

## Characterizing Vegetation, Climate, and Topography Lines in NFDRS Application

“Draft Fire Danger Rating Areas” is a web application designed to help users quickly access datasets useful for delineating Fire Danger Rating Areas (FDRAs), and use those datasets to delineate their FDRAs into areas with similar Vegetation, Topography, and Climate. More information about what a Fire Danger Rating Area is can be found in the Advanced National Fire Danger Rating System course material.

1. Open the Fire Danger Rating Application in AGOL, using login and password for a NIFC AGOL account.

The URL for the app is:

<https://nifc.maps.arcgis.com/apps/MapSeries/index.html?appid=0b966392b8094f79b07a15e7c28d23ff>

Note: For the best results, it’s recommended to use Chrome over Internet Explorer. Some icons do not appear as intended in Internet Explorer.

2. By default, this “Read Me” tab will open first, but you may start working on any tab at any time by simply clicking to activate the tab on to activate. Each tab operates in basically the same way, but you can get an information box explaining how to operate within the window by clicking on the **Details** menu. You can also come back to this page by clicking the “Read Me” tab.

After reading the information, click **Close** to make the box disappear.

3. Explain the tabs:
  - a. Read Me  
Instructions for reference on how to use the application. Come back to this tab any time you want to
  - b. Vegetation  
Use the layers button to toggle on and off the National Land Cover Dataset (NLCD), GAP Analysis Landcover, and Landfire Existing Vegetation Type (EVT) layers. Click the edit button, then "Vegetation", to draw lines separating areas of unique vegetation types on your landscape. Make sure to note which layer was used in the delineation.
  - c. Topography  
Use the "Layers" button to toggle on and off the Elevation and Slope layers. Click the "Edit" button, then "Topography", to draw lines separating areas of unique topographic types on your landscape. Make sure to note which layer was used in the delineation.
  - d. Climate  
Use the "Layers" button to toggle on and off the Annual and April - October precipitation (ppt) and maximum temperature layers. Click the "Edit" button, then "Climate", to draw lines separating areas of unique topographic types on your landscape. Make sure to note which layer was used in the delineation.
  - e. Draw Final Breaks  
Using the breaks drawn in the vegetation, topography, and climate steps as a guide, delineate a set of final break lines that will be used by a GIS Specialist to draft fire danger rating areas.
  - f. View Fire History

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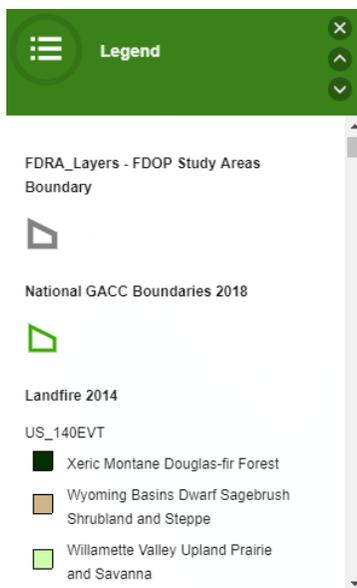
Zoom in to your area of interest. Use the "layers" panel to turn on and off fire occurrence data. Note that most layers have both a "heatmap" option as well as a layer that simply displays occurrence points. No editing takes place in this view.

4. Each tab has similar tools, but is focused on data about a specific kind of landscape characteristic (Vegetation, Topography, or Climate) or Task (Drawing "Final" FDRA breaks or Viewing Fire History). Tools are accessed from the menu bar. Tools include:

- a. Legend



The legend tool shows a list of the layers that are displayed in the map, and allows you to see the layer symbology (color and line style). Click "Legend" on the menu bar to turn the legend on or off.

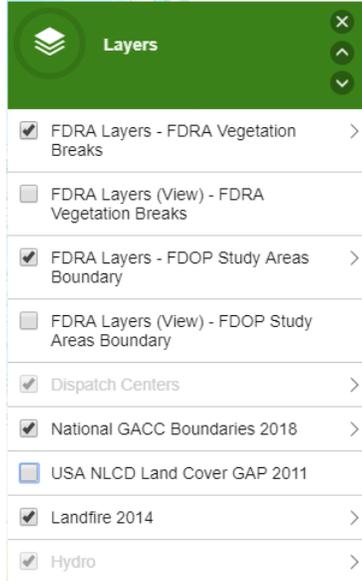


- b. Layers



The "layers" tool allows you to see all of the map layers that can be turned on or off in the map. Turning off a layer in the "layers" tool causes it to not draw on the map, and removes it from the legend displayed when using the "legend" tool above. Use the layers tool to switch between layers showing different data sources. For example, turn off the GAP Land Cover layer, and turn on the Landfire 2014 layer. Switch back to the "legend" tool to see how the colors in the Landfire Layer correspond to vegetation types.

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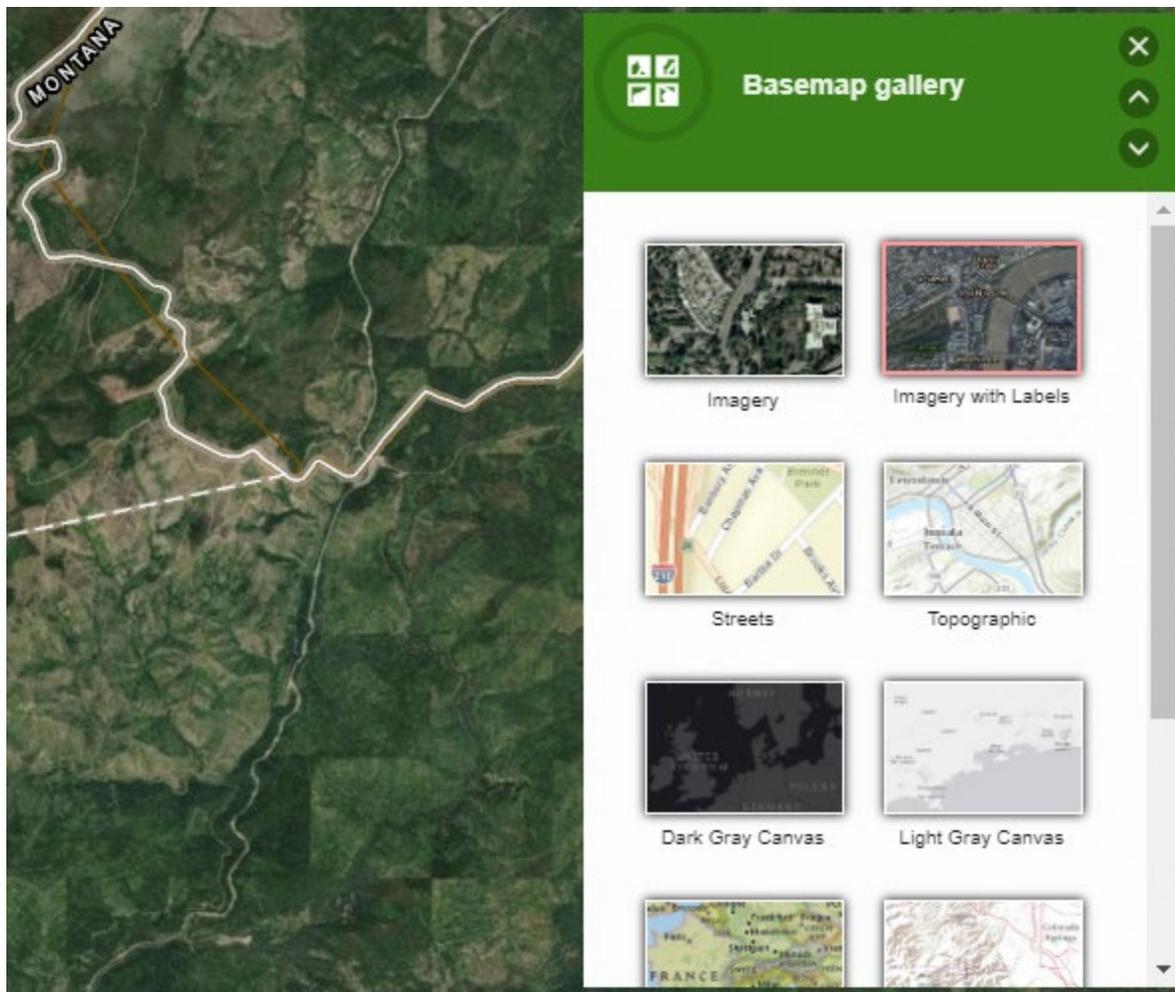


## c. Basemap gallery

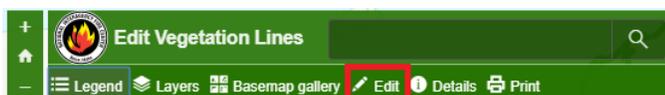


The Basemap Gallery tool allows you to switch between “basemaps” - the map often used for place reference, underlying more specialized data layers. Available basemaps include aerial photography/imagery with and without labels, street maps, topographic maps, and various plain backgrounds. To switch basemaps, simply click the Basemap Gallery tool and then click on a basemap from the gallery.

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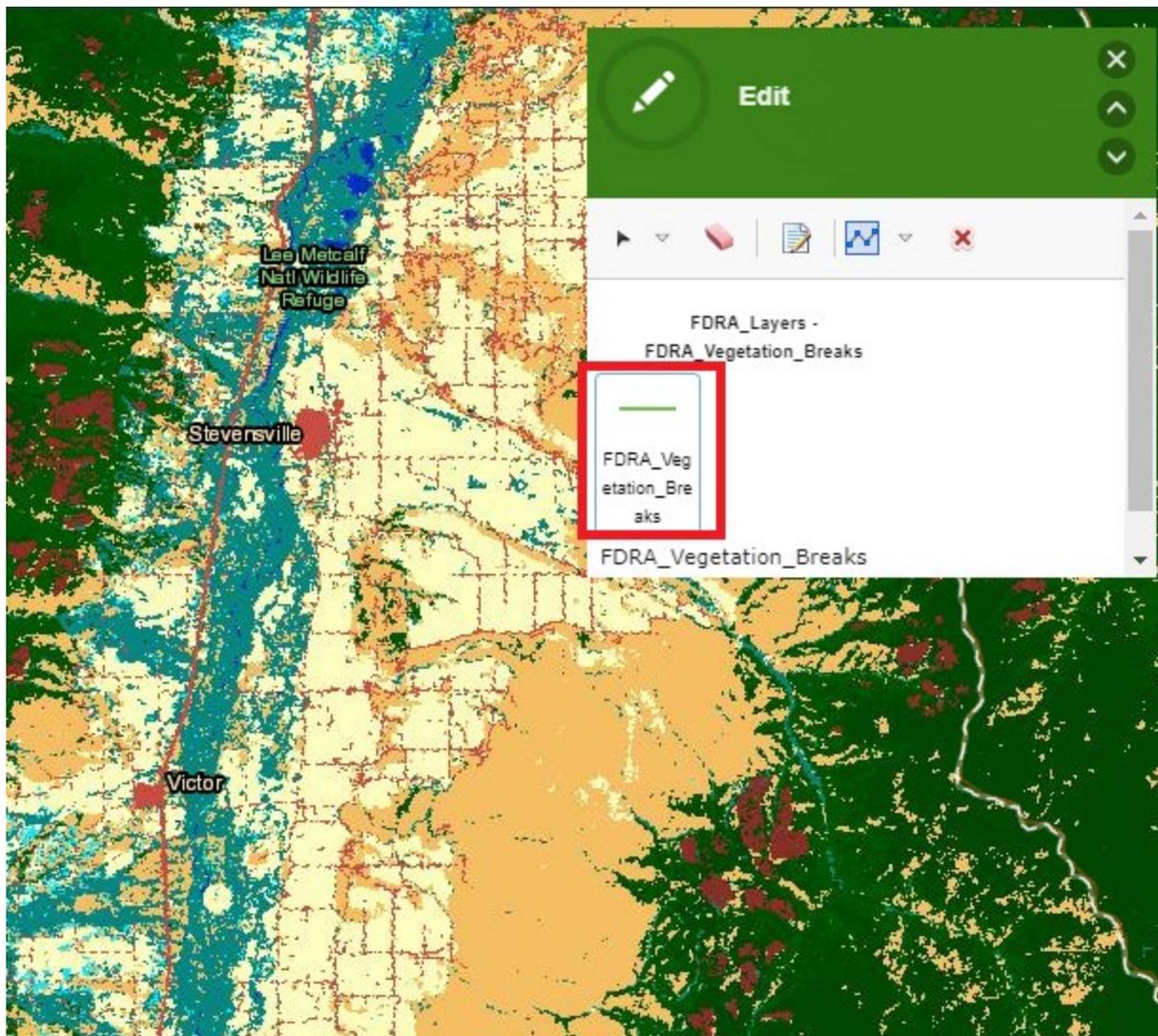


## d. Edit

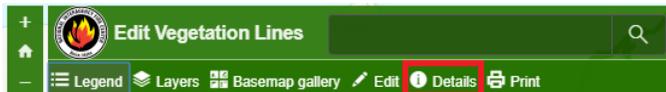


This is the tool used to draw lines delineating areas of similar vegetation, topography, or climate. You can only edit one set of lines at a time. For example, in the vegetation tab, the only line you can edit are the vegetation lines. To edit, simply click on the line symbol in the Edit window. Editing is covered more thoroughly in section 5, below.

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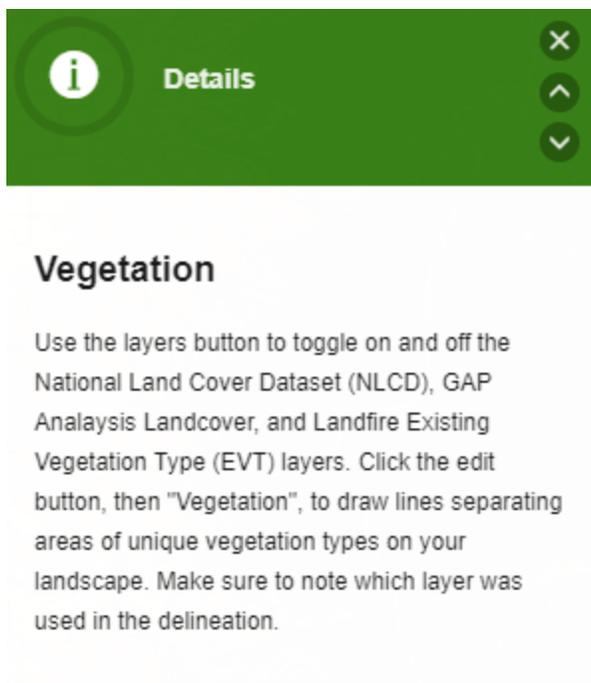


## e. Details



The details tool opens a window with information for using the tab you are currently using. When you click the details tab, a small information window will open in the upper right-hand corner of the tab. Click the “x” in the upper right hand corner to close the window.

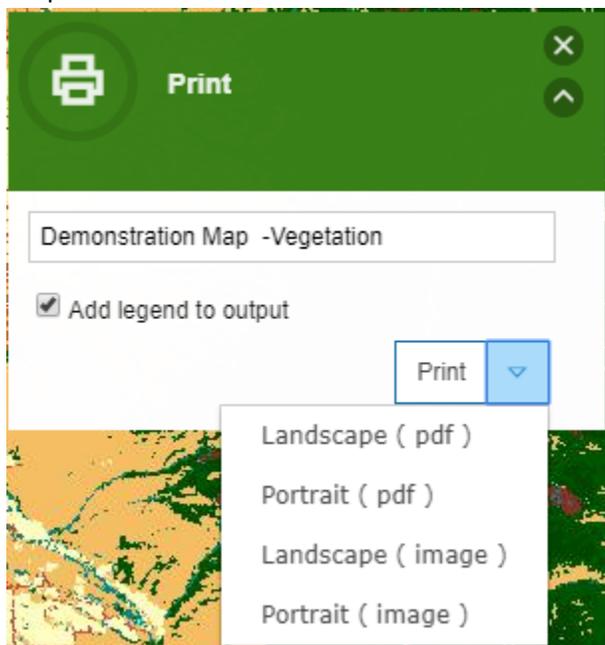
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## f. Print



The print tool allows you to create a printable PDF document or PNG image of the current map area and layers. You can choose to specify a title in the “Add custom title” dialog, and choose if you want the legend displayed on the product. If you choose the arrow to the right of the Print button, you can choose the print orientation (Portrait or Landscape) and choose PDF or PNG output.



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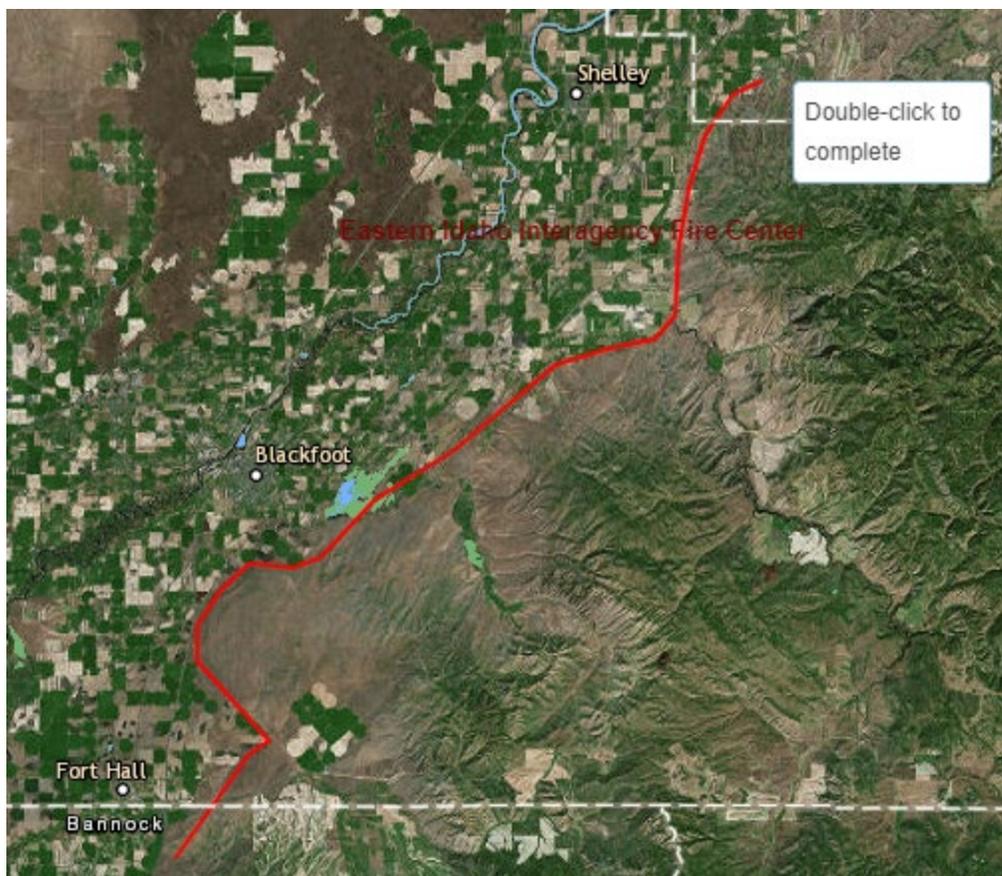
It will take the application a little time to produce the PDF document or PNG image. Once it is completed, the Print button will be replaced with a blue “Printout” download link. Click the link to download.

- g. Navigation
  - i. Use the mouse as your primary navigation tool. Click and drag to pan north, south, east, and west.
  - ii. Roll your mouse wheel to zoom in and out.
  - iii. On your keyboard, the arrow keys can be used to pan.
  - iv. The app also has a navigation button that can be used to zoom in or out. Click the “house” icon to zoom back to “home” – home is zoomed all the way out to the entire country.

### 5. Editing Process

- a. On each map, you will be drawing lines to delineate areas where the vegetation, climate, or topography are significantly different on one side of the line than the other. For example, drawing a line between grassland and forest vegetation, or between mountain and prairie topography.
- b. Any line should begin slightly outside your study area, follow the boundary you feel divides your study area best, and then end outside the study area. This is very important – lines that terminate inside the study area make it impossible to draw separate FDRAs.
- c. Refer to the course material on how vegetation, topography, and climate are used to build Fire Danger Rating Areas for more information on how/why this is done.
- d. To edit, open the edit menu as described above. Click on the line (Veg, Topo, Climate) you are going to draw.
- e. Identify the change in landscape you are going to follow. Using your mouse, starting outside the study area, click along that boundary, crossing into your study area, through the study area, and cross the boundary on the other side of your study area. Each click will place a “vertex” – a point where the line is anchored and can change direction. You can use your mouse wheel to zoom in and out while drawing your line. Once complete, double click to finish your line.

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- f. After completing a line, a dialog box will pop up. This will give you an opportunity to record the layer you used to draw that particular break, whether it should be considered “final” or “draft”, and indicate if you would like an administrator to delete the feature. Simply click the “x” in the upper right-hand corner to complete.

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FDRA\_Layers - FDRA\_Topography\_Breaks 

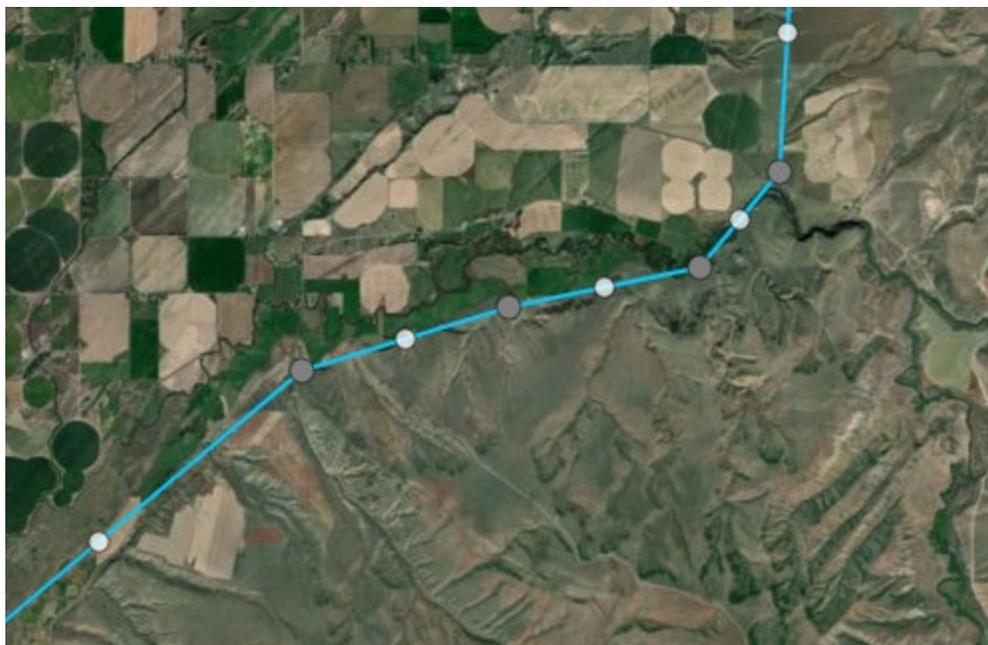
Input Layer	<input type="text" value="500 Foot Elevation"/>	
Final (Yes/No)	<input type="text" value="Yes"/>	
CreationDate	<input type="text"/>	
	<input type="text"/>	
Creator	<input type="text"/>	
EditDate	<input type="text"/>	
	<input type="text"/>	
Editor	<input type="text"/>	
DeleteFeature	<input type="text" value="No"/>	

Edited by abailey\_nifc seconds ago

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- g. If you make a mistake, you can double-click to finish editing, and, while the feature is still selected (highlighted blue) you can click the red “x” icon  on the edit window to delete your line. If it is no longer selected, you can click the black arrow icon , click to select the line, and then delete it by clicking the red “x”.
- h. If you have something selected and do not want it selected, click the pink “eraser” icon  to clear your selection.
- i. If you need to move just one, or a few, vertices, use the select tool  and click the line to select it. Then click the “attributes” tool (white paper and pencil icon) . Click near the line you want to change, and then hold your mouse near the line and the cursor will become a hand icon. Click the line with the hand icon, and it will display the vertices. You can then use the hand icon to move individual vertices. Note that this can become very time consuming – it is often better to simply delete your line and re-draw if many points would need to be moved. When you are done, click away from the line and your edits will be saved.

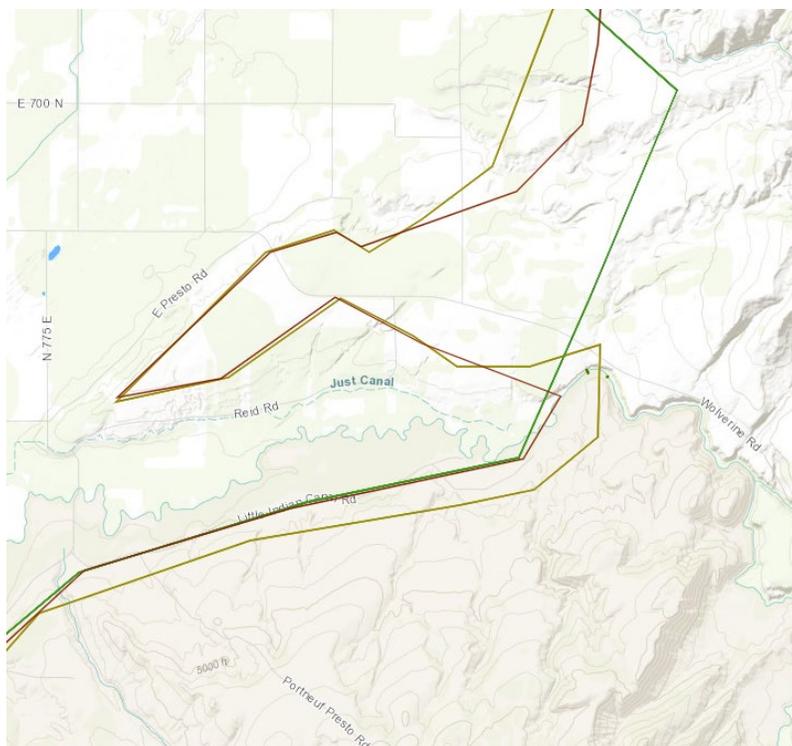
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j.

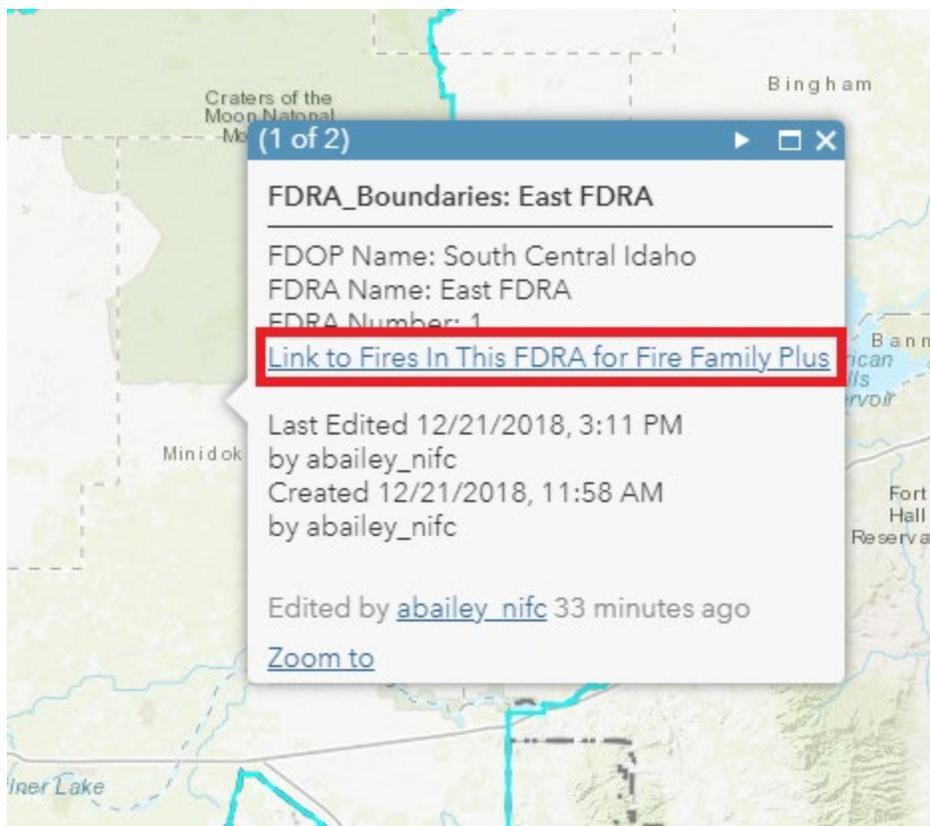
6. Using techniques described above, create lines for Vegetation, Topography, and Climate.
  - a. Move through each tab. There is no requirement that one be done before another, only that Climate, Vegetation, and Topography must be complete before moving on to “Draw Final breaks”.
  - b. When you complete all the Climate, Vegetation, and Topography lines, you will draw the best fit you can that captures all three sets of lines in one line, which will be used to slice the operating plan boundary into individual FDRAs.
  - c. In the example below, the final break line (red) follows topography (brown) for most of the boundary, but splits the difference between vegetation (green) and topography in the northern part of the image.

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- d. Boundaries such as Fire Response areas and administrative/agency boundaries can be used to draft final breaks. You can toggle these on and off through the “Layers” tool. For more info on drawing final breaks, see the Advanced NFDRS course material.
  
7. Once all lines have been created, a GIS specialist will use the lines as guides to carve out draft Fire Danger Rating Area (FDRAs) polygons using Tech tip 4, CreatingEdge-MatchedFDRAsInArcMap. **You will need to let your GIS specialist know when you are complete. Once your GIS specialist is finished, you should have a fire occurrence dataset for use in Fire Family Plus.** Fire occurrence data can be downloaded from <https://nfdrs-fires-by-fdra.s3-us-west-2.amazonaws.com/index.html>, organized into folders by the date and time when the fire occurrence dataset was exported. Alternatively, the download link can be found by clicking on an FDRA shape in the View Fire History tab:

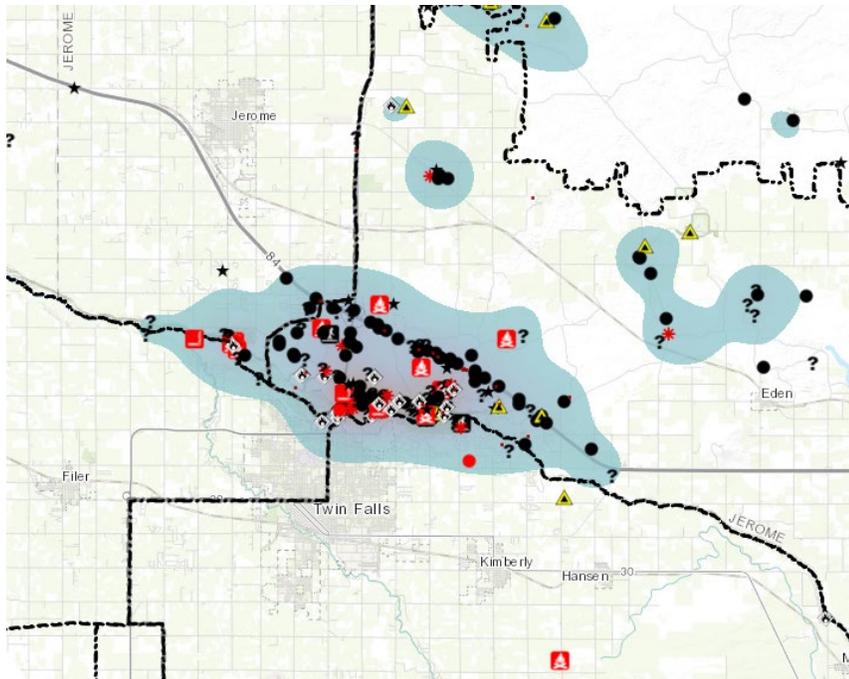
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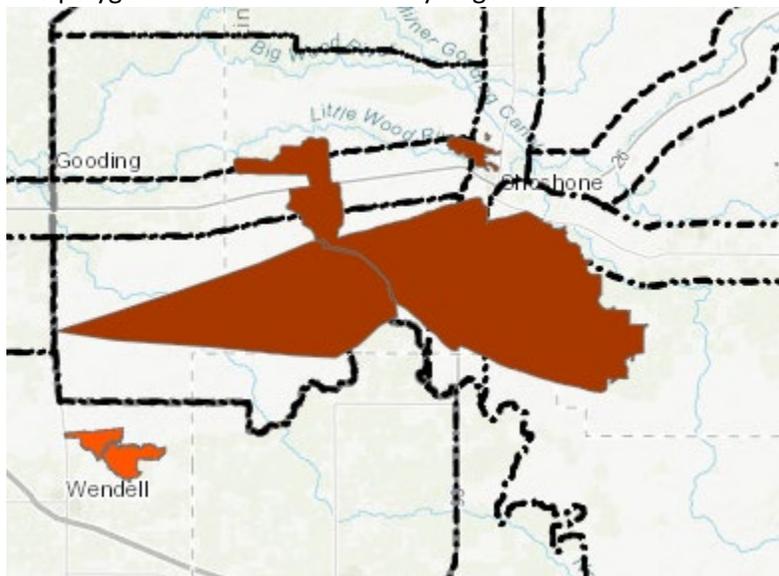
### 8. View Fire History tab

- a. This tab is not part of drawing FDRAs, but is a helpful reference to help understand your fire occurrence in context with your FDRA layers, agency boundaries, etc. The Layers tool will be open by default on this tab to give you easy access for turning on or off data.
- b. Zoom into your area first. Fires will not draw at small scales.
- c. Use the legend tool to understand what each point symbol means.
- d. You can flip between viewing all fire occurrence as points, in a heatmap, or both

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e. Fire polygons are available for many large fires.



f. Fires can also be separated by size class (E-G and D-G) and by Lightning/Non-Lightning.

9.