



Event GDB & COTS Tools

Labeling & Annotation *Part 1*

This lesson is part 1 of a 2 part lesson in which we will discuss adding labels to incident maps using labeling and annotation. In this part we will discuss which map features should have labels, and present some guidelines and best practices for how those labels should appear.

Lesson Objective

Review standards and techniques for labeling features on incident map products.

- Identify which incident map features require labels
- Discuss appropriate sizing and placement of labels on incident maps
- Discuss labeling non-incident features and adjusting labels to suit a specific map audience.



The objective of this lesson is to review standards and techniques for labeling ICS features on incident map products.

Students who complete part 1 of this lesson will be able to:

- Identify which ICS map features require map labels
- Discuss how to appropriately size and place label text on incident maps
- Point to a few examples of non-ICS features that might be labeled on incident maps
- And finally, discuss how a GISS might adjust map labels to make certain features or aspects of a map stand out.

Labels and GSTOP

Map Features that require labels according to GSTOP

- Assignments: Divisions & Branches
- Points: Helispots, Drop Points, Hot Spots, Spot Fires, Fire Origin, Camps, Staging Areas, Repeaters, Water Sources

According to the GSTOP, certain incident features **must always be** labelled on incident maps. These includes, Divisions and Branches, Drop Points, Helispots, Fire Origins, Spot Fires, and Hot Spots.

Other features that may be labelled according to GSTOP include Camps, Staging Areas, Repeaters, and Water Sources. Your SITL will help you determine which other incident features may require labels and what those labels should say.

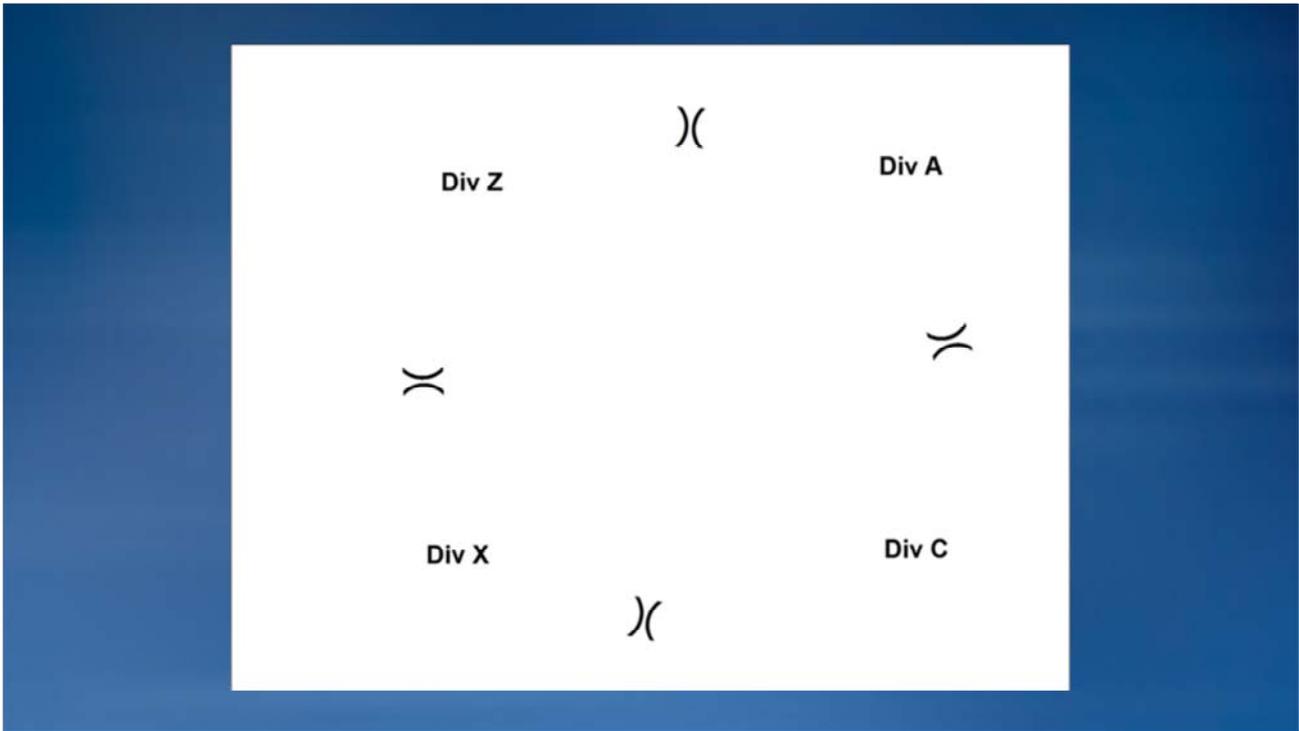
Assignments: Divisions & Branches

Divisions and Branches are identified on maps with a combination of opposing symbols (parenthesis or brackets) and **labels**

- Labels should be **outside** of the perimeter
- Labels should be centered between adjacent symbols
- Label font size: 18-24 pt and **Bold** (for an 8.5x11 or 11x17 IAP map, scale accordingly for larger layouts, different maps)

Map labels for division and branches are essential as line assignments are only identified on incident maps through a combination of symbols and labels.

Assignment labels should be placed outside of the incident perimeter and centered between adjacent assignment break symbols. For a typical IAP map, the font size of assignment labels should be between 18 and 24 points.



Here is a simplified example of labeled divisions. There is no “division” line or polygon feature to label and the division breaks themselves aren’t labeled. The assignment area is identified on the map by placing the appropriate map label between division break symbols.

Points: Helispots, Drop Points, etc.

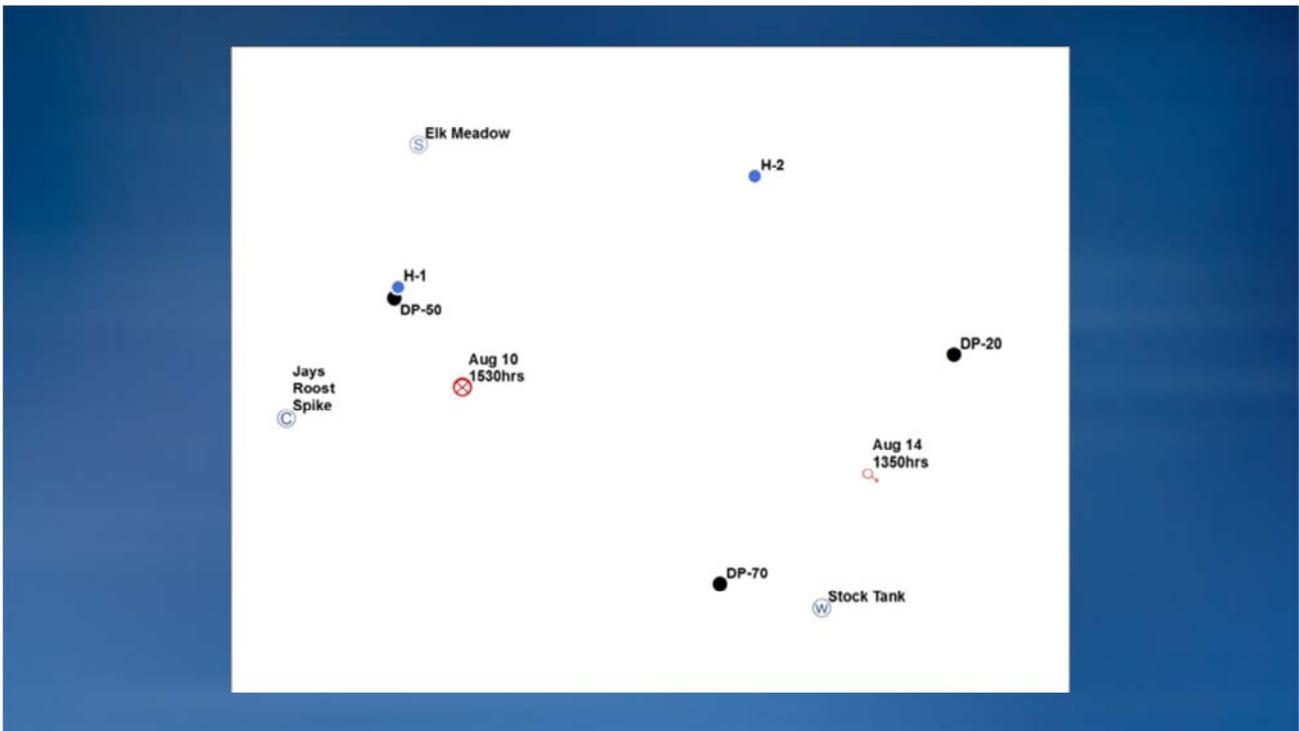
- Font size: 12-16 pt, **Bold** – 4-8 pts smaller than Div/Branch (for an 8.5x11 or 11x17 IAP map, scale accordingly for larger layouts)
- Label standards for incident points:
 - Drop Point: DP-10
 - Helispot: H-1
 - Fire Origin, Spot Fire, Hot Spot: Date & Time discovered – (e.g. 14 Jun 0930hrs)
 - Staging Area, Camp, Helibase: Include name **only if identified**, don't include “Staging Area”, “Camp”, or “Helibase” text in label

When labeling points on a typical IAP map, use a font size between 12 and 16 points.

According to the GSTOP:

“... text (labels or annotation) must be given for symbols that look identical when displayed in black-and-white: for example, Drop Point (“DP”) and Helispot (“H”). Use the text not only as a designator of the symbol type but also as an identifier of a particular feature (e.g., DP-1, DP-2, H-5). Hot Spot symbols look very similar to Drop Points and Helispots when displayed in black-and-white, so care must be taken to place any identifying text close enough to its map symbol to avoid confusion with nearby symbology”. – GSTOP Page 44

If required, features such as camps, helibases, and staging areas should be labeled with an identifying name only. Do not include the words camp, helibase, or staging area in such labels.



Here is a simplified example of labeled incident points. Notice that the drops points and helispots are labeled with their unique incident identifiers. The fire origin and spot fire are both labeled with a date and time.

The camp, staging area & water source are all labeled with a descriptive identifier. Features such as camps & water sources may or may not be labeled depending on the needs of your maps users. Work with your SITL to determine which features should be labelled on your incident maps.

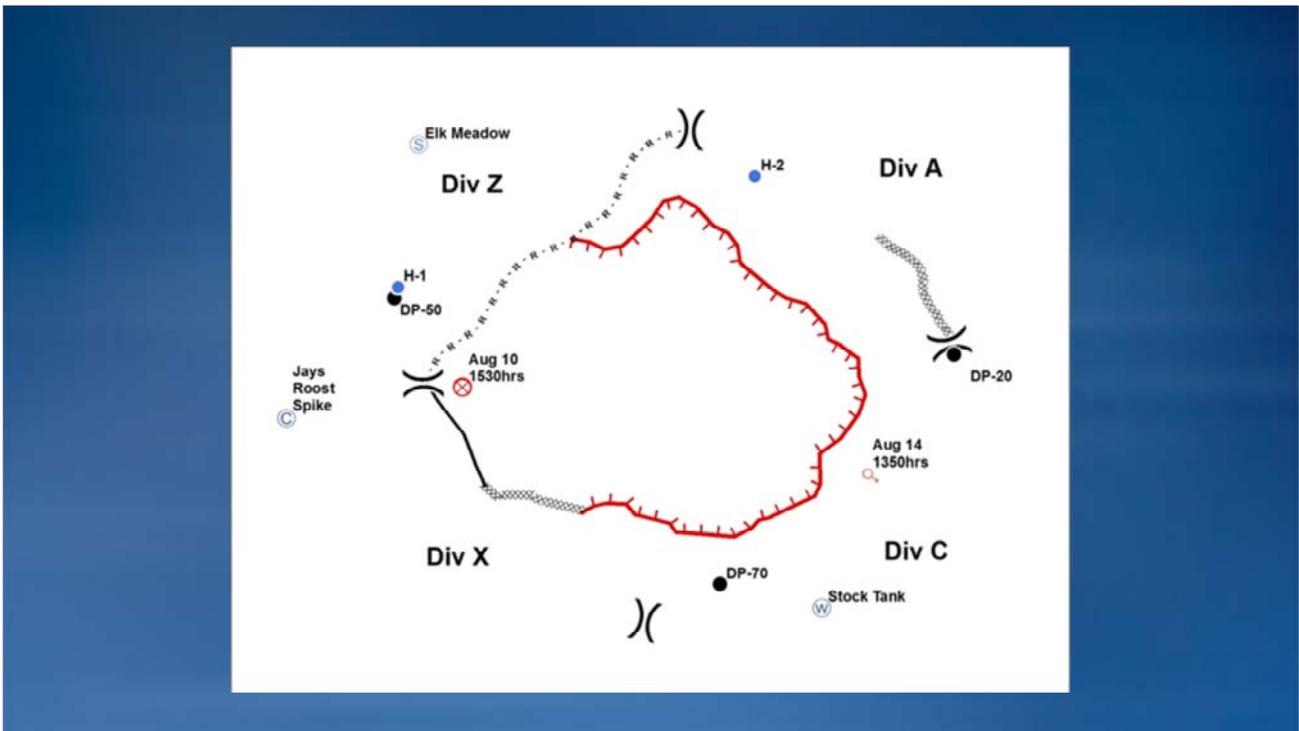
Additional Considerations for Labels

- Avoid placing labels over other map features, especially incident features
- For incident points, make sure point labels are not on top of or touching the associated points (increase dynamic label offset distance if need be)
- Consider adding halos to labels to make them more readable on copies
- When placing division/branch labels make sure they assist in making the assignment areas clear
- Have your fellow GISS & SITL review all maps (including labels) for accuracy



Other things a GISS should consider when creating map labels include:

- To avoid making labels that overlap or obscure other map features, especially important features such as other incident features or structures.
- Make sure incident point labels aren't touching or overlapping their associated points.
- Consider adding halos to map labels to make them more readable over base data.
- Place division and branch labels in locations that make the assignment areas clear, this can be especially challenging for multi-page maps.
- And finally, have your fellow GISS and your SITL review all maps and map features (including labels), for accuracy. The more sets of eyes the better.



This example shows labeled point features and line assignments, as well as fire line features for context, incorporating the guidelines from GSTOP and some of the other considerations we touched on previously.

Labeling Non-Incident Data

- Non-incident features are often present and labeled on incident maps
 - Highways, Roads, Trails – Route/Road# (Transportation Maps)
 - Fire History Fire - Name & Year (Operations Map)
 - Mountain Peaks – Name & Elevation (Air Ops)
- Use the same general guidelines for labeling non-ICS features on maps.
- Always seek review and guidance from your SITL.



- In many instances you will be asked to add labeled non-incident features to your map products
- For instance you may be asked to add labeled roads to a transportation map, fire history data to an operations map, or mountain peaks with elevations to an air ops maps.
- Follow the same general guidelines for labeling non-incident features as you would for labeling incident features. Avoid obscuring or interfering with incident features and labels when labeling non-incident data
- Always seek review and guidance from your fellow GIIS and SITL when labeling non-incident features on a map.

Labeling for Emphasis

- When appropriate use labels to emphasize map features.
 - Larger than normal labels for divisions & branches on a briefing map
 - Prominent labels for helispots, dip sites, water sources on air ops maps.
 - Prominent labels for important routes on transportation maps.



In certain instances it may be appropriate to adjust label font properties to make certain map features more prominent than others. For example, a briefing map is meant to be viewed by a large audience standing some distance away. It may be appropriate to enlarge the division & branch labels on a briefing map so line assignments are clear, even to those standing at the back of the briefing area.

Likewise you may enlarge or exaggerate the labels for air ops related points on an air ops map to help a pilot pick them out more easily, or make the labels for the transportation routes most important for accessing an incident, larger and more prominent than those for the surrounding transportation network on a transportation map.

A Few Examples...

- Things to think about when reviewing map labels:
 - Are all the appropriate features labeled?
 - Are there unnecessary labels?
 - Are the labels well sized, well positioned and clearly visible on the map?
 - Who is the audience for the map and how will it be viewed (briefing map vs. pilot map)? Are the labels appropriate in that context?



Now lets review the labels on a few example maps. As you are reviewing these maps keep the following questions in mind:

- Are all the appropriate features on the map labelled?
- Are there labels that are unnecessary and add clutter to the map?
- Are the labels well sized, well positioned and clearly visible on the map?
- Who is the audience for the map and how will it be viewed? Some maps such as briefing maps are meant to be viewed from a distance, other maps such as IAP maps will be viewed in hand. Still other maps may be designed to be viewed on a tablet or smartphone. Are the labels appropriate for the context in which the map will be viewed?

Lesson Objectives Review – Part 1

Following this lesson, you should be able to:

- Identify the incident map features that require labels
- Discuss appropriate sizing and placement of labels on incident maps
- Name a few non-incident features that might be added to and labeled on incident maps
- Discuss how labels could be used to emphasize certain features or aspects of a map



You should now be able to identify the incident features that require labels on incident maps, and which incident features can, but may not always be labeled.

Discuss general guidelines and best practices for the placement and sizing of labels on incident maps.

Name some non-incident features that may be added to and labeled on incident maps

And finally discuss how labels can be adjusted to emphasize certain features on or aspects of a map.

This concludes Part 1 of the labelling and annotations lesson. Please proceed to Part 2.



Event GDB & COTS Tools

Labeling & Annotation *Part 2*

This lesson is part 2 of a 2 part lesson in which we will discuss adding labels to incident maps. In this part we will discuss two methods of adding label text to incident maps using COTS tools, dynamic labeling and annotation.

Lesson Objective

Review standards and techniques for labeling incident features on incident map products.

- Review methods for adding label text to maps (labelling & annotation) using COTS tools
- Discuss the differences, and pro & cons of each method



The objective of this lesson is to review standards and techniques for labeling incident features on incident map products:

Students who complete part 2 of this lesson will be able to:

- Identify the primary methods for adding label text to maps using COTS tools, labeling and annotation...
- And discuss the pros & cons of each.

Labeling vs. Annotation

Labeling

- Displayed **dynamically**
- Stored as property of a layer
- Font size remains the same on a map layout as the map scale changes
- **Cannot** manipulate individual labels
- Incident points are often (not always) labeled with dynamic labeling



There are two primary methods for adding labels to incident maps in ArcGIS Desktop software; using dynamic labeling or annotation.

When using labeling, map labels are:

- Displayed dynamically, meaning they will not need to be added or removed each time a feature is added or removed.
- Labeling is stored as a property of a feature layer within a map layout.
- The font size is set within a layer's properties, and remains the same on a map layout even as the map scale is adjusted.
- Individual feature labels cannot be changed or manipulated
- Incident points like drop points and helispots are often, but not always labeled using dynamic labeling.

Labeling vs. Annotation

Annotation

- Based on a reference scale, does not change with map scale.
- Stored as a graphic in an ArcMap project or as **geodatabase feature class**
- Annotation is tied to a location, and stays where it is placed
- **Can** manipulate individual text features
- Division/Branch labels are often (not always) stored as geodatabase annotation

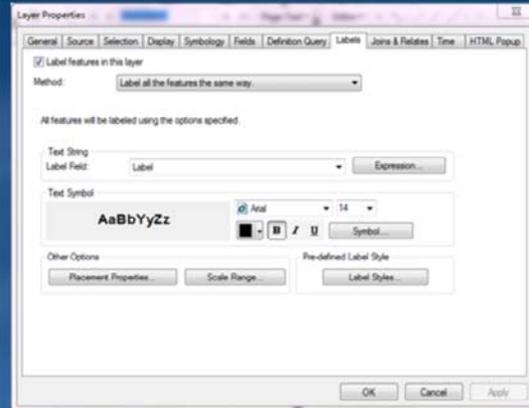


When using annotation, your map labels are:

- Based on a reference scale, meaning the font size is tied to that reference scale and **will not** change when the map scale changes in a layout.
- Annotation is stored either as a graphic in a map document or as a geodatabase features class.
- Annotation features are tied to geospatial locations and will stay at the location they are placed until moved by an editor.
- Each annotation text feature can be manipulated separately.
- Divisions and branches are often, but not always, labeled using annotation.

Working with Labeling

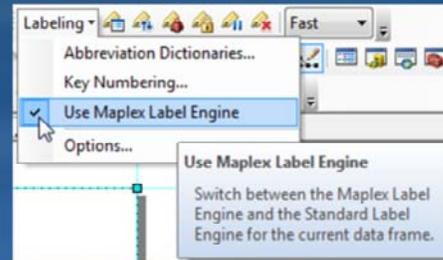
- A layer's label properties can be accessed from the Labels tab of the Layer Properties window
- Or, from the ArcMap - Labeling toolbar



- When using dynamic labelling, label can be turned on and manipulated from the Labels tab within Layer Properties of a map layer, or from the Labeling toolbar within ArcMap.

Working with Labeling

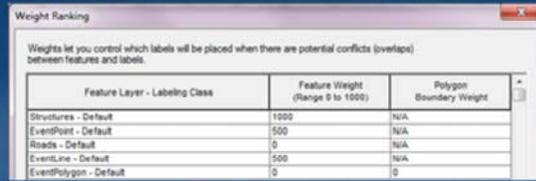
- Enabling the **Maplex** labeling engine within ArcMap will give you more options for controlling the placement of labels



- Enabling the Maplex Label Engine from the labeling toolbar will give you with more options for controlling the placement of map labels, and will generally do a better job of placing labels than the standard label engine.
- Dynamic labels may draw slower when Maplex is enabled, particularly if there are many labeled features in the map layout.

Working with Labeling

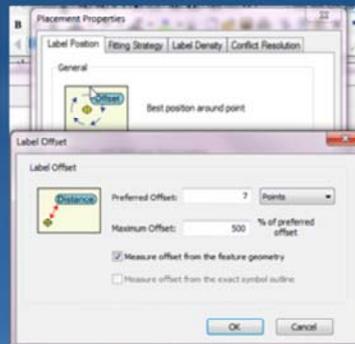
- Applying feature weights and modifying label offset properties can help ensure that point labels don't obscure or interfere with important map features



Weight Ranking

Weights let you control which labels will be placed when there are potential conflicts (overlaps) between features and labels.

Feature Layer - Labeling Class	Feature Weight (Range 0 to 1000)	Polygon Boundary Weight
Structures - Default	1000	N/A
EventPoint - Default	500	N/A
Roads - Default	0	N/A
EventLine - Default	500	N/A
EventPolygon - Default	0	0



Applying feature weights, and modifying label offset properties are just a few of the techniques that can be used to ensure that map labels do not overlap or obscure important incident features.

Working with Labeling – Pros & Cons

Pros

- Easy to setup in a map layout
- Easy to manage
- Properly configured labels, appear, and re-position automatically as map features are added or removed

Cons

- Labeling not always practical for divisions/branches, unless an assignment areas feature is maintained.
- In some situations (areas with a high density of incident point), labels may not appear or be placed appropriately

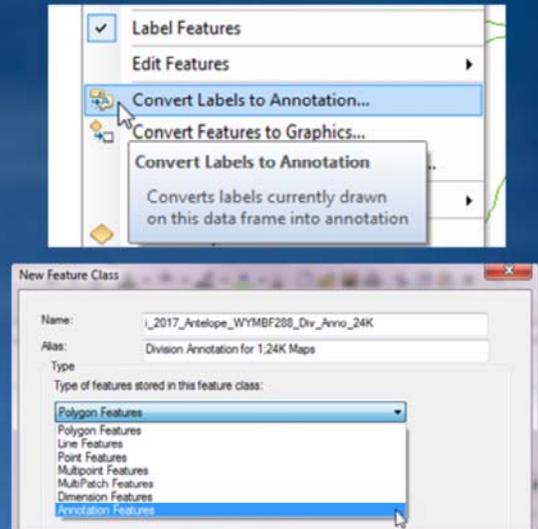


The primary advantage of using labelling is that is easy to setup in a map layout and easy to manage. When properly configured your map labels will simply appear, disappear and reposition as map features are added or updated, or the map layout adjusted. This is particularly beneficial for multi-page maps layouts, such as a multi-page IAP map.

Labelling cannot be used for divisions & branches unless the GISS creates and maintains an “assignment area” line or polygon feature. In certain situations labels may not appear or may never be placed appropriately. This typically happens in areas where there are a clusters of features that require labels. Labelling features in these situation may require a different approach, such as using annotation.

Working with Annotation

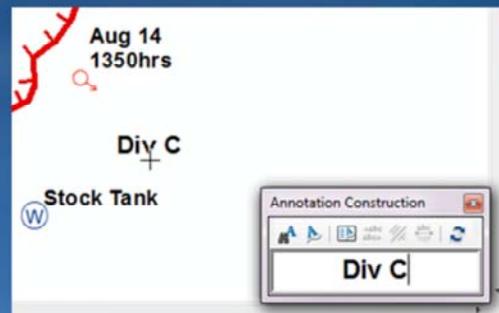
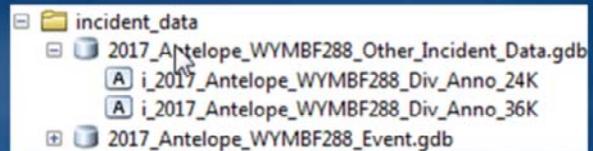
- Standard geodatabase annotation can be created using a layer's Convert Labels to Annotation option, **OR** by creating a new annotation feature class within an existing geodatabase



A new standard geodatabase annotation feature class can be created using the Convert Labels to Annotation option, from the context menu of a labelled layer within a map layout, or by simply creating a new annotation feature class within by file geodatabase.

Working with Annotation

- Standard annotation should be stored in the other incident data geodatabase
- Geodatabase annotation can be re-used in multiple map products, a clear advantage over annotation stored in maps



Standard geodatabase annotation for map products should be stored in the “other incident geodatabase”. Storing annotation in the incident geodatabase when using an Event feature service workflow is not practical as annotation features are not by default part of the Event feature service. Like other feature classes, having annotation open in another map will create locks, preventing the feature from being edited or the geodatabase the feature is in from being deleted or renamed.

Once created and populated an annotation feature class with a specified reference scale can be generally be used in other incident map products laid out at the same map scale.

Working with Annotation – Pros & Cons

Pros

- Re-usable in multiple map layouts (geodatabase annotation only)
- High level of control of the placement and content of map text elements

Cons

- Standard annotation must be managed separately from features (updated as map features are added and removed)
- Feature linked annotation not practical in Event feature service workflows, or editable with Basic license



In addition to re-usability, the primary advantage of geodatabase annotation is the high level of control it affords users in the placement of their map labels. Users pick exactly where annotations go, and the annotations do not move as the map layout is adjusted.

Standard geodatabase annotation must be managed separately from, and in addition to other map features. Standard annotation text will not appear or adjust when other incident features are updated or adjusted.

While feature linked geodatabase annotations do not have this problem, feature linked annotations are not editable with a Basic Esri license, nor are they practical within an Event feature service workflow.

Lesson Objectives Review

Following this lesson, you should be able to:

- Review methods for adding label text to maps (labelling & annotation) using COTS tools
- Discuss the differences, and pro & cons of each method



After completing this lesson, students should be able to:

- Identify the primary methods for adding label text to maps using COTS tools, labeling and annotation...
- And discuss the differences, and pros & cons of each method.