



## Ex. 5: GIS Utilities: GIS Analysis

### Using the BARC for BAER Support



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*This exercise demonstrates the reporting phase of burn severity mapping. Most reports will ask for acres of burn severity as well as acres of burn severity broken down by ownership, watershed, or other delimiters.*



**ALWAYS REMEMBER** to recalculate the necessary area fields after any spatial changes (e.g., clip, union, intersect, etc.). The area field is not dynamic and will not update with the correct values until you perform a recalculation.

#### Exercise Objectives

- Perform GIS Analysis using the Burn Severity Map

#### Required Data

- Fire perimeter, Soil Burn Severity, and Ownership layers

#### Introduction and Overview of Procedure Steps

In this exercise you will perform several GIS analysis techniques using BARC data. Subsequent analysis of BARC data is necessary to derive additional information from your data. In this exercise you will:

1. Determine Acres of Soil Burn Severity Classes Within the Perimeter
2. Determine Acres of Burn Severity by Ownership Using a Pivot Table in Excel

#### I. Determine Acres of Soil Burn Severity Classes Within the Perimeter

1. Add the following files to a new ArcMap document:
  - **hayman\_per\_062302.shp**
  - **hayman\_final\_soil\_bs.shp**
  - **pike\_sanisabel\_ownership.shp**
2. Open the **Attribute Table** for hayman\_final\_soil\_bs.shp.
3. Click **Options | Add Field**.
4. Configure the following in the Add Field dialog:
  - **Name:** ACRES\_GIS
  - **Type:** Double
  - **Precision:** 12
  - **Scale:** 1
5. Click **OK**.
6. Right-click on the ACRES\_GIS field and choose "Calculate Geometry..."
7. Click OK when prompted to acknowledge you are working outside an edit session.
8. In the Property drop-down box, choose **Area**.
9. Keep the projection the same as the input shapefile (it will default to that).
10. In the Units drop-down menu, choose **Acres US (ac)**. Make sure you don't choose "Ares (a)." There's a big difference between acres and ares.
11. Choose **OK**. All the records in the shapefile should now have an acre value.
12. Inspect the results.



13. Right-click the **SOIL\_BS** column heading.
14. Choose **Summarize**.
15. Ensure that the **1. Select a field to summarize** pull-down menu has **SOIL\_BS** selected.
16. Ensure that **ACRES\_GIS** is expanded under **Choose one or more...**
17. Place a checkmark next to **Sum**.
18. Click the folder icon next to **Specify output table**.
19. Navigate to your outputs directory.
20. Type: **acres\_bs** as the filename.
21. Click **Save**.
22. Click **OK**.
23. Click **Yes** to add the table to ArcMap's Table of Contents.
24. Right-click **acres\_bs** in ArcMap's Table of Contents.
25. Choose **Open**.
26. Inspect the results. This is one way to summarize the acres of burn severity. To do a more comprehensive summary considering more data layers, read on!

### II. Determine Acres of Soil Burn Severity by Ownership

1. In ArcToolbox, navigate to **Analysis Tools | Overlay | Intersect**.
2. Configure the following:
  - **Select the input layers to intersect:** *hayman\_final\_soil\_bs.shp* and *pike\_sanisabel\_ownership.shp*
  - **Specify the output shapefile of feature class:** Click the folder icon, navigate to your output directory and type: **soilbs\_ownership.shp** as the filename.
  - Click **Save**
  - Leave the other options to the **defaults**.
3. Click **OK**.

Because Shapefiles don't automatically update area or length attributes on features you edit, you'll need to re-calculate the ACRES\_GIS field

4. Open the attribute table for **soilbs\_ownership.shp**
5. Locate and right-click the **ACRES\_GIS** column heading.
6. Repeat steps 6-12 of Part I of this exercise.
7. Leave the **soilbs\_ownership.shp** attribute table open.



**ALWAYS REMEMBER** to recalculate the necessary area fields after any spatial changes (e.g., clip, union, intersect, etc.). The area field is not dynamic and will not update with the correct values until you perform a recalculation.



*The PivotTable instructions were written based on Microsoft Office 2007.*

#### IV. Determine Acres of Burn Severity by Ownership Using a Pivot Table in Excel

1. In the attribute table, click on **Options | Export...**
2. Name the output table **soilbs\_ownership\_table.dbf**, press OK, and press Save.
3. Do not add the table to the current ArcMap document because the next step will be done in Microsoft Excel.
4. On your computer desktop, click on **Start | Programs | Excel**.
5. Go to **File | Open** and navigate to the folder where you saved **soilbs\_ownership\_table.dbf**. Remember to change the file type to All Files (\*.\*) Load **soilbs\_ownership\_table.dbf**.
6. With your table loaded, go to **Insert | PivotTable**
7. Make sure the entire data set is highlighted and then click OK.
8. From the PivotTable Field list, click and drag **STATUS** to the "Row Labels" box in the bottom right of the screen.
9. Click and drag **Soil\_BS** to the "Row Labels" box, too.
10. Click and drag **ACRES\_GIS** to the "Values" box.
11. You now have a quick and easy report showing burn severity by ownership. You can do this same process with any number of GIS layers, provided you intersect them all together in ArcMap, recalculate acres, and then repeat this PivotTable process.
12. Explore display and formatting options within PivotTables. **Save** the file as an **Excel spreadsheet (\*.xls / \*.xlsx)**.

**You are finished with this exercise!**