time creating the symbology, or select Add Unlisted Values to add additional values, but not all possible values.
- Change symbology for each value as preferred
- Click Apply > OK



### **EXERCISE: Edit symbology**

• Edit symbology for the Parcel Types in your map.



### **Basic Labeling**

- Right-click a layer in the TOC and choose *Labeling Properties*
- In the Label Class pane, drop down the Class to choose the label class to be edited.
- The expression is written in Arcade language and can easily be edited to fit your needs.
- To turn a layer's labels on/off, right click the layer in the TOC & choose Label – it's a toggle so it will do the opposite of whatever is the current situation.

Contents • # ×		
Search P -		
Сору	Label Class	≁ ų ×
Drawing Order	TaxParcel - Partial	≡
Yes     Group <ul> <li> <li> <li> <li> </li> </li></li></li></ul>	Class - Symbol Position	
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PlattedBlocks	Parcel Subtype Asin()	
PlattedLots     Zoom To Make Visible	Created By Record Atan()	
Historic Selection	Retired By Record Atan2() Stated Area Average()	
Encumbrar     Label	Stated Area Unit Ceil()	
Label     Label     Labeling Properties	Calculated Area Cos()	
Encumbrance Convert Labels To Annotatio	Misclose Ratio	
Road	Insert Values • Expression	
Railroad 😣 Symbology	var seed = (\$feature.IsSeed == 1);	
Utility Disable Pop-ups	if (!seed){	
Conserva	<pre>return "<bol>" + Right(\$feature.name,3) + "</bol>" }</pre>	
all othe Data		
▲ 🗹 TaxParcel Sharing		
▷ Historic 📄 View Metadata		
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COGO     Properties		
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	n 🗸 🛁	<b>→</b>
	✓ Insert fields with coded value description function	
	Remove extra spaces	
	Remove extra line breaks	
	Learn more about label expressions	

#### Parcel Fabric Line Class Labels

In Pro 2.9, the labeling classes have been edited to take advantage of the new field and domain to position the line labels to the Left, Right or Centered (Shared).

Attributes Geom	etry				
Created By Record	<null></null>				
Direction	S40°32'06"W				
Distance	933.482867				
Radius	<null></null>	_			
Arc Length	<null></null>	La	be	C	ass - Subdivisions
Radius2	<null></null>				COGO Right
COGO Type	From Geometry				COGO Right
Label Position	<null></null>	C	ass	•	Symbol Position
ls COGO Ground	<null></null>		~	$\checkmark$	COGO Right
Rotation	Right Left	G	0		COGO Left
Scale	Centered		angu		COGO Shared



# **EXERCISE: Explore Labeling**

Explore the tabs and buttons to change:

- visibility scale
- font colors
- font styles
- placement properties
- etc . . .



### Saving and Loading Label Expressions

Advanced label expressions can be saved as label expression files (.lxp), which can be loaded into other layers or maps.

To save an Expression file:

- 1. Use the Green Arrow button below the Expression dialog to **Export** the expression to a saved location.
- 2. Name the file (.lxp label expression)
- 3. Click Save

To load an Expression file:

- Use the Folder button below the Expression dialog to Import an expression from a saved location.
- 2. Select the file (.lxp label expression)
- 3. Click OK

Label Cla	5S	* t )
	TaxParcel - Partial	Ξ
Class 👻	Symbol Position	
Cr) SQL		
Expression	1	
if (!see	<pre>= (Sfeature.IsSeed == 1); ){ (BOL&gt;" + Right(\$feature.name,3) + ""</pre>	
	୬ 🗸 🗎	→
	ds with coded value description function	
	extra spaces	
Remove	extra line breaks	

### **EXERCISE: Explore Expressions**

- Export an existing expression to save it
- Create a new expression
- Import the original expression back in



### Label Examples: Tax Parcel Defaults

### Parcel Label Expressions

```
Partial PIN: to show only the last 3 digits:
var seed = ($feature.IsSeed == 1);
if (!seed){
return "<BOL>" + Right($feature.name,3) + "</BOL>"
}
```

#### Full PIN:

```
var label;
var seed = ($feature.IsSeed == 1);
If (IsEmpty($feature.Name)==true){
  return label;
}
Else if (!seed){
  label = "<BOL>" + $feature.Name + "</BOL>"
  if (IsEmpty($feature.StatedArea)==true){
    return label; //returns only the parcel name
  }
  Else {
    if (IsEmpty($feature.statedareaunit)==true) {
      label = label + "\n" + "<fnt size = '8'>" + Round($feature.statedarea, 2) + " Unknown" +
"</fnt>";
      return label;
    }
    label = label + "\n" + "<fnt size = '8'>" + Round($feature.statedarea, 2) + " " +
DomainName($feature, 'statedareaunit') + "</fnt>";
    return label;
 }
}
```

### **EXERCISE: Explore Parcel Type Labels**

- Check and update the labels for Tax Parcels
- Partial PIN & Full PIN
- Display Tab expression
- Check the labels for Historic features
- Check the labels for each parcel type
- MORE



### **Dimension Label Expression**

When viewing the line dimensions, the label expression is what is used to create that bearing/distance view.

To view the expression,

- 1. Open the Layer Properties for the Tax Parcel Lines.
- 2. Navigate to the Direction and Distance view under Class.
- 3. The Expression is shown in the Expression dialog box. It should look something like this . . .

// Change the settings portion to configure direction format, color, rounding and abbreviations // This is an Arcade expression

// SETTINGS

var QuadrantBearingFormat = true; //set 'true' for quadrant bearing, 'false' for north azimuth var ShowDistance = true; //set as 'true' to show distance var ShowDirection = true; //set as 'true' to show direction var ShowRadius = true; //set as 'true' to show radius var ShowCurveParemater = true; //set as 'true' to show a curve parameter var CurveParameter = "ArcLength"; //set as 'ArcLength' or 'Chord' or 'Angle' for central angle. Case sensitive! var ErrorString = "COGO ERROR"; //set to display invalid COGO combinations var RadiusAbbr = 'R='; //radius abbreviation var ArclengthAbrr = 'L='; //arclength abbreviation var ChordAbbr = 'C='; //chord abbreviation var AngleAbbr = 'A='; //central Angle abbreviation var DistUnitRounding = 2; //number of decimal places for distance units: distance, radius, arclength & chord var NumberFormat = "#,###.00" //number format. In this example: thousands separator with padding of 2 zeros var directionColor = "blue='255"; //direction color: red, green, blue, cyan, magenta, yellow, black. You can also use RGB or CYMK combinations. var distanceColor = "black='255"; //distance color: red, green, blue, cyan, magenta, yellow, black. You can also use RGB or CYMK combinations. var radiusColor = "blue='255'"; //radius color: red, green, blue, cyan, magenta, yellow, black. You can also use RGB or CYMK combinations. var curveParamColor = "black='255'"; //curve parameter color: red, green, blue, cyan, magenta, yellow, black. You can also use RGB or CYMK combinations. var partialCOGOColor = "magenta='255'"; //partial COGO color: red, green, blue, cyan, magenta, yellow, black. You can also use RGB or CYMK combinations. var invalidCOGOColor = "red='255'"; //invalid COGO color: red, green, blue, cyan, magenta, yellow, black. You can also use RGB or CYMK combinations. var fontNameSize = "<FNT name = 'Arial' size = '10'>"; //font type and size 470



// VARIABLES var direction=\$feature.Direction; var distance=\$feature.Distance; var radius=\$feature.Radius; var arclength=\$feature.Arclength; var radius2=\$feature.Radius2 var prefix; // quadrant bearing prefix var postfix; // quadrant bearing postfix var bearing; var quadbearing; var binaryDictionary; //binary dictionary to check COGO combinations var checksum=0; //initialize checksum var validValuesArray; //array of valid values for COGO combinations var partialValuesArray; //array of partial values for COGO var degrees; var minutes; var seconds; var DMS; var directionStr = ""; //direction string using for label var distanceStr = ""; //distance string using for label var radiusStr = ""; //radius string using for label var curveStr = ""; //curve parameter string using for label var angleRad; //curve angle in radians var COGOValidity; //COGO combinations validity. can be valid, partial or invalid.

There are many places in which the user can interact with the expression and make changes.

- All the "var" are places in which items can be updated -
  - True/False
  - o Font color
  - Font name
  - Decimal rounding
  - abbreviations

### **EXERCISE: Explore Dimension Labels**

- Explore variable changes
- Explore color changes, font changes, size changes, etc.



# **Miscellaneous Tips**

For any further topics that you may have questions, please see the resource page at <a href="https://pro.arcgis.com/en/pro-app/help/data/parcel-editing/whatisparcelfabric.htm">https://pro.arcgis.com/en/pro-app/help/data/parcel-editing/whatisparcelfabric.htm</a>.

This will get you started in the right direction and assist you with any parcel editing, manipulation, and/or adjustments you may need to make.

ArcGIS Pro					Overview	Features	Resources	Free Trial	Buy Now
Home Get Started Help	Tool Reference	Python SDK							
		Search ArcGIS P	ro help	Q					
Help / Data / Parcels / Get started									
✓ Get started	Whati	s the par	cel fabric				In this t	opic	
What is the parcel fabric								ord-driven wo	rkflows ata model
Create a parcel fabric			hensive framework fo user environment, the				Configu		ata model
Add parcel types		<u> </u>	architecture. A service s (desktop, mobile, an						el líneage
Upgrade an ArcMap parcel fabric		ferent clients in the fi		a web) and a		nows can be		otory and para	
Append data to the parcel fabric	Currently, the p	parcel fabric is edited	in ArcGIS Desktop us	ing ArcGIS Pro	o. Editing or	web and			
Parcel fabric data model	mobile clients	will be supported in f	uture releases of Arc	GIS Pro.					
Add the parcel fabric to the map	Learn more ab	out ArcGIS Enterprise	9						
Workflow: Create a parcel fabric and load data									pic rd-driven workflows e a flexible data model
Workflow: Prepare and publish a parcel fabric	Desktop	Web	Mobile						
Use tasks	= 🥁								
> Configure the editing environment		Parcel Fabric							orkflows data model
> Validate the parcel fabric									
> Manage parcel fabric records	ArcGIS Enterpris	se <b>e</b>							orkflows data model
> Build parcels									





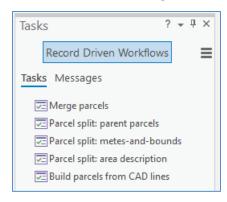
# **Record-driven Tasks**

A task is a set of preconfigured steps that guide you through a workflow. A Task can be used to implement a best-practice workflow, improve editing efficiency, or create a series of tutorial steps.

Tasks are saved to task files and can be shared with other projects. To use the parcel fabric tasks, import the task file into your project – 5 are included with the parcel fabric initially.

To find these, they are loaded in this location: <u>C:\Program</u> Files\ArcGIS\Pro\Resources\Tasks\en-US\ParcelFabric\

The Record-driven Workflows task file contains the following tasks from ArcGIS 2.5 forward:



### **EXERCISE: Import and open a task**

To import the task files into your project, follow these steps:

- 1. In the **Catalog** pane, right-click **Folders** and click **Add Folder Connection**.
- On the Add Folder Connection dialog box, browse to the Tasks folder located in your ArcGIS Pro installation directory, for example, C:\ProgramFiles\ArcGIS\Pro\Resources\Tasks.
- 3. In the **Catalog** pane, under **Folders**, expand the **Tasks** folder, expand your language folder, and then expand the **ParcelFabric** folder to list the available task files.
- 4. Right-click a task file and click **Import and Open**  $\checkmark$  to import the task file into your project as a task item.

The task file is added as a task item to the **Tasks** folder in the **Catalog** pane and is opened in the **Tasks** pane.

5. On the **Tasks** pane, select a task and click **Open Task**  $\rightarrow$  to run it. You can also doubleclick a task to run it.



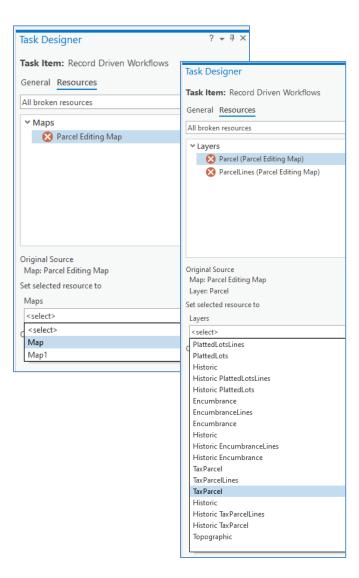


### **EXERCISE: Correct Task Error Messages**

Existing Esri tasks were configured with Esri-defined workspaces, maps, and layer names. Thus, we need to ensure they will work with our maps and layers.

To make corrections...

- 1. Click on the **Messages** tab to view the error messages listed.
- 2. Select one of the messages, it doesn't matter which one at this point
- 3. Click the Show Me button at the bottom once it's active.
- 4. Follow the prompts to update broken resources in the Task Designer pane.



Tasks ? → ╄ ×
Record Driven Workflows
Tasks Messages
28
The task 'Merge parcels' is referencing maps that are inaccessible. This Task Item might have been designed for a different project.
The verification action in step 'Select parent parcels' in task 'Merge parcels' uses a layer or table 'ParcelEditing/Parcels' that does not exist.
The task 'Parcel split: parent parcels' is referencing maps that are inaccessible. This Task Item might have been designed for a different project.
Description Open the Task Item in the correct project or open Task Designer and reference the correct maps under the Resources tab.
Show Me



### **EXERCISE:** Configure a task

The Tasks are general guides on how to perform parcel fabric editing workflows. You can configure and change the tasks, or you can create new tasks.

You can configure the parcel fabric tasks for your organization in the following ways:

- Change the task name.
- Add or remove steps.
- Change the step behavior.
- Change the action the step performs.
- Change the active map view for each step.
- Change how layers behave in the Contents pane.
- Track task usage history.

#### To configure an existing parcel fabric task:

- Right-click the imported task file (task item) in the Tasks pane and click Edit In Designer 2. This will open the Task Designer pane where you can change the name and description of the task.
  - Alternatively, you can open the task, click **Options** = on the **Tasks** pane and click **Edit In Designer**.
- 2. Click **Open Task** in the **Tasks** pane to see the step behavior in the **Task Designer** pane.

Tasks Record Driven Workflow	? → म × vs	Task Designer     ? • # ×       Step: Merge parent parcels       General     Actions       Name
Parcel State Edit In Designer	Tasks ? •	Merge parent parcels
Parcel split: metes-and-bounds	Merge parcels	Tooltip
	Steps Messages	
	<ul> <li>Create a parcel record</li> <li>Locate the parent parcels</li> <li>Select parent parcels</li> <li>Merge parent parcels</li> </ul>	Instructions     B     I     Image: Comparison of the set of the s
	Merge the parent parcels into a new parcel. In a record-driven merge workflow, parcels should merged using the <b>New Feature</b> tab on the <b>Merge</b> Choosing the <b>New Feature</b> tab will save the origin parcels as historic. Merge using the <b>Existing Feature</b> tab will not save original parcels as historic.	150 characters left
	The new parcel will be associated to the active recor Make a selection	Step Behavior O Manual User runs and user proceeds O Auto Run Step runs and user proceeds
	Existing Feature New Feature	Auto Proceed User runs and step proceeds     Automatic Step runs and step proceeds     Hidden User will not see the step
		Optional User can skip this step 👔





- 3. Select the step you wish to edit in the **Tasks** pane.
- 4. Use the Task Designer pane to make your edits
  - a. General Tab
    - i. Name
    - ii. ToolTip
    - iii. Instructions make it your own language (merge v. combine for example)
    - iv. Step Behavior
  - b. Actions Tab
    - i. Set the Command/Tool
    - ii. When to start the tool
    - iii. Prior/Post action
  - c. Views Tab
    - i. Set what map is active
  - d. Contents Tab
    - i. Set what layers are Visible, Selectable, Editable, and Snap-able.
      - 1. Can capture from your current settings in the map.
    - ii. Set what snapping items are on point, edge, vertex, etc.
- 5. Use the tools available on the **<u>Tasks</u>** pane to . . .
  - a. Validate the Task
  - b. Add a new Step to an existing Task
  - c. Delete a Step from an existing Task
  - d. Record steps to add to the Task



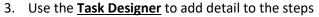
### To create a new task

 Click the Task and drop-down arrow on the Insert tab and click New Task Item and elick is the table.

### OR

Use the **Tasks** pane and select the New Task tool

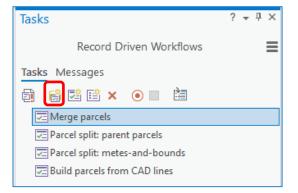
- 2. Use the tools available on the **Tasks** pane to ...
  - a. Add a new Step to the new Task
  - b. Record steps to add to the new Task
  - c. Validate the Task



- a. General Tab
  - i. Name
  - ii. ToolTip
  - iii. Instructions in your own business language
  - iv. Step Behavior
- b. Actions Tab
  - i. Set the Command/Tool
  - ii. When to start the tool
  - iii. Prior/Post action
- c. Views Tab
  - i. Set what map is active
- d. Contents Tab
  - i. Set what layers are Visible, Selectable, Editable, and Snappable.
    - 1. Can capture from your current settings in the map.
    - 2. Set what snapping items are on point, edge, vertex, etc.

#### Tip:

Prep an actual edit that you want to use to create a task for and use the Record function while you do the edit. All of your steps and settings are captured by the Task configuration and then you can tweak the details.





# **Editing Exercises**

Some exercises are arranged so that those with associated Tasks are paired with their non-task exercise for comparison's sake.

### Assumptions for all exercises:

- Using the Parcel Fabric in Pro
- Are in an editing version (not Default) or a file .gdb
- Topology is set to GeodatabaseTopology

### Assumptions for Record-driven exercises:

• Are using an Active Record

### **NOTES for all Tasks:**

- Recognize that the Tasks bring the tool to you and enforce that all the steps are completed. Very consistent for multiple editors.
- These were all for 'ideal' situations. Often denoted as urban situations.



## **Record-driven Workflows**

### **1: Create New Tax Parcel**

The procedures below walk through a simple new parcel first with just a digitizing process. If you need the specificity of the traverse tool, see exercise 6 for more information.

- 1) New Tract: Create a new tax parcel without COGO information
  - Open the **Create Features** pane from the **Edit** ribbon
  - In the Create Features pane, select the tax parcel lines template



- Draw shape with Construction Tool
- When complete, use Create Seeds to verify the parcel is enclosed.
- Then use Build Active to complete the parcel.

This way of building a new parcel did NOT clip it out from any underlying features. The new feature may be overlapping a parent parcel.

Be sure to SAVE your work.

### **Additional Practice:**

Use an actual update to practice entering data.

• Find a description to practice curve entry as well

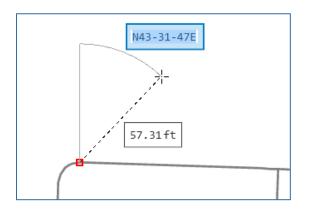


### **Dynamic Constraint Option**

Another option for entering data (as in steps 3 & 4 above) is to use the Constraint tools which are used as an on-screen heads-up style of traversing a parcel. The Constraint tool constrain the directions and distances of digitized lines to specific values entered the same way you would enter other COGO.

To turn dynamic constraints on or off, click **Dynamic Constraints** <sup>24</sup> on the status bar at the bottom of the active map.

- 1. Click on the map to start digitizing the line.
- 2. Press the Tab key to get editing focus on a displayed dimension.
- 3. Once the dimension has focus, modify its value.
- 4. Press Enter to constrain the line to the dimension.



If you're digitizing a line using the **2 Point Line** tool <sup>•••</sup>, constrained dimensions will be stored in COGO fields if the line is <u>COGO enabled</u>. Line feature classes in the parcel fabric are COGO enabled.

You can set the default constraint behavior: hover the pointer over **Dynamic Constraints** at the bottom of the map.

- Deflection angles can be used when digitizing polylines using the Line tool /.
- Absolute angles can be used when using entering absolute bearings QB or AZ.

NOTE: To save constraint dimensions in COGO fields, use the **2**-**Point Line** tool to create lines. With the **2 Point Line** tool, direction constraints can only be displayed as absolute angles.

Constraints
Dynamic constraints are On
Default direction constraint:
○ Deflection
Default constraint for input mode:
Direction O Distance
2 <u>4</u> III N>





### 2: Merge Parcels (with Task)

The Merge parcels task is a record-driven workflow for merging two or more parent parcels into a new parcel. The original or parent parcels are saved as historic.

The description of the steps and actions used are in the Merge parcels task.



- 1. Create a parcel record
  - The Manage Records pane is embedded in the Tasks pane and is opened in the first step automatically.
- 2. Locate the parent parcels
  - Locate tool is prompted.
  - You can skip this **Locate** step.
- 3. Select parent parcels
  - Select by rectangle is prompted.
- 4. Merge parent parcels
  - The **Merge** pane is embedded in the **Tasks** pane and is opened in the step automatically.
  - History is created and saved (assuming New Feature tab is chosen in Merge step).



### 3: Merge Parcels (No Task)

To merge parcels, you can use the Merge parcels task or follow these steps:

1. <u>Create a parcel record</u> for the parcel merge.

The parcel record will be set as active in the map. The Created By Record field of new parcel features will be populated with the GlobalID of the active record.

- 2. If necessary, use the Locate pane to search for and locate the parcels to merge.
- 3. Use the **Select** tool <sup>koll</sup> in the **Selection** group on the **Parcels** ribbon to select the parcels you want to merge.

#### Tip:

Select the parcel polygon to select the parcel. All parcel features are kept coincident with the parcel polygon using map topology.

4. Click **Merge** in the **Tools** gallery on the **Parcels** ribbon to open the **Merge** pane.

When merging parcels with an active record set in the map, the **Merge** pane opens with the **New Feature** tab open by default.

- 5. Enter the attributes of the newly merged parcel under **Merged Feature Attributes**.
- 6. Click Merge to merge the parcels.

The original parent parcels are saved as historic. The Retired By Record field of the historic parcel features is populated with the GlobalID of the active record.

Create Record	
Name	Merge
Record Type	<null></null>
Recorded Date	4/12/2022 12:35:55 PM
Created By	<null></null>
Created Date	<null></null>
Modified By	<null></null>
Modified Date	<null></null>
Created Parcel Count	<null></null>
Retired Parcel Count	<null></null>

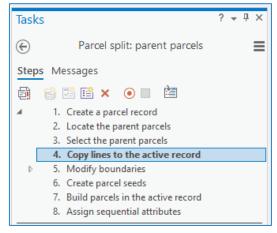
Modify Features		* ₽ ×
$\odot$	📲 Merge	
Existing Feature	ew Feature	
Change the se	election	-
Layer		
TaxParcel		•
Features to merge		
21-0124-000		×
21-0125-000		×
✓ Keep original feature ✓ Use Template	ıres	
Parcel		-
Merged Feature Attrib	outes	
Name	<null></null>	
Parcel Subtype	<null></null>	
Created By Record	<null></null>	
Retired By Record	<null></null>	
Stated Area	<null></null>	
Stated Area Unit	<null></null>	
Calculated Area	<null></null>	
Misclose Ratio	<null></null>	
Misclose Distance	<null></null>	
Is Seed	No	Ēt.
		Merge



### 4: Parcel Split Parent Parcel (with Task)

The Parcel split: parent parcels task is a record-driven workflow for splitting parent parcels into new parcels. Parcels are split by adding or modifying boundary lines and constructing new parcels. The original or parent parcels are saved as historic.

The split parent parcels workflow below describes the steps and actions used in the <u>Parcel split: parent parcels task</u>.



- 1. Create a parcel record
  - The **Manage Records** pane is embedded in the **Tasks** pane and automatically opens in the first step.
- 2. Locate the parent parcels
  - Locate tool is prompted.
  - In the task, you can skip this step.
- 3. Select the parent parcels.
  - The step loads the **Select** tool.
- 4. Copy lines to the active record
  - The **Copy Lines To** dialog box is embedded in the **Tasks** pane and automatically opens in the step.
- 5. Modify boundaries
  - The **Create Features** pane is embedded in the **Tasks** pane and automatically opens in the step. The **Select** and **Delete** tools are also available for use in the step.
- 6. Create parcel seeds
- 7. Build parcels in the active record
- 8. Assign sequential attributes

### 5: Parcel Split Parent Parcel (No Task)

To split parcels, follow these steps:

1. <u>Create a parcel record</u> for the parcel split.

The parcel record will be set as active in the map. The Created By Record field of new parcel features will be populated with the GlobalID of the active record.

- 2. If necessary, use the Locate pane to search for and locate the parcels to split.
- 3. Use the **Select** tool <sup>№</sup> in the **Selection** group on the **Parcels** ribbon to select the parcels you want to split.

You can select more than one parcel to split. In this workflow, you will be using the boundary lines of parent parcels to construct new parcels.

### Tip:

Select the parcel polygon to select the parcel. All parcel features are kept coincident with the parcel polygon using map topology.

4. Click **Copy Lines To** in the **Construct** group on the **Parcels** ribbon.

5. In the **Copy Lines To** dialog box, select the parcel type in

a) Choose Show only active record to only show parcel

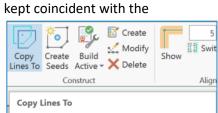
b) Choose whether you want to preserve the attributes of the parent parcels and transfer them to the new

features that are part of the active record.

which the new parcels will be constructed.

loops.

parcels.

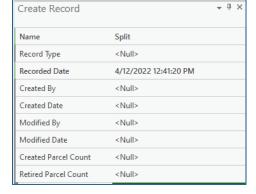


Copy selected parcels or lines to the parcel type chosen on the Copy Lines To dialog box. Use the copied features to create new parcels in the active record.

Copy Lines To X
Copy lines to record Split
Parcel Type TaxParcel *
<ul> <li>✓ Show only active record</li> <li>✓ Preserve attributes</li> </ul>
OK Cancel

c) Click **OK** to copy the lines of the selected parcels to the active record.

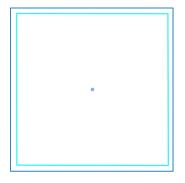
If you choose to preserve attributes, they will be transferred to the seeds that are automatically created for the closed line



61 0

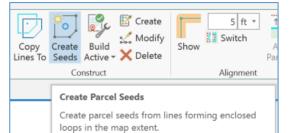


- 6. Add split lines or modify lines to construct new parcels. For example, add a split line between two new split points:
  - a) Select a line to which you want to add a split point and click **Divide** in the **Tools** gallery on the **Parcels** ribbon.
  - b) On **Divide** pane, choose the divide method, the direction of the line to split and how to space the split points.
  - c) Enter the distances of the split point or points and click **Divide**.
  - d) If necessary, use the **Divide** tool to add a split point on a second parcel line.



- e) Use the necessary tool(s), such as the Traverse tool , the Two-Point
   Line tool , or any of the context menu options to add split lines between the split points.
- Click Create Seeds in the Construct group on the Parcels ribbon to create additional parcel seeds for new, closed loops of lines.

You can also move seeds or copy and paste parcel seeds.





8. Select the parcel seeds and open the **Attributes** pane to add attributes for the parcel seeds. The seed attributes will be transferred to the parcels when they are built.

Alternatively, you can choose to attribute the parcels when they are built.

9. Select parcel lines with partial dimensions and open the **Attributes** pane to update the line dimensions.





- Lines with partial dimensions are labeled with a dimension displayed in pink.
- The line is missing attributes in COGO fields.
- Use the **Update COGO** for the **Tools** gallery on the **Parcels** ribbon to generate and add missing COGO dimensions to parcel lines.
- 10. After attribute values have been updated, click **Build Active** in the **Construct** group on the **Parcels** ribbon to build parcels from lines and seeds in the active record.



The original parent parcels will be saved as historic. Turn on the **Historic** sublayer under the parcel type group layer in the **Contents** pane to display historic parcel features.

		//////	

11. Optionally use the **Sequential Numbering** tool  $\mathbb{P}_{\frac{3}{2}}^{\frac{1}{2}}$  in the **Tools** gallery on the **Parcels** ribbon to add sequential attributes to the new parcels.



### 6: Split Parent Parcel – Metes & Bounds (No Task)

To split parcels using metes and bounds, you can follow these steps:

1. <u>Create a parcel record</u> for the parcel split.

The parcel record will be set as active in the map. The Created By Record field of new parcel features will be populated with the GlobalID of the active record.

- 2. If necessary, use the Locate pane to search for and locate the parcels to split.
- 3. Use the **Traverse** tool to create a parcel traverse.
  - Click Traverse in the Tools gallery on the Parcels ribbon to open the Traverse pane.
  - 2. In the **Traverse** pane, choose the layer in which to create the traverse from the **Layer** drop-down menu.
  - 3. Snap to an existing point as the starting point of your traverse, or anywhere on the map.

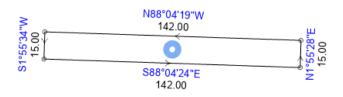
The new parcel will be aligned with existing parcels.

4. Start entering your traverse dimensions.

#### Tip:

Click **Show Only Active** in the **Records** group on the **Parcels** ribbon to only show parcel features in the active record. If there is a new record in the map, only the traverse lines should be visible. Turning off the display of surrounding parcel features by clicking **Show Only Active** makes it easier to view and enter traverse lines.

 After entering your closed loop parcel traverse, click Create Seeds <sup>1</sup>/<sub>2</sub> in the Construct group on the Parcels ribbon to create a seed for the parcel traverse.



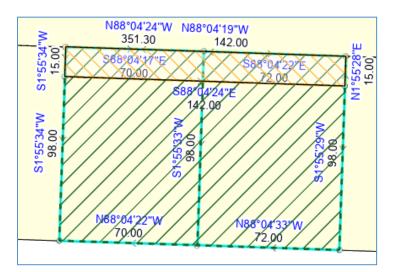
5. Click **Build Active** in the **Construct** group on the **Parcels** ribbon to build the parcel.

Create Record		* † >
Name	Split	
Record Type	<null></null>	
Recorded Date	4/12/2022 12:41:20 PM	
Created By	<null></null>	
Created Date	<null></null>	
Modified By	<null></null>	
Modified Date	<null></null>	
Created Parcel Count	<null></null>	
Retired Parcel Count	<null></null>	

Modi	fy Features	?	Ŧ	џ	×
	🕄 Traverse				≡
Lines	Closure				
Layer	Tax_Lines				٣
0	Click in the map to set a start location			>	×
+	Set Start Set Closing Trace Lines				
	Direction • Distance Radius Arc Ler	ngti	h •		



- 6. If necessary, select the newly built parcel, open the **Attributes** pane, and update its attributes.
- 7. If necessary, <u>align the parcel</u> so that it overlays existing parcels in the correct position.
- 8. Select the new parcel and click **Clip** I in the **Tools** gallery on the **Parcels** ribbon.
- 9. The **Input Features** tab should be your current selection. Verify it's correct.
- In the Clip pane, make sure Clip all editable layers is not checked (at the very bottom), and click the Target Features tab.
- 11. Select the target parcels you want to clip and use to create remainder parcels. The view will change as you select your input and target features so you know what will be affected.



Modify Fe	eatures	* Ū :
€	Clip	
[7]		
Cha	nge the selection.	
Input Featu	res Target Features	
▲ TaxPare	cel (1) 0025-000	
24	0023-000	
Buffer Dista	nce:	0 ft •
When clipp	ping features	
•	Discard (Remainder)	
	Discard the area that intersects	
	Preserve	
	Preserve the area that intersects	
	Split	
0 🖸	Preserve both areas	
		CI-
Cline all a	ditable features	

- 12. Choose the **Discard (Remainder)** option in the **Clip** pane
  - 1. NOTE: Be sure to explore the other Clip options.
- 13. Click **Clip** to clip and create remainder parcels.

### Tip:

Turn on the **Historic** group layer for the parcel type in the **Contents** pane to display historic parcel features.

Select the remainder parcels, open the **Attributes** pane, and update their attributes. You can also use the **Sequential Numbering** tool  $\square^{\frac{1}{3}}$  in the **Tools** gallery on the **Parcels** ribbon to <u>assign</u> <u>sequential attributes</u>.



### 7: Split Parent Parcel – Metes & Bounds (Ground To Grid)

To split parcels using metes and bounds and the Ground To Grid function, you can follow these steps:

1. <u>Create a parcel record</u> for the parcel split.

The parcel record will be set as active in the map. The Created By Record field of new parcel features will be populated with the GlobalID of the active record.

- If necessary, use the Locate\_pane to search for and locate the parcels to split.
- 3. Set your Ground To Grid offset factors
  - 1. Click the **Ground To Grid** dropdown under the **Corrections** group within the **Edit** tab on your ribbon.
  - 2. Choose the "Enter the ground line and draw the grid line" option under the **Interactive Correction Change** section.
  - 3. A new window will prompt you to input the recorded Direction and Distance of a known, existing line in your fabric.
    - 1. You can use a section line or the line of a neighboring parcel.
    - 2. You can choose to only correct for direction by keeping the Distance at 0.
  - 4. After clicking **Next**, a new pop-up window will prompt you to click the start and end points of your known line in your map.
  - 5. Your Ground To Grid is now set. You know this because the Ground To Grid icon is now darker in color up on the ribbon and down at the bottom of your map next to the scale factor.

1:339

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- 1. Click either icon to toggle Ground To Grid on and off.
- 4. Use the **Traverse** tool to create a parcel traverse.

Create Record		≁ ‡ ×
Name	Split	
Record Type	<null></null>	
Recorded Date	4/12/2022 12:41:20 PM	
Created By	<null></null>	
Created Date	<null></null>	
Modified By	<null></null>	
Modified Date	<null></null>	
Created Parcel Count	<null></null>	
Retired Parcel Count	<null></null>	

	4 >					
	round Grid <del>•</del>	Manage Quality				
<	Correct	ions				
	Gro	ound to Grid Co	prrections are Off			
	✓ Direc	tion Offset:	0 dd -			
	🗸 Dista	ince Factor:				
	Constant scale					
	O Co	mpute from ele	vation mode			
	Interactive Correction Change					
ł	- 📻 Enter the ground line and draw the grid line					
	Draw the ground line and the grid line					

Corrections: Ground To Grid					
Enter the ground direction and distance					
Direction N90-00-00E QB *					
Distance 0 ft 🔹					
Nex	t				
	ce of 0 will not update ance factor.				







- Click Traverse in the Tools gallery on the Parcels ribbon to open the Traverse pane.
- 2. In the **Traverse** pane, choose the layer in which to create the traverse from the **Layer** drop-down menu.
- 3. Snap to an existing point as the starting point of your traverse, or anywhere on the map.

Modi	fy Features	? -	, џ	×
	🕄 Traverse			≡
Lines	Closure			
Layer	Tax_Lines			٠
0	Click in the map to set a start location			×
+	Set Start Set Closing Trace Lines			
	Direction • Distance Radius Arc Le		Ŧ	

🕅 Traverse

Trace Lines

Radius

Arc Length

Tet Closing

≡

Modify Features

Lines Closure

Layer Tax\_Lines

P Set Start

Direction

N90-00-00E QB

The new parcel will be aligned with existing parcels as the **<u>Ground To Grid</u>** adjustment will automatically work with the Traverse tool to adjust your input metes and bounds to any distortion or inconsistencies within your map. Ground To Grid will display the Direction and Distance values you input within the COGO attributes while changing the geometry of your line to fit your existing data.

4. Start entering your traverse dimensions.

### **Override Tip:**

- Within the Traverse window, you can override project units by clicking the field drop-down arrow to choose a different unit for your dimensions.
- You can also type a <u>shortcut override</u> next to a dimension.

			Stated Area	<null></null>
Override	Keystroke	Use in grid field	Stated Area Unit	<null></null>
Meters	m or M	Distance, Radius, Arc Lengt	Calculated Area	<null></null>
			Misclose Ratio	Acre
Kilometers	km or KM	Distance, Radius, Arc Lengt	Misclose Distance	Acre US
Feet	ft or FT	Distance, Radius, Arc Lengt	Is Seed	Square Meter Square Foot
			Created By	Square Foot US
Yards	yd or YD	Distance, Radius, Arc Lengt	Modified By	Square Foot Clarke Square Fathom
Miles	mi or MI	Distance, Radius, Arc Lengt	Modified Date	Square Nautical Mile
		Distance, nations, rice Lange	,	,

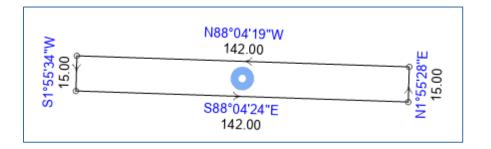
• The parcel type polygon feature class has both **Stated Area** and **Stated Area Unit** attribute fields. You can override the project area unit and choose a different unit for your stated area by selecting the unit from the **Stated Area Unit** field drop-down box in the **Attributes** pane.

### Tip:

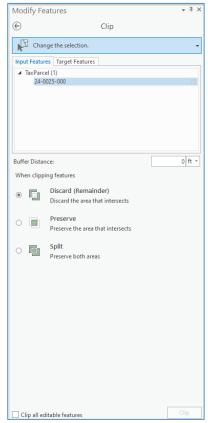
Click **Show Only Active** in the **Records** group on the **Parcels** ribbon to only show parcel features in the active record. If there is a new record in the map, only the traverse lines should be visible. Turning off the display of surrounding parcel features by clicking **Show Only Active** makes it easier to view and enter traverse lines.



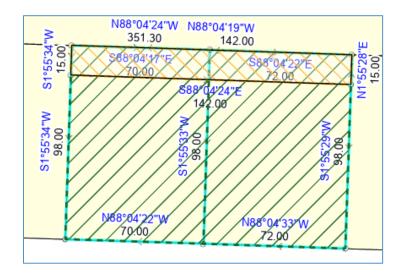
5. After entering your closed loop parcel traverse, click **Create Seeds** in the **Construct** group on the **Parcels** ribbon to create a seed for the parcel traverse.



- 6. Click **Build Active** in the **Construct** group on the **Parcels** ribbon to build the parcel.
- 7. If necessary, select the newly built parcel, open the **Attributes** pane, and update its attributes.
- 8. Select the new parcel and click **Clip** in the **Tools** gallery on the **Parcels** ribbon.
- The Input Features tab should be your current selection. Verify it's correct.
- In the Clip pane, make sure Clip all editable layers is not checked (at the very bottom), and click the Target Features tab.
- Select the target parcels you want to clip and use to create remainder parcels. The view will change as you select your input and target features so you know what will be affected.







- 12. Choose the **Discard (Remainder)** option in the **Clip** pane1. NOTE: Be sure to explore the other Clip options.
- 13. Click **Clip** to clip and create remainder parcels.



### 8: Build Parcels from CAD Lines (with Task)

The *Build parcels from CAD lines* task is a record-driven workflow for building parcels from CAD lines in the parcel fabric.

Task	ſS	?	Ŧ	џ	×
G	Build parcels from CAD lines				≡
Step	os Messages				
2	👸 🛃 📑 🗙 💿 🔲 🛗				
4	1. Create a parcel record				
	2. Locate your work area				
	3. Add CAD lines to the map				
	4. Select CAD lines				
	5. Copy lines to active record				
Þ	6. Edit and clean CAD lines				
	7. Build parcels in active record				
	8. Sequentially assign attributes				

- In the Build parcels from CAD lines task, the **Manage Records** pane is embedded in the **Tasks** pane and automatically opens in the first step.
- In the Build parcels from CAD lines task, the **Catalog** pane is embedded in the **Tasks** pane and automatically opens in the step.
- In the Build parcels from CAD lines task, the step loads the **Select** tool.
- In the task, the **Copy Lines To** dialog box is embedded in the **Tasks** pane and automatically opens in the step.
- In the task, the Planarize tool, Extend Or Trim tool, Vertices tool, Create Seeds command, Validate Extent command, and Fix Error tool are automatically loaded in a pallette for the step.
- In the task, the step automatically runs the Build Active command and proceeds to the next step.
- In the task, the **Sequential Numbering** pane is embedded in the **Tasks** pane and automatically opens in the step.

### 9: Build Parcels from CAD Lines (No Task)

To build parcels from CAD lines, you can follow these steps:

1. <u>Create a parcel record</u> for the CAD file.

The parcel record will be set as active in the map. The Created By Record field of new parcel features will be populated with the GlobalID of the active record.

- 2. If necessary, use the Locate pane to search for and locate the parcels to split.
- 3. Click Add Data <sup>11</sup> in the Layer group on the Map tab and browse to and add the CAD data to the map.

Create Record		≁ û ×
Name	Split	
Record Type	<null></null>	
Recorded Date	4/12/2022 12:41:20 PM	
Created By	<null></null>	
Created Date	<null></null>	
Modified By	<null></null>	
Modified Date	<null></null>	
Created Parcel Count	<null></null>	
Retired Parcel Count	<null></null>	

To add external feature classes, you may need to <u>add a geodatabase</u> containing the data to the project or <u>connect to a geodatabase</u>.

4. <u>Georeference</u> the CAD lines if necessary.

Georeferencing CAD lines moves the lines to the projection and spatial location of the parcel fabric. When georeferencing, you can move the CAD lines to an approximate position in the parcel fabric. After building the parcels, use alignment tools to align the parcels to the surrounding parcels in the parcel fabric.

5. Use the **Select** tool <sup>koll</sup> in the **Selection** group on the **Parcels** ribbon to select the CAD lines.

#### Tip:

To select all the lines in a layer, right-click the line layer in the **Contents** pane, point to **Selection**, and click **Select All**.

- 6. Click **Copy Lines To** in the **Construct** group on the **Parcels** ribbon to open the **Copy Lines To** dialog box.
- 7. Choose a parcel type to which to add the copied lines.

The copied lines will be added as new lines to the parcel line feature class of the parcel type.

8. Choose **Show only active record** to show only parcel features that are part of the active parcel record.



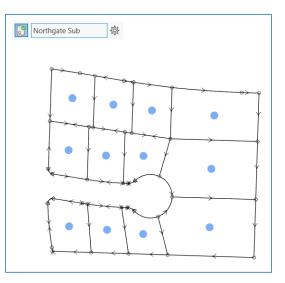
#### Note:

Turning off the display of parcel features that are not part of the active record is useful when editing and modifying lines to construct new parcels.

If parcels are already part of the active record, they will be displayed in addition to the copied lines.

9. Click **OK** to copy the lines to the active record.

Seeds will be automatically generated for closed loops of lines.



- 10. Clean the copied CAD lines. For example, you may need to do the following:
  - Extend or trim dangling lines, planarize lines, or delete lines that create gaps.
  - Click Vertices in the Tools gallery on the Parcels ribbon, and click on a line to display its vertices.
  - Delete parcel seeds. Erroneous parcel seeds can indicate erroneous line loops or gaps. Clean the gaps and delete the erroneous seeds.
  - Create additional parcel seeds. Click **Create Seeds** in the **Construct** group on the **Parcels** ribbon to generate parcel seeds.
- 11. Click **Validate Extent** in the **Tools** gallery on the **Parcels** ribbon to validate the map extent and detect any missed line errors.

Topology errors are labeled in the map extent by their error name, for example, Missing Point. Open the **Error Inspector** pane to display the topology errors. Use the **Fix Error** tool <sup>©</sup> to fix errors in the map with a predefined fix.

Missing parcel and missing point errors will be fixed when parcels are built.



12. Optionally select and update the attributes of parcel seeds. The attributes will be transferred to the new parcels once they have been built.

Alternatively, you can update the attributes of the built parcels.

- 13. Click **Build Active** in the **Construct** group on the **Parcels** ribbon to <u>build parcels</u> from CAD lines in the active record.
- 14. If necessary, <u>align</u> the newly built parcels to surrounding parcel features.
- 15. If necessary, set parcels that were replaced by the CAD lines as <u>historic</u>.

If the parcel record of the CAD lines is the active record, the Retired By Record field of the parcel features being set historic will be populated with the GlobalID of the active record.

16. Use the **Sequential Numbering** tool  $\square_{\frac{1}{2}}^{\frac{1}{2}}$  in the **Tools** gallery on the **Parcels** ribbon to add sequential attributes to the new parcels.

You can also select parcels and open the **Attributes** pane 💷 to update attributes

17. Optionally use the **Update COGO** tool in the **Tools** gallery on the **Parcels** ribbon to add COGO dimensions to the newly built parcel lines.

Select the lines you want to update and click the **Update COGO** tool to open the **Update COGO** pane. COGO dimensions are generated from the line geometry. The COGO Type attribute of the line is set to **Computed**.



## **10: Union Parcels to Create a New Parcel**

Unioning parcels will leave the original selected parcels as current/active and will create a new parcel as well – all current. **No History is created in this process** as long as there is no active record set and/or you are not merging within the same parcel type.

- 1) Select existing parcels to be unioned.
- 2) Navigate to and choose Merge tool

<b>□</b>
Merge

3) On the Merge pane...

- a. Use the New Feature tab for a Union
- b. Choose the button for "Keep original features"
- c. Choose the button for "Use template"
- d. Set the new template (must be visible in the TOC to be selectable with the template browser)
- Examples:
  - Select existing Tax Parcels to begin a new Subdivision: The outer boundary of the tax parcels becomes the new Subdivision boundary
  - Select PLSS Sections to create the PLSS Township
- e. Fill in any other attributes needed
- f. Merge -

The Merge tool will then merge the parcels together into a new parcel based on the Template setting and will NOT create any Historic features.

4) If not already done, update the attributes of the new parcel

### SAVE EDITS!

Merge		?	Ŧ	џ	×
Existing Feature	ew Feature				
Change the se	election.				•
Layer					
PlattedLots					*
Features to merge					
7				×	
8				×	
Keep original feature     Use Template     Parcel Merged Feature Attrib				•	]
Name	123-456-789				
Created By Record	<null></null>				
Retired By Record	<null></null>				
Stated Area	<null></null>				
Stated Area Unit	<null></null>				
Calculated Area	<null></null>				
Misclose Ratio	<null></null>				
Misclose Distance	<null></null>				
Is Seed	No				
Parcel Subtype	<null></null>				

# **Quality-driven Workflows**

# Quality Ribbon

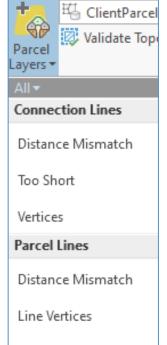
📽 📾 🗊 5 - ♂ - 💠 🖻 車 毌 闰 🗅 🖀 -	Parcels TrainingDemo - DemoV3 - ArcGIS Pro
Project         Map         Insert         Analysis         View         Edit         Imagery         Share           Image: Project	Records       Quality         Im Attributes $i \rightarrow i$ Im Class $i \rightarrow i$ Im Class $i \rightarrow i$
Save Discard Parce Layers + Unidate Topology + Layers + L	Shrink Merge Merge Simplify By Delete Build Consistency Weighted App
Manage Edits Evaluation Gaps and Overlaps Select	ion 🖼 Tools Least Squares

### **Evaluation Module**

Parcel Layers • Evaluation

ClientParcelFabric

- Distance Mismatch
  - Evaluates the difference in the distance between the Shape Length and the COGO Distance.
  - o Generates a new layer in the Table of Contents
  - By default, the difference criteria is set to 0.5' which means any line with a difference greater than 0.5' will be flagged.
  - You can change the difference in the Layer's Properties > Definition Query tab
- <u>Too Short</u>
  - Generates a new layer in the Table of Contents
  - By default, the evaluation is set to report any line that has a Shape Length less than 0.5'
  - You can change the difference in the Layer's Properties > Definition Query Tab
- Vertices
  - Generates a new layer in the Table of Contents
  - When used with a line class, it generates a new line class (dashed symbology)
  - When used with a polygon class, it generates a polygon class with a dashed boundary line and green nodes at the vertices – not necessarily the same as the Points layer.





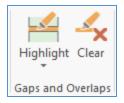
Parcels

Vertices





### Gaps & Overlaps Module



This tool is used to find small gaps and overlaps in the data prior to running topology validation. It is also meant for small areas, such as just in your area of work on a split, combine or new subdivision.

#### To use this tool:

- Set the Highlight Settings use the dropdown to get to the settings
  - Enter the Width something less than what would be an alley width.
  - Layer enter the layer to be evaluated
  - Colors set your Gap and Overlap colors
- Highlight the errors
  - Click the tool to show any violators
  - This tool only works in the current view note the dashed line generated at the periphery.
  - Use the Clear button to clear the currently highlighted features.

Highlight (	Slear	Select Parcel Features
Highlight	: Settin	gs
Maximum	n Width	6 ft *
Layer		TaxParcel •
Gap color		•
Overlap c	olor	-

Do not highlight countywide – it will take a long time to evaluate if it finishes at all.



## **11: Topology Validation**

Topology can be found in the Map's Table of Contents or in Catalog.

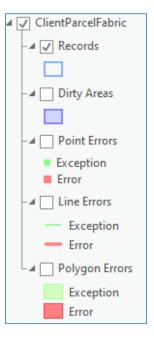
#### Via Table of Contents:

**Dirty Areas:** 

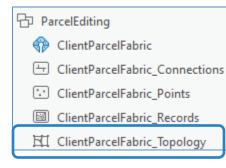
• This is an indicator that shows areas that have not been validated yet.

Point, Line, Polygon Errors:

• These are visual representations of the errors that are found when topology is validated.



### In Catalog:



Many rules are created by the parcel fabric itself, but these are editable. The default rules pertain to each feature type by itself, meaning there are no rules to tie parcel types together.

77 0



To see the Topology properties, view the Properties of the Parcel Fabric Topology from Catalog.

### General Tab:

Topology Properties: Clie	entParcelFabric_Topology		х					
General								
Feature Class	Name:	ClientParcelFabric_To						
Rules Errors	XY Cluster Tolerance:	0.0032808333 Foot_US						
Manage	Z Cluster Tolerance:	0.001000000						
	✓ Status							
	Not Validated							
		There are one or more dirty areas in this topology. Dirty areas are where editing has been performed.						

- Name: you can modify the name of the topology if you wish. A default name will be given if you do not specify.
- Tolerances: The XY and Z Cluster tolerances will be auto-populated with values based on the coordinate system of the data unless you specify otherwise.
  - Keep in mind that the tolerances indicate that any error smaller than that value will be auto-corrected and any error larger than that value will be flagged for you to review and correct. So, keeping the default values might be a good place to start and adjust once you start to review the errors.



### Feature Class Tab:

Topology Properties: Cl	ientParcelFabric_Topology				×
General					
Feature Class Rules Errors	Number of XY Ranks:     1       Number of Z Ranks:     1				
Manage	✓ Feature Classes				
	Feature Class	XY Rank		Select All	
	Construction		^	Clear All	
	✓ 🖾 TaxParcel	1		Clear All	
	PLSSQuarter_Lines	1			
	PLSSSixteenth_Lines	1			
	✓ 🖾 PLSSSection	1			
	✓ 🖾 PLSSQuarter	1			
	HistoricPlats				
	ClientParcelFabric_AdjustmentLines				
	ClientParcelFabric_Records				
	PlattedLots_Lines	1			
	Discrepancy_Points				
		>	~		

This tab allows you to choose which feature classes will participate in the topology and what rank each of those will receive.

# of Ranks: You can choose how many rankings you would like to participate in your topology.

- The lower the value, the better the rank 1 is the highest rank meaning it's the best accuracy.
- Ranks indicate which features are considered more or less accurate than other features.
- If there is an error smaller than the tolerance specified in the General tab, it will be resolved based on the ranks listed here. Lower ranks will be adjusted to higher ranks. Equal ranks will split the difference/average the difference.

To select which features will participate, check the box to the left of the feature and then indicate the rank(s) you'd like to assign to it.



### Rules Tab:

General Feature Class	+ Add 🗙 Remove 🔮 Load Existing 🔚 Sav						
Rules	Feature Class 1	Subtype 1	Rule	Feature Class 2	Subtype 2		
Errors	ClientParcelFabric_Connections		Endpoint Must Be Covered By (Line-Point)	ClientParcelFabric_Points		^	
Manage	PLSSTownship_Lines		Endpoint Must Be Covered By (Line-Point)	ClientParcelFabric_Points			
	PLSSTownship_Lines		Must Not Have Dangles (Line)				
	PLSSTownship_Lines		Must Not Self Overlap (Line)				
	PLSSTownship_Lines		Must Not Self Intersect (Line)				
	PLSSTownship_Lines		Must Be Covered By Boundary Of (Line-Area)	PLSSTownship			
	PLSSTownship		Boundary Must Be Covered By (Area-Line)	PLSSTownship_Lines			
	PLSSSection_Lines		Endpoint Must Be Covered By (Line-Point)	ClientParcelFabric_Points			
	PLSSSection_Lines		Must Not Have Dangles (Line)				
	PLSSSection_Lines		Must Not Self Overlap (Line)				
	PLSSSection_Lines		Must Not Self Intersect (Line)				
	PLSSSection_Lines		Must Be Covered By Boundary Of (Line-Area)	PLSSSection			
	PLSSSection		Boundary Must Be Covered By (Area-Line)	PLSSSection_Lines			
	PLSSQuarter_Lines		Endpoint Must Be Covered By (Line-Point)	ClientParcelFabric_Points			
	PLSSQuarter Lines		Must Not Have Dangles (Line)				

All the rules are shown in the Rules tab. There are some rules that cannot be modified as they are the basis of a fabric.

• These 6, per Parcel Type, are not editable:

Endpoint Must Be Covered By (Line-Point) Must Not Have Dangles (Line) Must Not Self Overlap (Line) Must Not Self Intersect (Line) Must Be Covered By Boundary Of (Line-Area) Boundary Must Be Covered By (Area-Line)

To Add your own rules, either scroll to the bottom of the list to the prompt "Click here to add a new rule.", use the Add button at the top of the dialog box or use the Load Existing tool at the top of the dialog box.

Suggestions of what to add:

- Anything that will spatially relate multiple parcel fabric types
- Gap/Overlap rules where appropriate

TaxParcel	Must Not Have Gaps (Area)	
TaxParcel	Must Not Overlap (Area)	
PLSSTownship	Boundary Must Be Covered By Boundary Of (Area-Area)	PLSSSection •
PLSSSection	Boundary Must Be Covered By Boundary Of (Area-Area)	PLSSQuarter +
PlattedBlocks	Must Be Covered By Feature Class Of (Area-Area)	Subdivisions *
PlattedLots	Must Be Covered By Feature Class Of (Area-Area)	Subdivisions 🔹

You can modify or delete any rules that you create, but not what the fabric needs.



### Errors Tab:

General							
Feature Class	Generate Summary					Ex	port to File
Rules	Feature Class 1	Subtype 1	Rule	Feature Class 2	Subtype 2	Errors	Exceptions
Errors	ClientParcelFabric_Connections		Endpoint must be covered by	ClientParcelFabric_Points		0	0
Manage	PLSSTownship			PLSSTownship		1	0
	PLSSTownship_Lines			PLSSTownship_Lines		0	0
	PLSSTownship_Lines		Endpoint must be covered by	ClientParcelFabric_Points		0	0
	PLSSTownship_Lines		Must not have dangles	PLSSTownship_Lines		0	0
	PLSSTownship_Lines		Must not self-overlap	PLSSTownship_Lines		0	0
	PLSSTownship_Lines		Must not self-intersect	PLSSTownship_Lines		0	0
	PLSSTownship_Lines		Must be covered by boundary of	PLSSTownship		0	0
	PLSSTownship		Boundary must be covered by	PLSSTownship_Lines		0	0
	PLSSSection			PLSSSection		4	0
	PLSSSection_Lines			PLSSSection_Lines		5	0
	PLSSSection_Lines		Endpoint must be covered by	ClientParcelFabric_Points		0	0

The Errors tab allows you to generate a summary of the errors and export that to a file as you need.

"Generate Summary" is only available when topology has been validated.

### Manage Tab:

Topology Propertie	s: ClientParcelFabric_Topology	×
General Feature Class Rules Errors	Manage geodatabase functionality ✓ Editor tracking Specify the fields to record the user name and date when a feature is created or edited. Fields specified will be maintained by ArcGIS. Any new fields will be created automatically.	
Manage	Creator Field Create_Juser Create_Date Field Create_date Editor Field Iast_edited_user Edit Date Field Iast_edited_date Time standard: () UTC (recommended)	
	<ul> <li>Database time</li> <li>Learn more about editor tracking</li> </ul>	

The Manage tab allows you to enable and disable editor tracking.



### **Topology Tools:**

To validate and correct topology errors, use the tools in the pallet.

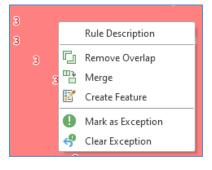
Validate				
Validate	Validate	Validate	Error	Fix
All	Extent	Specified E	Inspector	Error

- **Validate All:** If there are more than 1000 features in your data, this tool will prompt you to open the geoprocessing tool to validate the entire dataset.
- **Validate Extent:** This will validate whatever is in your current data view. If there are more than 1000 features, it will again prompt you to run the geoprocessing tool.
- Validate Specified Extent: This tool will allow you to draw a box over the area you'd like to validate. If more than 1000 features, you will be prompted for the geoprocessing tool.
- Error Inspector: This will open the Error Inspector panel to examine individual errors and potentially make corrections or mark errors as exceptions.

Error	nspector: Map				?、	, 4 ×
Source	: <sup>昨</sup> ClientParcelFab	ric 🔹 🗱 Validate 🛛 Filter: 🍸 🎇 S	election: d 🕅 🖸 📲			≡
_⊿ Sha	pe Feature 1	Rule	Feature 2	Exception	Preview Details Fix	
6	TaxParcel 3950	Must Not Overlap	TaxParcel 3951			
E	TaxParcel 3950	Must Not Overlap	TaxParcel 3952			$\rightarrow$
8	TaxParcel 3950	Must Not Overlap	TaxParcel 3953		21-0048-000 21-0039-000	
6	TaxParcel 3950	Must Not Overlap	TaxParcel 3954			
E	TaxParcel 3950	Must Not Overlap	TaxParcel 3955		21-0049-000 CENTRAL SQUARE	
E	TaxParcel 3950	Must Not Overlap	TaxParcel 3956		$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\leftarrow$
6	TaxParcel 3950	Must Not Overlap	TaxParcel 3957		21-0041-000	4-000
E	TaxParcel 3950	Must Not Overlap	TaxParcel 3958		21-0042-001	
E	TaxParcel 3950	Must Not Overlap	TaxParcel 3959		21-0042-000 21-0038-000	5-000
5	TaxParcel 3950	Must Not Overlap	TaxParcel 3960			<u> </u>

Preview Details Fix	
Available Fixes for Selected Errors:	
🔝 Create Feature	1 Errors
<sup>III</sup> ≱ Merge	1 Errors
🕼 Remove Overlap	1 Errors
Mark as Exception	

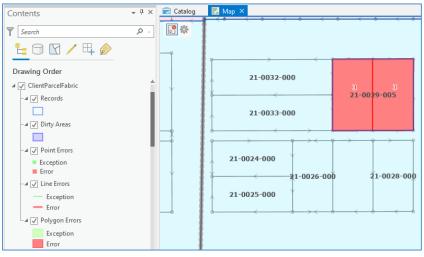
• **Fix Error:** This is an on-the-fly tool that will allow you to interact with individual errors to make corrections or flag as exceptions.





# **EXERCISE: Test Validate options and correct errors**

- 1. Zoom to an area around a scale of 1:1000
- 2. Choose Validate Extent
- 3. Be sure your Point, Line and Polygon Errors are visible in your table of contents



#### 4. Open Error Inspector to review errors in current view

Er	Error Inspector: Map							
So	urce: $\mathbb{H}_{\mathbb{H}}$	🖞 ClientParcelFabric 🛛 🔻	🔯 Validate 🛛 Filter: 🍸 🏹	Selection: 🕂 🙀	V 📑			
⊿	Shape	Feature 1	Rule	Feature 2	Exception			
	M	TaxParcel 3299	Must Not Overlap	TaxParcel 14082				
	5	TaxParcel 3298	Must Not Overlap	TaxParcel 14082				
			·					

- 5. Assess & test various tools available
- 6. Test a mass exception
- 7. Open Fix Error tool
- 8. Assess and test various tools available



## **12: Attribute Rules**

Attribute Rules provide efficiency by letting the computer do some automated calculations or queries to populate attributes that may otherwise be manually entered.

Project A	ttribute Rules Insert	Analysis	View	Share	Appearance	Labeling Data	Records
Cut					<b>1</b>		
Paste X Delete	Fields Subtypes Domains C	Contingent C Values	Calculation Rule •	Constraint Rule	Validation Ready to Rule Use Rules		xport Enable Disable Save Rules Rule Rule
Clipboard	Design			Add F	ules	A	ttribute Rules
Contents	* † ×	E DEMOI	MAP2020	🖷 Field	ds: TaxParcel	Attribute Rules: Enc	umbrance ×
Search     P     Calculation							
Image: Add Rule     Image: Columns     Image: Filter							

To access Attribute Rules, select a layer you wish to create a rule for and navigate to Design > Attribute Rules.

Three Attribute Rule Types:

Calculation Constraint Validation						
Add Rule   Columns   Filter						
Add Immediate Calculation Rule						
Add Batch Calculation Rule						

#### Calculation

New Rule		
Calculation		
Rule Name New Rule		
Description		
Subtype <all></all>		•
* Field		*
✓ Editable		
* Expression 🔀		
> Error		
✓ * Triggers		
Insert	Update	Delete
Execution		
Tags		

Examples:

- Calculate Acreage
- Calculate the Record Name



### • Constraint

New Rule						
Constraint						
Rule Name New Rule						
Description						
Subtype <all></all>						
* Expression X						
✓ * Error						
Error Number						
Error Message						
✓ * Triggers						
Insert Update Delete						
> Execution						
Tags						
iays						

Examples:

• Control needs to be within 1000 feet of County boundary.

### • Validation

New Rule					
Validation					
Rule Name New Rule					
Rule Name New Rule					
Description					
Subtype <all></all>					
* Expression 🔀					
✓ * Error					
Error Number					
Error Message					
Severity 5					
> Execution					
Tags					
L					

#### Examples:

Validate attributes



### Pre-Configured Rules:

You can access the pre-configured rules by

- selecting and right-clicking a feature class in the Table of Contents
- Choose Data Design > Attribute Rules
- On the Attribute Rules ribbon, use the Import Rules dropdown and select Parcel Fabric



Rules such as Larger Than, Smaller Than, Longer Than, & Must Match Within can be modified in the Definition Query.

#### Polygon:

Rule Name	Description
MUST HAVE A RECORD	Parcel features must be associated to the record that created them
MUST BE LARGER THAN	Parcel shape area must be larger than the specified area
MUST BE SMALLER THAN	Parcel shape area must be smaller than the specified area
CURRENT MUST NOT OVERLAP	Current parcels must not overlap each other. Current parcels can overlap historic parcels and historic $\boldsymbol{\mu}$
NAME MUST BE UNIQUE	Parcel names must be unique for current parcels in the same parcel type
NAME MUST NOT BE EMPTY	Parcel names must be populated and cannot be NULL
MISCLOSE RATIO MUST BE LESS THAN	Misclose ratio must be less than the specified tolerance
MICLOSE DISTANCE MUST BE LESS THAN	Misclose distance must be less than the specified tolerance
AREAS MUST MATCH WITHIN	Shape area and Stated Area must not differ by more than the specified tolerance

#### Line:

Rule Name	Description
MUST HAVE A RECORD	Parcel features must be associated to the record that created them
MUST BE LONGER THAN	Boundary line must be longer than the specified length
DISTANCE MUST MATCH WITHIN	Line shape length must match the COGO distance within the specified tolerance
DIRECTION MUST MATCH WITHIN	Line shape direction must match the COGO direction and rotation within the specified tolerance

#### Point:

Rule Name	Description
MUST BE IN XY EXTENT	Points must lie within the specified MBR (minimum bounding rectangle)
MUST BE IN XY EXTENT	Points must lie within the specified MBR (minimum bounding rectangle)
MUST BE IN Z EXTENT	Point's z attribute coordinate must lie within in the specified height range
XY MUST MATCH SHAPE WITHIN	Point's XY attribute coordinates must lie within the specified distance of the point's shape
Z MUST MATCH GEOMETRY WITHIN	Point's Z attribute coordinate must lie within the specified height of the point's shape



# **EXERCISE: Create Rules**

- A: Calculate Rule Type:
  - o Make sure to have fields for attribute to be calculated
  - Create a new Attribute rule
  - Edit a feature to test
- B: Constraint Rule Type: Control must be within County.
  - Test it by trying to add a corner at 1,1.
- C: Validation Rule Type: via Pre-Configured Rules
  - o Modify Definition Query
  - o Test



# 13: Run a Consistency Check (Least Squares Analysis)

A consistency check will determine the location and number of measurement errors in your data. This is done through a Least Squares Analysis which checks the direction and distance accuracy of your lines.

 Verify that your lines are populated with COGO attributes as these are the values that the process evaluates. Distance, Direction, Radius, ArcLength and Radius 2 values.

#### Note:

If your lines are not attributed with COGO values, use the <u>Update</u> <u>COGO</u> tool to generate COGO values from the geometry (not from a deed).

- 2. Fill out the **Direction Accuracy** and **Distance Accuracy** fields for all lines you will be checking.
  - Default is 30 seconds for **Direction** and 0.49 ft for **Distance**.

#### Note:

- Higher values in the accuracy fields = Lower accuracy
- Lower values in the accuracy fields = Higher accuracy
- Example:
  - If I put a value of 120 in the Direction Accuracy field and a value of 3 in the Distance Accuracy field, that would mean that my Direction accuracy is plus or minus 2 minutes and my Distance accuracy is plus or minus 3 feet.

# 3. Use the **Analyze Parcels By Least Squares Adjustment** tool to run the consistency check.

a. Select the lines that you want to analyze (could be connection lines as well)

#### Tip:

You can choose polygons as part of the analysis, but they will increase the processing time as the tool has to extract the lines from the polygons. Processing times will be faster by selecting only lines to be analyzed.

- b. Choose the Parcel Fabric to be analyzed.
- c. Under Analysis Type, choose "Consistency check".
- d. Choose the default Convergence Tolerance or type in your own.
- e. Run the tool.

Attributes Geome	etry
Direction	N44°12'38"W
Distance	596.875854
Radius	<null></null>
Arc Length	<null></null>
Radius2	<null></null>
СОGО Туре	From Geometry
Is COGO Ground	Yes
Rotation	0°00'00"
Scale	1
Direction Accuracy	30
Distance Accuracy	0.492125

Geoprocessing •	ч×						
$$ Analyze Parcels By Least Sq $\oplus$							
Parameters Environments	?						
* Input Parcel Fabric	• 🚘						
Analysis Type							
Consistency check	•						
1 Convergence Tolerance	_						
0.05 Meters	-						



- 4. View and analyze the results.
  - a. View Details from the geoprocessing tool to check the Chi-Square test result. If the result is low or high, you will need to change the accuracy values assigned in Step 2.

Analyze Parcels By Least Squares Adjustment (Parcel Tools)

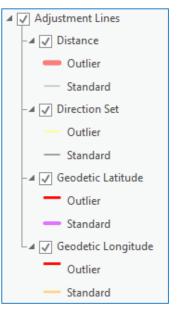
A Completed with warnings.

Started: Today at 3:01:42 PM Completed: Today at 3:01:45 PM Elapsed Time: 3 Seconds

Errors and warnings

 A Missing distance and/or direction accuracy values. Default accuracy values will be used. Distances: 0.492125 ftUS, Directions: 30 seconds
 A Chi square test: Low. To improve the chi square test decrease the values in the distance accuracy or direction accuracy fields. (Decreasing the accuracy value on a measurement increases its influence on coordinate positions in the network.)

- b. Explore the Adjustment Lines feature class added to the **Contents** pane.
  - The symbology will show you if there are any outliers in your data.
- c. Make corrections to any outliers you may have.





## 14: Run a Weighted Least Squares Adjustment

A weighted least squares adjustment will calculate more accurate coordinates for the points in your fabric using two or more control points. This is done through a Least Squares Analysis which checks the direction and distance accuracy of your lines, and then an application of the proposed adjustments.

 Verify that your lines are populated with COGO attributes as these are the values that the process evaluates. Distance, Direction, Radius, ArcLength and Radius 2 values.

#### Note:

If your lines are not attributed with COGO values, use the <u>Update</u> <u>COGO</u> tool to generate COGO values from the geometry (not from a deed).

- 1. Fill out the **Direction Accuracy** and **Distance Accuracy** fields for all lines you will be checking.
  - Default is 30 seconds for **Direction** and 0.49 ft for **Distance**.

#### Note:

- Higher values in the accuracy fields = Lower accuracy
- Lower values in the accuracy fields = Higher accuracy
- Example:
  - If I put a value of 120 in the Direction Accuracy field and a value of 3 in the Distance Accuracy field, that would mean that my Direction accuracy is plus or minus 2 minutes and my Distance accuracy is plus or minus 3 feet.

# 2. Use the **Analyze Parcels By Least Squares Adjustment** tool to run the least squares analysis.

a. Select the lines that you want to analyze (could be connection lines as well)

Tip:

You can choose polygons as part of the analysis, but they will increase the processing time as the tool has to extract the lines from the polygons. Processing times will be faster by selecting only lines to be analyzed.

Geoprocessing • P	×
€ Analyze Parcels By Least Sq	$\oplus$
Parameters Environments	?
* Input Parcel Fabric	-
Analysis Type	
Weighted least squares	•
Convergence Tolerance	
0.05 Meters	•

- b. Choose the Parcel Fabric to be analyzed.
- c. Under Analysis Type, choose "Weighted least squares".
- d. Choose the default Convergence Tolerance or type in your own.
- e. Run the tool.

Attributes Geometry					
Direction	N44°12'38"W				
Distance	596.875854				
Radius	<null></null>				
Arc Length	<null></null>				
Radius2	<null></null>				
COGO Type	From Geometry				
Is COGO Ground	Yes				
Rotation	0°00'00"				
Scale	1				
Direction Accuracy	30				
Distance Accuracy	0.492125				



- 3. View and analyze the results.
  - a. View Details from the geoprocessing tool to check the Chi-Square test result. If the result is low or high, you will need to change the accuracy values assigned in Step 2.
- Analyze Parcels By Least Squares Adjustment (Parcel Tools)
   ×

   ▲ Completed with warnings.
   Started: Today at 3:01:42 PM

   Completed: Today at 3:01:45 PM
   Elapsed Time: 3 Seconds

   ▲ Missing distance and/or direction accuracy values. Default accuracy values will be used. Distances: 0.492125 ftUS, Directions: 30 seconds

   ▲ Chi square test: Low. To improve the chi square test decrease the values in the distance accuracy or direction accuracy fields. (Decreasing the accuracy value on a measurement increases its influence on coordinate positions in the network.)

Adjustment Points

Adjustment Lines

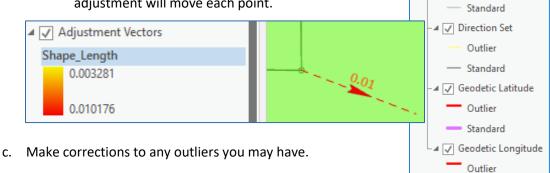
▲ 🗸 Distance

Outlier

Standard

 $\odot$ 

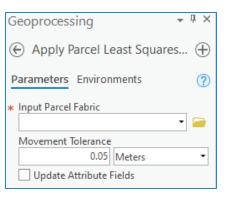
- b. Explore the Analysis group layer with the Adjustment vector, point, and line feature classes added to the **Contents** pane.
  - The symbology of the points and lines will show you if there are any outliers in your data.
  - The vectors show the direction and length the adjustment will move each point.



- 4. Rerun the **Analyze Parcels By Least Squares Adjustment** tool if you made corrections to any outliers.
- If the adjustments look satisfactory, then run the Apply Parcel Least Squares Adjustment tool.

#### Note:

- a. This tool applies the results and proposed changes stored in the Adjustment feature classes. This makes it so there is no need to select the features during this step.
- b. Choose a Movement Tolerance.
  - Any adjustments that are smaller than this distance will not be applied.
- c. Choose if you want to Update Attribute Fields with statistical metadata.
- d. Run the tool
  - You may choose to "Enable Undo" for this tool before running it.



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# **Enterprise Versioning**

Many organizations have multiple editors and thus use an enterprise system to enable them to edit at the same time. When multiple editors are required to work with the Parcel Fabric, enterprise versioning is the method used so that each editor has a working copy of the data and can make edits without interference from other editors. When the editor wishes to then share and review edits, via the versioning tools, he/she can then review the edits in the context of the published edits from other editors and post edits to the default data.

The versioning process and tools enable multiple editors to stay connected to the main geodatabase while editing, review his/her edits against other editor's changes, and maintain the option to discard the entire version of edits in the case of major errors.

# **Versioning Process**

A version represents a snapshot in time of the entire geodatabase. It contains all the datasets in the geodatabase. Versioning allows multiple users to edit the same data in an Enterprise geodatabase without applying locks or duplicating data.

Every Enterprise geodatabase has a parent version called DEFAULT; therefore, versioning is always enabled for the geodatabase. The DEFAULT version always exists and cannot be deleted. You maintain and update the DEFAULT version over time by posting changes to it from other versions. You can create any number of versions and have users edit them simultaneously.

Versioning with the Parcel Fabric only allows one step from the DEFAULT parent, but as many as is needed. In other words, the parent DEFAULT can have as many children as are needed, but no grandchildren. Without the Parcel Fabric, grandchildren are possible.

File geodatabases do NOT support versioning.



# Access Versioning Commands

If you are editing a parcel fabric published as a feature service, you will be working with a branch-versioned geodatabase, and you will need to switch to and create versions. After you <u>add the parcel fabric to a map</u>, you can use the **Versioning** ribbon to create and manage versions.

Project	Мар	Insert	Analy	/sis	View	Edit	Ima	agery	Share	Versioning
Manage Ne Versions Versi	on		Conflict Manager	Version	Historia Momer Archivir	tal nts	Change Version Map	Refresh View		

To access the Versioning ribbon,

1. Click List By Data Source 🗇 in the Contents pane

Then:

2. Select your database connection. The **Versioning** ribbon, containing commands to manage, create, and reconcile versions, becomes available.

#### OR

3. You can right-click the database connection in the **Contents** pane to switch between versions.

Data Source	
4 💽 Map1	
▲ I sde.DEFAULT (ParcelFabricProTest)	
▶ 🗸 Historic : His 🚰 Change Version	
🛛 🗸 Historic : His 🗞 Change Moment	t
▶ 🗸 Historic : His	





### Create a new Version

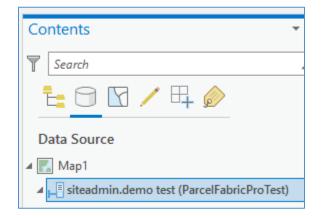
- 1. Add all needed data to a New Map
- 2. Click on the **Default gdb** in the **List by Data Source** TOC pane
  - a. This will make the Versioning Ribbon available
- 3. On the Versioning Ribbon, choose New Version
  - a. Fill in the appropriate information
  - b. Check the box to Switch to this new version

You can set one of three permissions on a version:

• **Private**— Only the owner or the ArcSDE administrator may view the version and modify versioned data.

New Version	×
Parent Version sde.DEFAULT	
Name	
Description	
Access Permission	
Private     Protected	
O Public	
Change to this new version	
OK Ca	ncel

- **Protected** Any user may view the version, but only the owner or the ArcSDE administrator may edit datasets to which he or she has read/write permission.
- **Public** Any user may view the version. Any user who has been granted read/write (UPDATE, INSERT, and DELETE or read/write) permissions on datasets can modify those datasets.
- 4. Verify the version changed in the List by Data Source TOC pane



# **Reconciling & Posting Process**

**Reconciling:** pulling all the changes from the target (parent/Default) version into your version and finding anything that doesn't match.

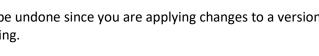
Reconcile merges all modifications between the current edit version and a target version. Any differences between the features in the target version and the

features in the edit version are applied to the edit version. Reconciling happens before Posting a version to a target version. A target version is any version in the direct ancestry of the version, such as the default version.

\* You cannot use the Undo operation to undo a Reconcile. To undo a Reconcile, you must exit your edit session without saving changes.

**Posting:** pushing your versioned edits to the default parent version.

\* Posting cannot be undone since you are applying changes to a version you are not currently editing.





Post







## **Reconciling & Posting a Version**

- 1. Make sure you have the Version to Reconcile set in the Contents pane under the List by Data Source Tab
- 2. Click on the *Reconcile* button on the *Versioning Toolbar*

If any conflicts arise, the Conflict Manager tool will be available on the Versioning toolbar. It can be used to resolve differences in the versions.

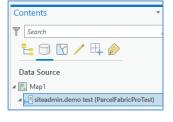
If no conflicts arise, then you may continue to post the edits.

- 3. Click on the Post button on the Versioning Toolbar
- 4. Version maintenance:

After posting data, you can either continue to edit with the same version or you can change version to Default and remove the current version.

- **a.** If you choose to continue editing with the same version, you may continue to edit and repeat the Reconcile and Post steps often.
- b. If you choose to remove the current version, use the *Change Version* option either from the Versioning toolbar or from a right-click menu of the data source to change back to the Default version.
  - i. Select the Default version and click OK
  - ii. Then, use the *Manage Versions* tool on the Versioning toolbar to select, right click and choose delete to remove the version you no longer need. Be sure to Save the change.

4	Name	Owner	Parent	Description	Access	Reconciled	Validated	Created
	DEFAULT	sde		Instance default version	Public			4/30/2020 7:55
	demo test	siteadmin	DEFAULT		Public	7/28/2020 7:27:42 PM		7/28/2020 7:10
T	码 New		1					
	× Delet							
	Resto	re version						
	2 Reco	cile/Post						







Change Version	×
ParcelFabricProTest	
Filter by name:	Filter by owner:
✓ sde.DEFAULT	
siteadmin.demo test (curre	nt version)
Version count: 2	OK Cancel





# **Appendix: Recommendations**

# Recommendations:

- A. Change your symbology and labeling to fit your needs.
- B. Become a member of the Esri GeoNet Community Land Records and Local Government. https://geonet.esri.com/
- C. Keep this website bookmarked:
  - o <u>https://pro.arcgis.com/en/pro-app/help/data/parcel-editing/whatisparcelfabric.htm</u>

# Data Cleanup Needs (aka Homework):

Every project leaves a little room for some homework – whether clean up needs, further decisions to be made, or tweaks to implement. Below are the items found, discovered, or recommended for the Client's homework.

- 1. Attributes:
  - a. Ensure the attribute schema will match the Client's needs. Test what is there and what changes you may be thinking about.
- 2. Topology:
  - a. There are several small gaps & overlaps that can be corrected with topology tools and other COTS ArcGIS Pro tools.

# Things to think about . . .

### A: Fabric Record usage

Be clear about how the County will use Records moving forward

### **B: Review map Items:**

- TOC items add/remove features as needed, move items up/down or group
- Symbology changes including transparency, scale for visibility, and label options
- Field visibility and highlighting
- Set Labeling
- Prep Task settings configuration of each task