Enhancements to Labels and Text

Often how we enter data into the attribute table is not the way we wish it to display as a label.

We can uniformly change the display with symbol properties, but what happens when you want to modify only one or a few labels to make them stand out.

Labels and map text use symbol settings for their font display properties.

The symbol settings are referred to as the base settings.

You can override the base settings with formatting tags and enhance labels by writing simple VB expressions in the Label Properties dialog.

In this image the table shows the values of the parcel field used for labeling.

Above the table we see an enhanced label where Parcel No: text was added and the label italicized.

We also see a modified annotation label with just a portion of the label bolded.

Generally it's taught when you turn on a layer's labels you are unable to manipulate them individually unless you convert them to an annotation class.

Like most things with ESRI software there are usually two or more ways to get around a general rule.

Let's start manipulating the labels by adding the text Parcel No: to all labels and then italicizing the labels.

Right-click on the layer and at the bottom of the menu choose properties.

The layer properties dialog will appear.

Make sure the labels tab is selected.

In the Label Field select the target field from the table.

In this case Parcel_ID.

Next click the Expression button.

The label Expression dialog will appear.

The top window pane displays the fields in the table.

The Expression window pane is where we'll create our VB expressions.

Before Parcel_ID add Parcel No: within quotes.

To connect objects you need to add an ampersand.

To maintain a space between the colon and the parcel number you must put a space in quotes.

In this example I'll place two spaces.

Add another ampersand.

Within the next set of quotes add a less than sign then ita and then a greater than sign.

This indicates where the italicized labeling starts.

Now go to the end of the field name and in quotes do the same thing except add a forward slash between the less than and the letter I.

This indicates where the italicizing stops.

The ita on both sides of the label field must be identical in their font.

Click the verify button to determine if your code is functioning.

The Label Expression Verification dialog will pop up.

The sample window pane gives a preview of what the labels will look like.

Click ok on all the open dialogs to return to the map document.

In the next segment we will add some formatting tags to one of the annotation labels.

The labels were already converted to annotation.

Double-click on the center parcel label to open the properties dialog.

We only want to bold the last six numbers of the label.

Click on About Formatting Text button.

This dialog shows many basic tags that can be used to modify labels.

These tags can be used almost anywhere text is placed on or around the map.

They can be used with dynamic label expressions, annotation, legend text, map titles, and even in values with a field of a table.

Close the About Formatting Tags window.

Place the cursor where you want the formatting change to begin.

Type <bol>

Type </bol> where the formatting change ends.

Click OK

More than one formatting tag can be added to text.

Open the properties again to italicize the whole label.

At the beginning of the label type in <ita> and at the end add </ita>.

Click OK.

Create Layers from Selected Features

When features of a layer are selected a new layer can be easily created from the subset of data.


Note: When a layer is created by using the process Create Layer from Selected Features the new layer displayed in the table of contents will retain a live link to the primary layer. Any change to the new layer will result in a change to the primary layer.

Once the features are selected, right-click on the layer in the table of contents.

In the menu move the cursor over selection and a drop down window will appear.

In the following menu choose Create Layer from Selected Features.
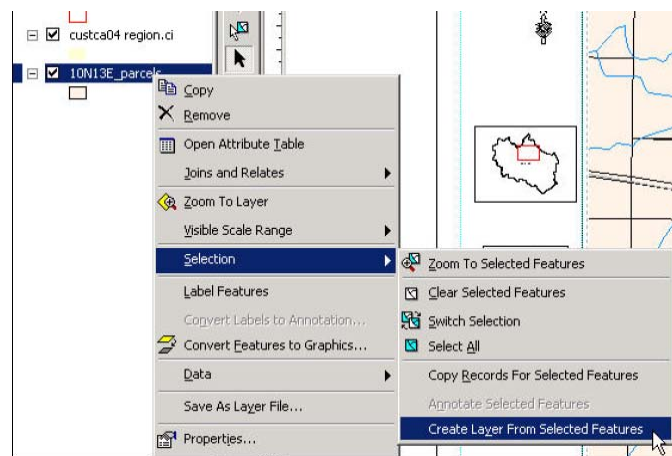
The new layer is automatically added as the top layer in the feature data set.

This concludes *Create Layers from Selected Features*.

Watch "Create a Shapefile from Selected Features" to create an independent data file.

Move and Rotate Selected Layer as a Whole Unit

In this example Jerome County wanted to edge match all their section parcel data to the GCDB.

They created their parcel layers one section at a time in CAD.

The issue is that when they create and print a four section map layout the edges of the individually created sections overlap and gap.

Here we will look at the first two steps in the edge match process, moving and rotating the section for the best fit into the GCDB lines.

The error in the position of the section has been exaggerated.

Start by opening an edit session.

Click the Editor Button and choose Start Editing.

From the dialog choose the appropriate section to edit.

If you get a second dialog just click Start Editing.

Go to the layer in the Table of Contents and right-click.

Hover over Select and then click on Select All.

Press the Z key and hold, this shortcut key changes the cursor to a Zoom tool.

Zoom to the area of interest – if you are zoomed out too much it is hard to place the layer exactly where you want it because of snapping.

Left-click and hold on the selected layer and drag the section corner to match the GCDB corner.

Now we will rotate the section using the rotate tool.

Right-click the layer and choose Zoom to Layer.

First find the anchor, an X, usually centered in the selected area.

Hover the Rotate Tool over the anchor, the Rotate Tool will change to a four directional arrow.

Click and drag the anchor to where you want the pivot point for the section rotation to be.

If you have show snap tips active then that information will show when the anchor snaps to a feature.

Here the anchor snaps to the GCDB vertex located on the corner.

Click the A key – an angle dialog will appear.

Enter in the desired degree of rotation.
 + in a clockwise direction
        - in a counter clockwise direction

You will have to experiment with the values to get your desired result.

I will enter in -5 and hit enter.

Now the layer is as close to matching the GCDB lines as I can get it without moving vertices.

This concludes this production.
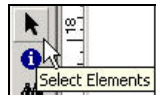
Distribute

Spacing between multiple graphics can be manipulated using the Distribute tools.

By using these tools you are ensuring that objects are spaced precisely and in turn maintaining a professional look to your maps.

In this example I will use the Distribute Vertically function to create vertical equidistant space between selected graphics.

When distributing vertically the top and bottom most graphics are your dominant graphics and will not move and all graphics between will adjust to equidistance.
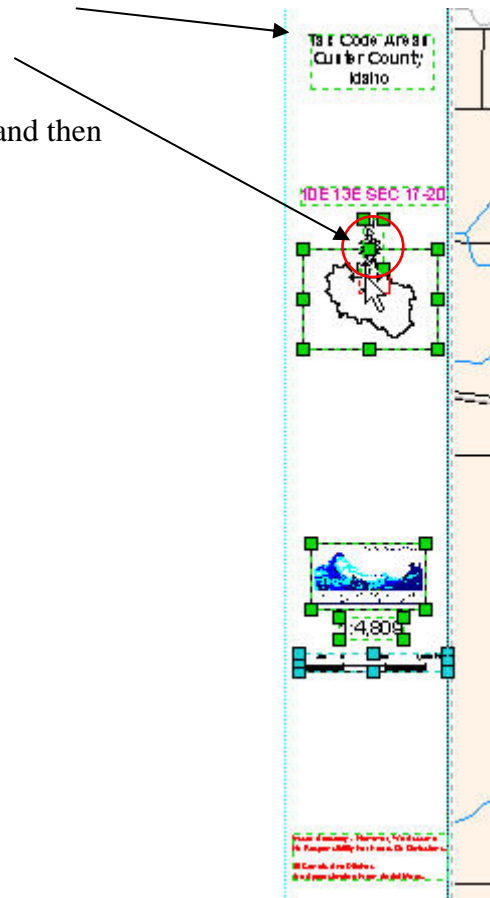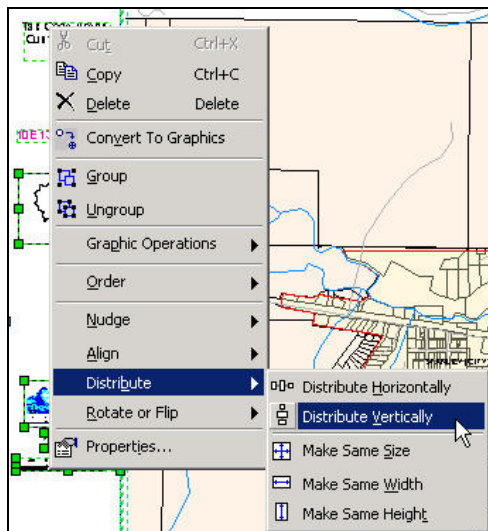
I would suggest using guides to precisely set your top and bottom graphics.

Using the Select Elements tool click and drag a selection box around a group of graphics on the left side of the layout.

Right-click on one of the selected graphics.

In the drop down menu move the cursor over Distribute and then Distribute Vertically (see graphic below).

Notice that the distance between graphics is equal.

Also, notice that the graphics have rearranged, compare the image to the right to the one above right. Sometimes this isn't an issue but many times want graphics in a specific order.

To get around the re-arrangement problem without renaming the normal.mxd is to select fewer graphics.

In this example I'll undo the first distribute vertically action.

Undo Move Element

Then I'll click outside the map to unselect the graphics

Now move the graphics individually to approximately where you want them to be.

Select 4 or 5 graphics and distribute them as you did above

Repeat this with different sets of graphics until you feel they are where you want them to be.

Watch the Distribute Vertically training video by clicking here.
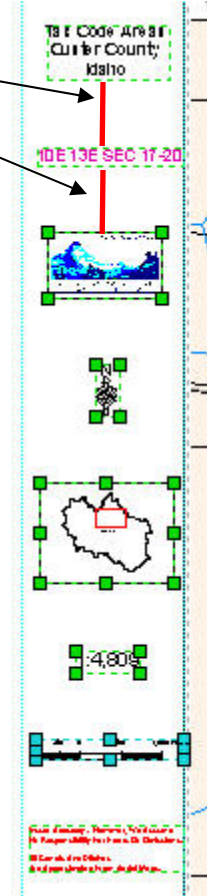
Using the Align Tool

The Alignment Tool allows you to precisely position graphics in relation to each other, ensuring a more professional appearance.

You can align two or more graphics using their four edges or centers.
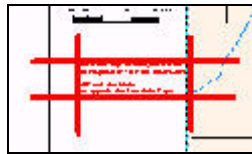
We will align graphics vertical center as an example.

The first step is to select the graphics you want to align.

Draw a selection box around all the elements on the left side of the Map-making sure to include the neatline.

The blue handles indicate which of the graphics is the dominant graphic.

Make sure the handles for the neatline are blue and the rest are green.

The dominant graphic will be the one used as the guide for moving all the other graphics, in this case the dominant graphic should be the neatline.

Right-click on one of the graphics and then in the pop-up menu, choose Align and then Align Center for the drop-down menu.
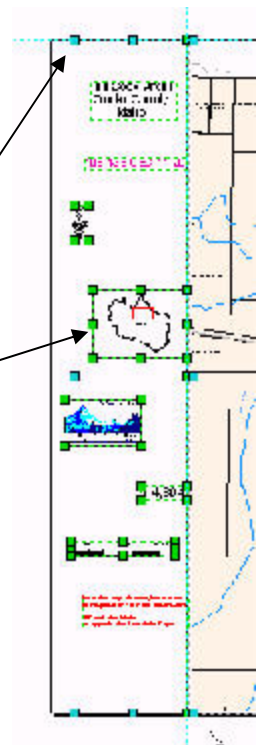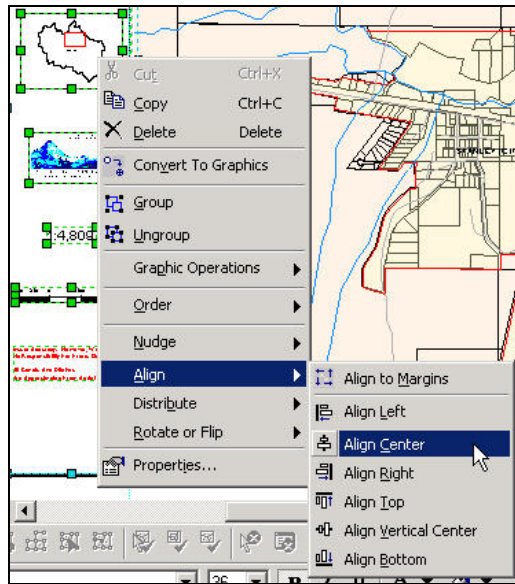
All the graphics moved accept the dominant graphic and all the graphics are now aligned with their vertical centers to the vertical center of the neatline.

Watch the education video "Aligning Graphics".

Grouping Graphics

Grouping is helpful when you want elements on a map to maintain their distance and spacing from each other when moved. Although, once elements are grouped they become a static graphic. As a static graphic you will no longer be able to edit them individually nor will they be dynamically linked to the map.

To group elements you need to select 2 or more items.

You can select them by left-clicking one element and then holding down the shift key select the other elements to be grouped.

Another way to select a group of element is too left-click and hold outside the items to be selected and then drawing a selection box completely around them.
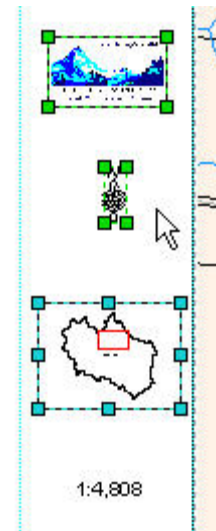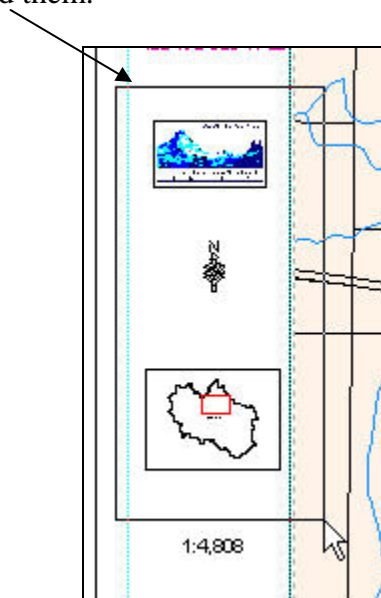
Once the elements are selected right-click over any one of the selected items and from the menu select group.
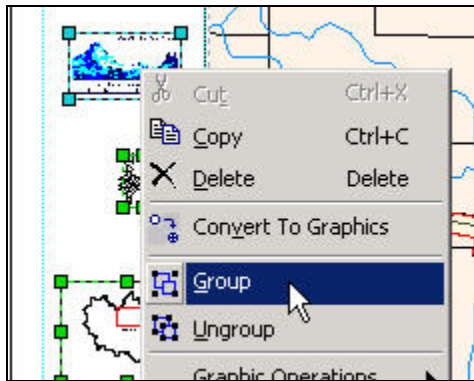
Now left-click on any of the grouped graphics and you will see that the selection box with handles includes the other graphics. You can click and hold to move the graphics as one unit and see that the elements can be moved with the spacing between each being maintained.

To ungroup the graphic right-click over the selected item and then choose ungroup.
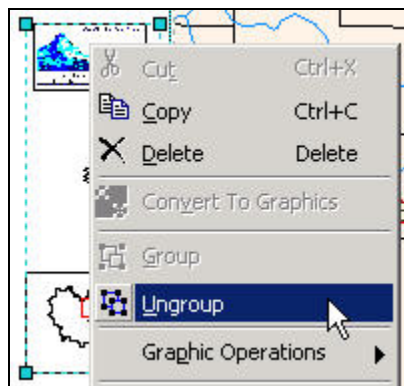
Now elements can be moved individually, any dynamic items are restored and you can edit the elements.

Page Setup for Plat Maps

In this example I will show you how to set the page size and data frame for Plat Maps.

By Idaho code the page size should be 30h x 36w and landscape.

The data frame needs to be 30 x 30 to accommodate the scale(s) that we will use for 1 and 4 section maps.

Start by making sure you are in Layout View.

Once you are on the layout page go to the main menu and choose File menu and then choose Page Setup.

The Page Setup window will appear.

Uncheck Same as Printer.

If you are going to share this map document with someone that does not have access to the same printers as you, then you should *uncheck* Same as Printer.

With Same as Printer the map size is maintained at the same size as the page for the selected printer.

If the map is larger than the selected printer page size some clipping may occur during output.

To create a custom sized map, choose Custom from the Standard Page Sizes pull down.

Change the values of the Standard Map size to 36x30.

And the Page Orientation to *Landscape*.

To set the data frame to the correct position we need to set guides but we need the rulers to accomplish that task.

To turn on the rulers right click off the page and choose options and the Options window will appear.

Choose the Layout View tab.

In the Appearance section choose Show scrollbars and both vertical and horizontal guides.

In the Rulers section check the box next to Show.

Move to the unit's box and choose inches. Next, under the smallest division choose ½ inch, this works well for the accuracy we need and the size of the map.

In the snap elements to section check the box for guides.

In the Snap Tolerance box enter .5 inches, generally the larger the map the larger the snap tolerances you want to use.

Click OK

Next add guides on the horizontal ruler at 1, 6, and 36-inches.

On the vertical ruler add guides at 0 and 30-inches.

Now move your cursor over the data frame and left click once to select the data frame.

Using the handles of the data frame move the appropriate edges to the 6 and 36-inch guides on horizontal and the 0 and 30 guides on the vertical.

With all the edges in place the data frame is at 30 x 30 inches.

This size is appropriate to use a scale of 1:4800 for a 4 section map and a scale of 1:1200 for a 1 section map.

North Arrow

The most difficult task when adding a North Arrow is determining which one you want to use!

The ESRI Style alone has over 100 different North Arrows.

Inserting a North Arrow is an easy task

On the Main Menu toolbar click on Insert.

In the main menu choose North Arrow.

The North Arrow Selector will appear, now start your search for your favorite arrow.

The arrow is always added near the center of the map and is added as a selected graphic.

Simply move the cursor over the arrow and move it where you want it…

Projection Model

You may often receive data in a projection other than state plane.

Or, you may want to reproject your county data to match imagery layers.

Going through the reprojecting process with each dataset is time consuming and constantly selecting projection parameters may leave room for errors.

In this production we will create a model; this model will reproject data from IDTM to SP.

The end result will be an easy to use model, which will have all the projection tool parameters set to project a layer.

Once the model is created, by simply changing the input and output files you can quickly reproject any data from IDTM to SP.

Once in ArcMap open ArcToolbox.

We will create a new toolbox to house projection models in.

In the ArcToolbox TOC right-click on ArcToolbox and in the drop down choose New Toolbox.

A new toolbox will appear at the bottom.

Rename the toolbox to reflect its contents, for example IDTM to SP.

Right-click on the new Projection Toolbox, pick New and then Model.

A new Model will be added to the toolbox and the Model Window will appear.

Rename the Model to reflect its function of reprojecting from IDTM to SP.

The Model window is the interface you will use to create your processes.

In its simplest form a Process is a tool with its associated input and output files.

To populate your empty model window simply click and drag the necessary items to the window.

Use the Index tab at the bottom of ArcToolbox TOC find the Projection tool by typing in the tool name, selecting the appropriate tool from the list and then clicking on Locate.

The toolbox will expand to the Project tool location.

It is located under the data management toolbox, in the Projection and Transformation toolset and then

feature toolset.

Add it to the model window by left-clicking and dragging it into the model window.

In this example we'll take the output file from the already performed clip process and drag it to the model window.

In ModelBuilder there are easily identified shapes for each type of object in the window.

Blue Oval – Input Data
Yellow Square – Tool
Green Oval – Output Data

As you see in the model window the colors are missing from the tool and output objects.

Hollow objects indicate that the process is incomplete.

Setting the parameters of the tool will link the process and then the hollow objects will be filled.

To connect the input object to the projection tool click on the connect tool, this will change the cursor to the connect wand.

Use the connect wand to connect the Input Feature to the Projection tool.

Click on the cursor tool and then double-click the Projection Square to open the dialog window.

In this dialog you will set the projection parameters.

The Input Dataset should be filled in since we connected it with the wand.

Browse for the output location and rename the file RangeSP, something that designates it as State Plane projection.

In this case, the warning symbol tells us that the default file name already exists.

The Output Coordinate System will be selected from a known layer.

The green dot denotes a required field.

In the 4th row you will choose a Geographic Transformation if required.

As shown to the right, continue to browse to the NAD 1983 (Feet) folder.

Idaho State Plane has three zones, East, Central, and West.

Open ArcCatalog.

In the Table of Contents browse to the output file, highlight it, and then choose the Metadata tab.

After review the metadata you can see that the new file has been re-projected.

Close the Model.

To make the model easy to use for data other than the one identified in the blue oval we need to set parameters.

Parameters are the characteristics of a tool.

In this model think of them as the objects that will or can change; the input and output.

The purpose of this model is to easily re-project any data that is in IDTM to State plane.

By setting parameters we will create a dialog window to make selecting our input and output easy.

To identify an object as a parameter simply right-click on it and choose Model Parameters.

Do this for both the input and output ovals.

A large P should appear next to any object designated as a parameter.

Save the changes to the model and then close the Model dialog.

Now right-click on the model in ArcToolbox again but this time choose Open instead of Edit.

The model dialog that appears contains the two parameters that were designated.

The X identifies a problem that needs changed for the tool to work.

In this case the default file name already exists so we need to rename the file.

In the input file we can choose a layer from the dropdown the only difficulty is that to reproject using this model the layer must be added to the map.

Or, the model can be added to any other map project.

Watch the video Adding Saved Models to Map Projects.

Click Ok

The Spatial Query – "Are within a distance of"

With the Select By Location dialog box, you can select features based on their location relative to other features.

As an example, you want to know how many parcels are within 300 feet of a planning and zoning change along a road segment.

Answering this question—and others like it—involves forming a spatial query.

In this case we will be using the query of "are within a distance of" to select the needed parcels Activate the Select Features tool.

Within the data frame select the road segment where the zoning change is taking place.

Next, choose selection in the Main Menu From the drop down choose select by location.

The Select By Location dialog box will appear In the I want to drop down choose select features from.

In the following layers: menu, choose the parcels layer In that: menu, choose are within a distance of.

In the features in this layer choose streets.

Because we selected the street we wanted the Use selected features box is checked.

When we chose Are within a distance of the Apply a buffer to the features dialog was activated.

Type in a distance of 300 and choose feet if it's not already selected.

All the highlighted parcels are within 300 feet of the road segment we chose.

Click Apply and then Close.

To view the selected parcels open the parcel attribute table and click on Selected.

Creating a Relate

Often the data we need to access is not found in a layers own attribute table.

For example the parcel layer we will use in this example does not have the owners name in the attribute table but the dbf table pcparc00 created from the AS400 does.

If you are lucky your layer's attribute table has data values that are identical to data in another layer or table, for our example both tables have parcel numbers.

This will allow an association or relationship to be created between the 2 tables.

If this relationship exists between tables you will be able to do a Join or Relate to access that external data.

In this video we will look at Relates: these will be instances when the individual values in the 2 tables have either a one-to-many or many-to-many relationship.

In this example we will create a one-to-many relationship between the parcels using the parcel number.

The parcel layer has each parcel number in the table only once.

The pcparc00 table has repeating parcel numbers because Joe Smith can own more than one parcel.

Before we make the relate let's add the external table to our map project.

This has to be done if you want to query the external table.

Click on the source tab at the bottom of the TOC.

Now right-click the path for the layer and from the drop down menu and choose Add Table.

The dialog shows all the tables that are found in the folder where the layer is located.

From the list choose the table parcpc00 and then click add.

Select the Index tab at the bottom of the TOC.

Making the connection between the tables is done by right-clicking the target layer, selecting Joins and Relates and then Relate

A dialog will appear for building the relationship in this dialog you will choose the tables to relate and the fields with matching values.

The first choice is to identify the field within your layer.

In this example choose Parcel_No from the drop down.

The 2nd field is already populated with the correct table.

For the 3rd choice we need to choose the field in the pcparc00 table that contains parcel numbers.

In this case choose PM_PAR_14.

The 4th step is naming the Relate. It will have a default name of Relate1 or Relate2 and so on.

Click OK and the Relate is created.

This concludes Creating a Relate.

Now watch Query a Related Table to learn one way to access the data in the external table and display the associated spatial data in your map project.

Query Related Table

Once tables have an association via a Relate, you are able to query any related table to enhance the information describing your spatial layer.

The ability to query and use data from another outside table is the main advantage of a Relate.

In this example, we will query the external related table for ownership names to use for labels.

The highlighted fields are the links between the two tables.

The parcels layer displayed in the map project does not contain ownership data.

So, we will also use the Select by Attribute to query the AS400 table, pcparc00.

To query an external table it must be added to the map project.

See the video "Create a Relate" to see how to accomplish this task.

Start by opening the dbf table pcparc00.

A relationship is already established between these two tables, with the spatial data showing for the parcel's layer in the map project.

In the pcparc00 table we are able to find the names of the parcel owners.

There are two simple ways to locate the records of concern.

Let's say we are looking for all the parcels owned by 77 Ranch LLC.

One way is to sort the name field and then scroll through all the records to find the ones you are interested in.

Right-click on the field heading and choose Sort Ascending.

Scroll through all the records to find the ones you are interested in.

This can be cumbersome when you are dealing with large datasets.

Clear the selected features by clicking the Options Button and then selecting Clear Selection.

The other is to write a simple query in the Select by Attribute dialog.

Click the options button at the bottom of the page.

From the menu, go to Select by Attributes.

The Select by Attribute dialog will open.

By default, the Method: will be filled in with Create a New Selection, which is the appropriate choice for this example.

In the item list find and double-click PM_mail_nm, the field containing the ownership values.

Then click once on the equal operator.

Next, click on the Get Unique Values Button.

Within the list find and double-click the value 77 Ranch LLC.

You could also type in this value instead of searching through the Unique Values list – just remember to put a single quote around the name.

Also, when typing you have to spell the name exactly how it appears in the table.

You can make sure the query is constructed correctly with the verify button.

Caution - The verify button only tells you that your query is functional as written, it does not tell you that you've written it in a way to extract the information you need.

Now that we know the query expression is functional, choose Apply.

All the 77 Ranch LLC records are selected.

Now let's look at the map. There are no selected features.

Remember we created the query for the external dbf not the parcel layer attribute table.

We have to promote the selected records to the parcel layer.

This is easily done by selecting the options button again

From the menu go to Related Tables and then choose relate1: Countywide.

The parcels layer table will appear.

Choose the Selected Button to show the selected records.

Close the table and you can see the parcels are also selected in the map.

This concludes Query Related Tables.

Now you can watch *Create Layer from Selected Features* and turn the selected features into a separate layer to display.

Converting Units of Measure –
Calculating a New Field in the Attribute Table

You've been asked to determine the acreage of the polygon features of a layer and then label the layer with the derived acreage values.

Most features created with GIS software give you the measure of area in the units of the layers projection squared – for example feet squared for State Plane and Meters for data in UTM.

To solve this issue a new field needs to be added to the layers table and then the field populated with the appropriate acre values.

Two examples will be demonstrated of how to use the field calculator to populate the cells of the new fields.

In both cases we will use a conversion constant to obtain the acres of the polygons.

In the first example we will have a layer projected in State Plane (US Foot).

In the second, the conversion will be from meters squared to acres.

The advantages of this method are it provides accurate permanent data for all the cells in the attribute table.

Now those values can be easily used for reports or to label the map.

There are several disadvantages.

You need to know how to write very basic logical expressions.

You need to know a little about setting up the properties of the cells, for example whether to use Integers or Floats; which starts you down the path of database management issues.

The third issue is; this only gives you the conversions for existing features within the layer.

Before we create a new field you need to activate the Editor Toolbar to be used later.

To activate the Editor toolbar simply go to View on the Main toolbar, then Toolbars in the dropdown and click on Editor.

When dealing with parcels an area request is always in acres.

Here is a parcel layers attribute table.

The table has an Area field we can use to within a simple calculation to create the Acres values.

The first step is to add the Acres field to the table.

Along the bottom of the attribute table click on the Options button and then Add Field.

In the dialog Name the Field Acres.

For the Type choose Float.

In the Field Properties type in 10 for Precision and 1 for Scale.

Precision is basically the number of characters allowed and scale the number of decimal places displayed.

Now that we have the field added; start an editing session.

If you do your field calculations outside of an edit session the changes to the table are permanent.

So, if you make a mistake or need to change your calculation you would have to delete the field and start all over.

Go to the Edit Toolbar and choose the Editor Button.

From the menu choose Start Editing

In the dialog choose the appropriate source.

You will see the layers that can be edited in the bottom window pane.

Click OK.

The field headings for editable fields have turned white.

Right-click on the Acres field.

Choose Calculate Values.

The Field Calculator dialog will appear.

Notice the field name, center left in the dialog.

It reads Acres =

To derive the Acres values from square feet multiply by the conversion constant 0.0002295684.

In the bottom window pane we need to define what expression we want to be calculated.

To create the expression, start in the Fields window and click once on Area.

Acres will appear in the window within brackets.

Using the operators on the right, choose the multiply button.

Next, type in the conversion constant.

Click Ok.

The cells of the fields are populated with the acres for all the features of the layer.

In this example the Area field is in squared meters.

In the field calculator a different expression will be created.

Double-click Area and then from the operator list choose the forward slash to designate division.

Next, type in the conversion constant.

Click Ok.

The cells of the fields are populated with the acres for all the features of the layer.

Simple Field Calculations

You need to label features on your layout and the only source for the needed label is found as part of another value in the table.

For example, part of a PIN number.

Jerome County labels maps for appraisers with the 11th-14th numbers of the PIN number.

So, if the PIN reads RP07S27E270521A the label would be 0521.

How do you extract the desired numbers to use as our label?

The Field Calculator is the tool to use.

The Field Calculator is a powerful tool for editing tables or for more advanced calculations using Visual Basic.

I will show you how to use the String function Mid, which is used to remove a specific consecutive string of characters.

First I will add a field with empty cell values to populate the cells with the new values.

With an attribute table open go to Options and then choose Add Field.

In the dialog name the field.

In this case I'll use PIN_Label

For Type choose Text, this allows the cell value to be numbers or letters.

Since I know the resulting label is only 4 characters, for length type in 4.

Limiting the length of the field will act as a quality control so longer numbers are excluded from entry.

Click OK.

Before calculating the field values I'll need to start an edit session.

I could calculate outside of an edit session but then all the changes would be permanent.

If I made a mistake I would then have to delete the field and start over.

Click on Editor on the Edit Toolbar.

Choose Start Editing.

In the dialog choose the appropriate layer for editing.

Click OK.

If you get a second dialog choose Start Editing.

The column headings that are available to be edited will display white.

Right-click on the Pin_Label field heading.

From the drop-down select Calculate Values.

The Field Calculator Dialog will appear.

In the Field Calculator under Type choose the radio button for String.

The Functions window will re-populate with the new String Functions.

The calculation expressions will be developed in the bottom window pane.

Click once on Mid ( ) in the Functions list.

Make sure the cursor is between the parentheses after Mid in the window.

Click once on PIN, then type a comma, then type an 11, 4.

Then click OK.

The Pin_label field is populated with the appropriate string of characters from the Pin

field.

Choose Editor again and choose Save Edits and then choose Stop Editing.

To label with the new field right-click on the layer and go to properties.

Choose the Labels tab.

In the field drop-down choose Pin_Label and then click OK.

Joining Tables in ArcGIS 9.X

Joining tables allows you to append data from any number of .dbf tables to a layers table, like a parcel layer.

When the Join is finished the fields and data from the joined table will be added to the parcel layer attribute table or origin table.

You may want to join a table if you want to symbolize the features of a layer using data other than with the layers own attribute table.

The join is created using an Item from separate tables that have matching cell values, for example two tables with parcel ID numbers.

In this example I will join an external table to a parcel layer table.

Both tables have a field containing parcel ID numbers.

Notice that the Item names do not have to be identical.

Joins are best used when there is a one-to-one or a many-to-one relationship between these unique values.

To create a join first right-click on the parcel layer in the Table of Contents.

Hover over Joins and Relates and then select Join.

This will bring up the Join Data dialog.

The dialog allows you to fill out all the needed information to create a join.

In field 1 select the item from the Parcel Layer table that contains the parcel number, parcel_ID.

In field 2 select the table pcimag00.

In field 3 select the item from the external table that contains the correct version of the parcel number, II_Par14.

Select OK.

This completes the join.

Right-click on the parcel layer and select Open Attribute Table.

Notice all the additional fields from the external table.

Also, notice the naming convention of the fields.

This completes Creating a Join.

If your table relationship is one-to-many or many-to-many or you do not want the origin table to be appended watch the video "Creating a Relate".

Reprojecting in ArcView 9.X

Typically one of the first issues to resolve when obtaining data from an outside source is determining what projection the data is in and reprojecting it if needed.

Luckily, ArcGIS 9.X re-projects data on-the-fly.

The project on-the-fly feature of 9.X is slightly misleading since it doesn't actually permanently change the projection file of layers but simply calculates the projection change.

This allows layers in a map project from multiple projections to overlay properly.

For display purposes or simple map production data re-production may not be necessary.

Why then reproject?

The answer lies in understanding projections or more importantly the limitations and problems of each projection.

The example I'll give is Idaho Transverse Mercator (IDTM).

This projection's Central Meridian runs down the middle of the State at 114° longitude.

This means the resulting representation of data is the most accurate along this line and data are the most skewed or distorted at the east and west edges.

The current Standards for the State of Idaho are IDTM for statewide data and State Plane for county data.
 When you are editing your spatial data it becomes important to reproject.

You don't want to use distorted data from an IDTM projection when conducting work at a county extent.

When you obtain data from someone, always ask what projection the data is in if no metadata is provided.

If you are getting a shape file make sure you are given the .prj file too.

The .prj file contains the projection information for shape files and reprojecting with ArcToolbox is simple when the correct .prj file is available.

If no projection is assigned to the data and you know it was created in a certain projection you will need to define the projection before you re-project it.

Watch the video Define Projections for more details.

In this example Statewide Soils dada was received but it's projected in IDTM.

Only the data for an individual county is needed and you need to reproject it to match all your County State Plane data.

I have already clipped the statewide layer to Gooding's county boundary.

Watch the video Clip to learn how to do that task.

Open ArcToolbox if it isn't already open.

You'll find the project tool in the Data Management Tools toolbox and then the Projection and Transformation toolset and then the Feature Toolset.

Double-click the Project tool.

This will open the Project dialog.

In the first field I'll use the drop-down and choose the soils_clip layer.

The Output Dataset is automatically filled placing the new layer in the same folder as the Input data.

I'll rename the layer to more accurately reflect what it is.

In the 3rd field I'll browse for an existing layer with the correct state plane projection parameters.

By doing it this way you eliminate the chances of errors.

Click Import.

Then browse for the known layer.

Click Ok

Since the Datum for the IDTM layer was NAD27 and State Plane is NAD83 I'll need to select a Geographic Transformation.

In this case I'll choose NAD27 to NAD83 NADCON.

Click OK

The new reprojected layer is automatically added to the table of contents.

This concludes reprojecting.

Save, Add, and Run Model in a New Map Project

One of the main advantages of creating models is to simplify repetitive tasks.

Repetitive tasks are simplified by setting the parameters to a tool within a model and then applying the model to new datasets that require the same process, for example reprojecting.

Two ways to use a model you've created are to add the new dataset to the map project or save your altered ArcToolbox and add it to a new map project.

In this production we will go through the steps to save your ArcToolbox settings as an independent file.

Then the new ArcToolbox configuration containing the new model can be added to any map project.

I've created a new model to reproject layers from IDTM to State Plane, which resides in a new toolbox I created – IDTM to SP.

To save the new ArcToolbox configurations go to ArcToolbox at the top of the TOC.

Right-click the toolbox, hover the cursor over Save Settings.

The drop down that appears gives you two choices; To File and To Default.

The choice To File allows you to save an independent xml file which can be loaded to any opened ArcToolbox in a new map project.

The choice To Default overwrites the ArcToolbox default settings and the saved changes will appear anytime ArcToolbox is opened in a new map project.

In this example I'll choose To File

A reason to choose To File would be to avoid cluttering your default ArcToolbox TOC.

Browse to the location you want to save your file and then type in a name for the xml file.

Click Save.

Now I'll open a new map project that doesn't contain the re-projection model.

Right-click ArcToolbox again and from the drop down move to Load settings and then From File.

Browse to the folder where the xml file was saved and choose it and then Open.

The ArcToolbox TOC will expand to include the re-projection toolbox.

Now open the model by right-clicking on it and choosing edit.

As we see the model contains the input and output filenames from our original project.

Right-click the model and choose open.

The model dialog will open.

In this dialog a new input file from the map project and an output file can be selected.

Click OK to run the model.

This concludes *Save, Add, and Run Model in a New Map Project***.**

Watch *Creating a Model to Project from IDTM to State Plane*.

Transparency

The transparency tool is used when you wish to be able to see the spatial data under a polygon layer that has solid fill symbology – making the overlaying polygon see through.

This is especially useful when overlaying polygons on raster data.

If your effects toolbar is not already open choose View in the main button bar, and then

toolbars… in the dropdown check the Effects toolbar.

On the Effects toolbar make sure the proper layer is chosen.

In this case choose the City Layer.

Click the Adjust Transparency button and the Transparency sliding scale will appear.

Move the Transparency to about 70%.

You will see that we can still distinguish the city layer.

But now we can see the raster image under the city.

Using Guides

A guide is a layout aide; they allow you to visually align map elements in the layout view.

In this example we will use the guides to set the data frame, but not the other elements of the map.

It is important to note that map elements only snap at their edges to guides.

To place guides you need to have your rulers showing in the layout view.

To conform to the Rules and Standards for plat maps we want to arrange the Layout View on a 30 by 36 inch page.

The data frame should be 6 inches from the left, and at the edge for the top, bottom, and right sides.

A 1-inch margin is needed for binding so also place a guide at 1 inch from the left edge.

To check if guides are ready to be used, right-click outside the layout page, then go to options at the bottom of the drop down Choose the Layout View Tab Next, make sure the Snap Elements to: Guide box is checked.

Then you need to set a snapping tolerance.

Use larger tolerances for larger maps.

Anywhere from two-tenths to half an inch would be good for a plat map.

To add a guide, simply left click on the ruler where you want the guide to be set.

Add a guide to all the edges of the layout page, 0, 30, 0, and … 36 inches Zoom in on the layout page to add your guides at 1 and 6 inches.

If you left-click and hold on the guide the exact placement of the guide will show in the upper left corner of the layout window.

When the cursor appears as a double-headed arrow you can slide the guide to the place you want it.

If you set a guide in the wrong spot, you can left-click and hold on the guide arrow, then slide it up and down the ruler to where you want it.

Add the guide at 6 inches, use the measurement in the left corner to place it correctly.

To manage guides, right-click on the guide arrow. In this window, you can remove a guide, hide the ruler, or choose options.

As you can see in this dialog window, another way to set a guide is by right-clicking on the ruler and choose **Set Guide**.

Now we will set the Data Frame to fit these guides.

Click once within the Data Frame to activate the handles.

It does not matter which handles you use, move your cursor over any handle until the cursor changes to multi-directional arrows.

Click and hold the handle then slid the edge to the appropriate guide.

You will see it snap to the guide.

Adjust each side of the view and the neatline, to the guides.