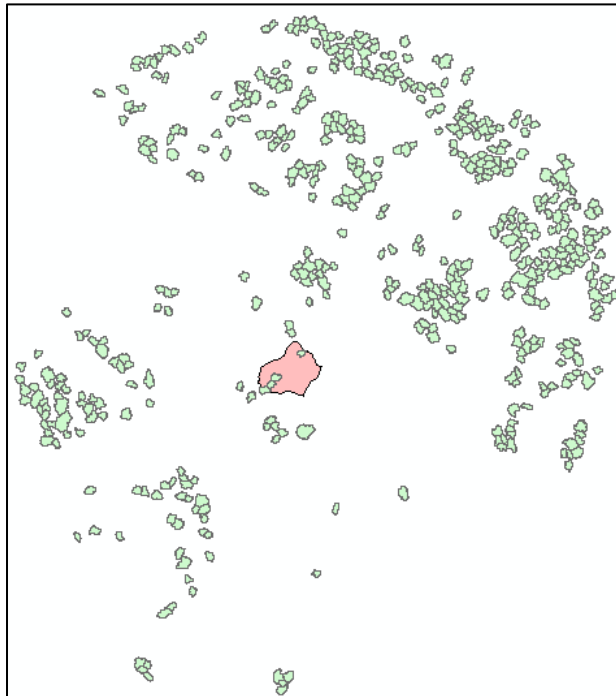


EXERCISE 5

Identify Potential Landing Zones for a Single Stand



Introduction

At this point in the workflow, you have already identified potential landing zones based on their area, shape, average slope, and maximum tree height. In addition to that, you generated a suite of statistics pertaining to the slope, canopy cover, canopy height, nearest river and road, and the X, Y coordinates for each potential landing zone (PLZ). Now it is time to select one individual candidate stand and identify the PLZs available for that single stand

Objectives

- Identify PLZs for a single candidate stand
- Finalize attribute table that can later be analyzed further in Excel

Required Data

- LandingZones_Segments.shp
- CandidateStands.shp



Prerequisites

- Install Esri ArcMap on computer and have basic understanding of how to use the software.
- Completed Exercises 1-4





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Part 1: Set Up ArcMap

A. Start ArcMap

1. If your ArcMap session isn't still open, navigate to your **LandingZones** folder and open **LandingZones.mxd**.

B. Add Data

1. Click the **Add Data** button (see below).

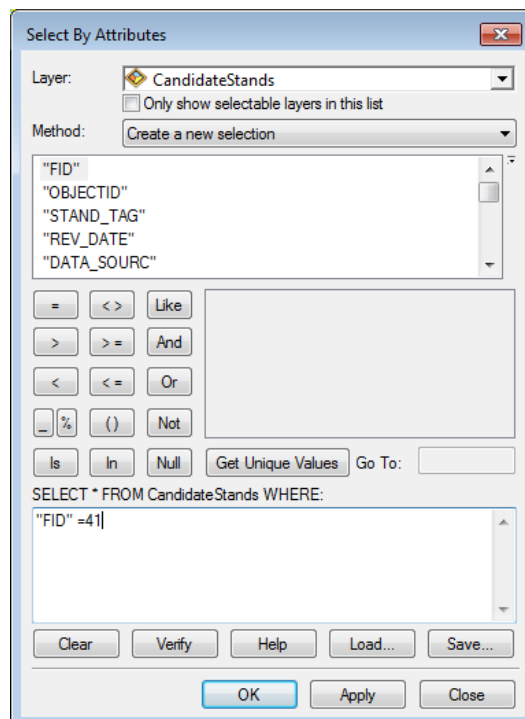


2. Navigate to the location of the **LandingZones** folder and add **CandidateStands.shp**.

Part 2: Select Candidate Stand

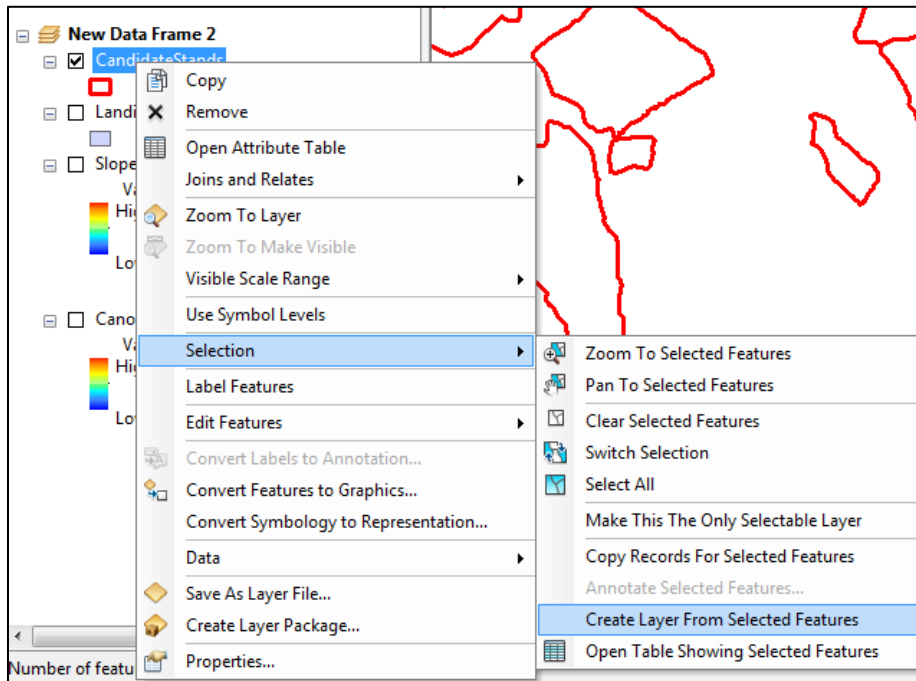
A. Select a Single Candidate Stand

1. Click the **Selection** drop down menu at the top of your ArcMap and click **Select By Attribute**.
2. In the Select By Attributes window, change the layer to **CandidateStands**.
3. Double click **"FID"** and select the **'='** sign.
4. Enter **41** to complete the equation. Click **OK** (see below).

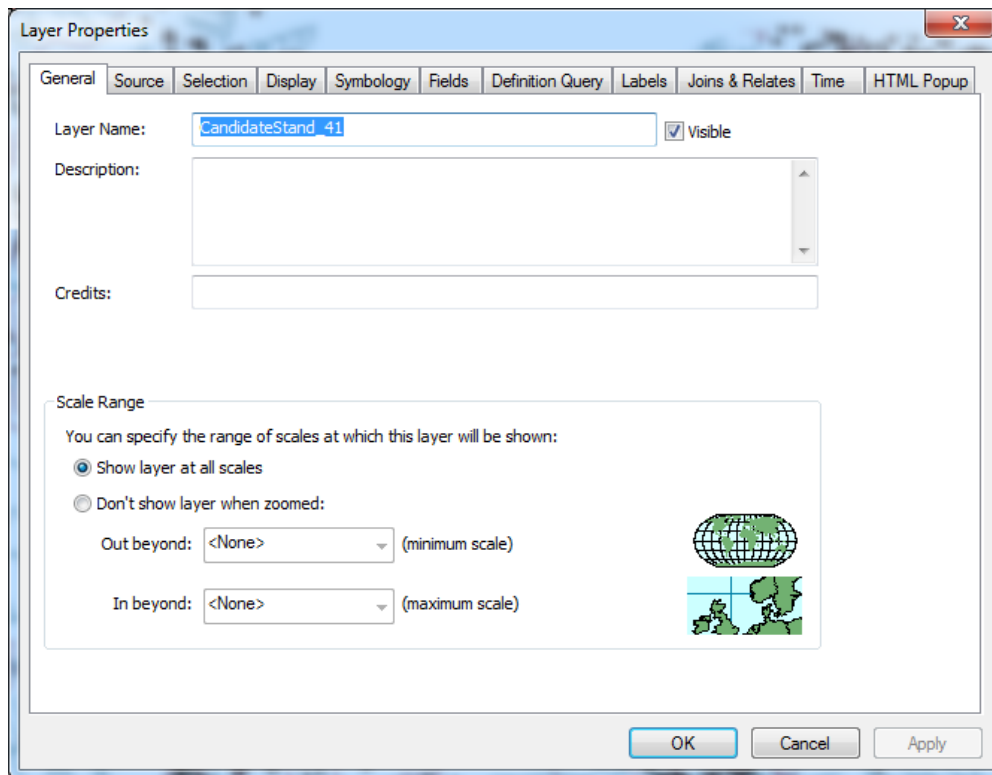


- i. This highlights the candidate stand in both the attribute table and on the map. Now you need to turn this polygon into its own shapefile.

5. Right-click **CandidateStands** in the TOC, hover over the **Selection** category and click **Create Layer From Selected Features** (see below).



6. As a result, a new polygon named **CandidateStands selection** is added to the top of the TOC.
 - i. Note that when you create a layer from selected features, the layer only exists in your ArcMap session. You would need to export the new layer in order to save it as a shapefile that can be shared and analyzed outside of your current ArcMap session. However, for this workflow, you don't need to export this layer.
7. Double-click **CandidateStands selection** in the TOC.
8. In the Layer Properties window that opens up, select the **General** tab on the far left.
9. Change the **Layer Name** to **CandidateStand_41** and click **OK** (see below).



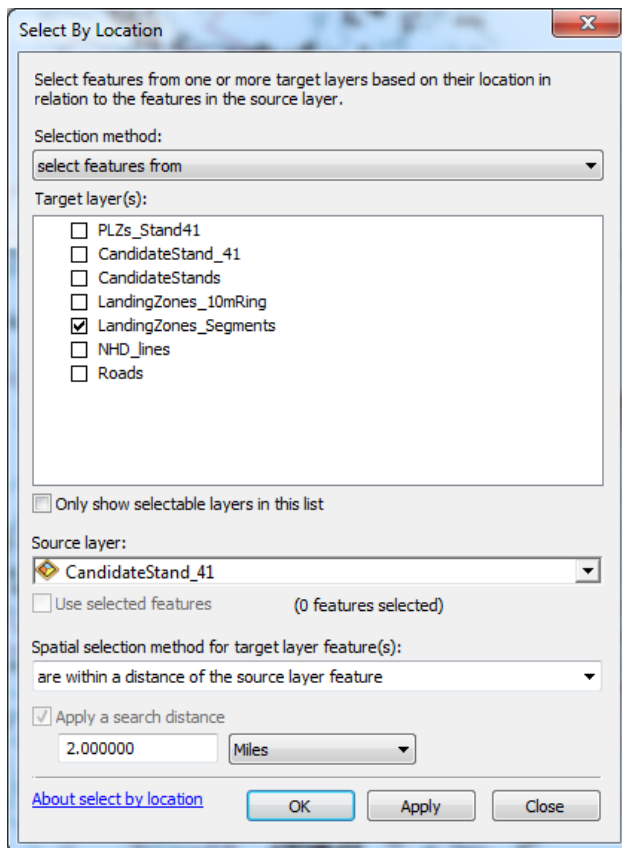
10. Turn off the CandidateStands layer in your TOC unchecking the box next to it in the TOC.
 - i. You can also choose a new symbology for this layer if the default does not stand out enough. Click the symbol below the new shapefile in the TOC and choose a prominent color.

Part 3: Select and Label Proximate LZs

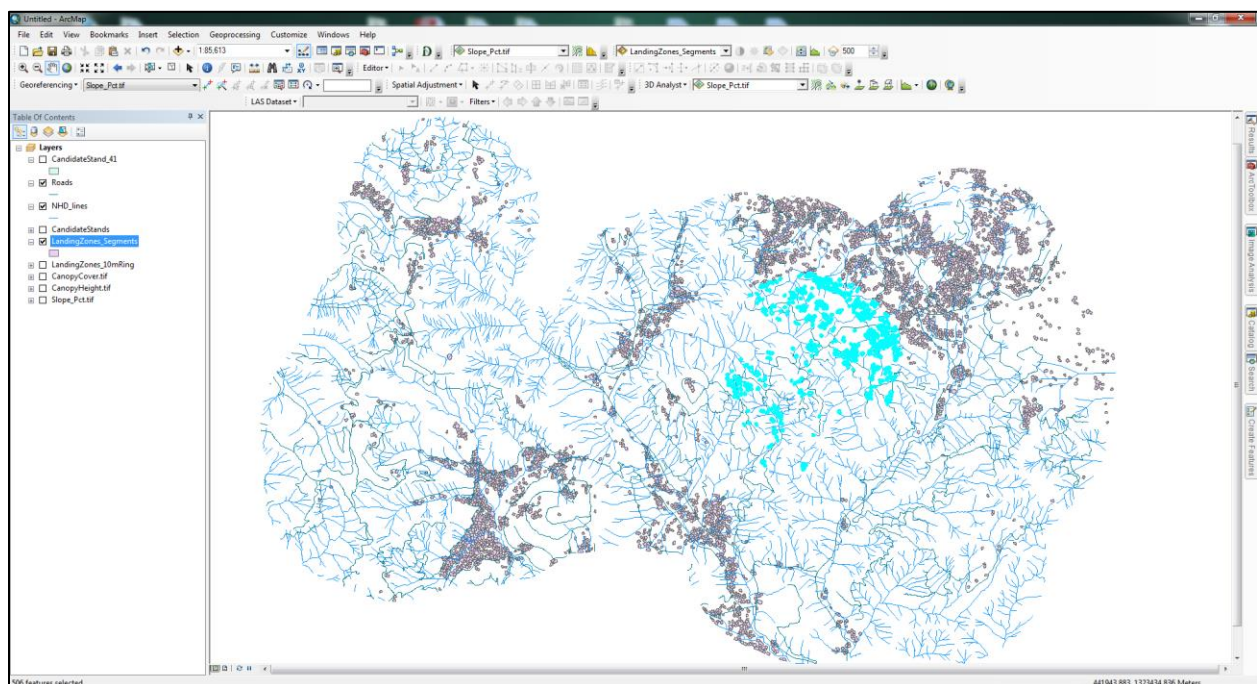
In this section, you will identify potential landing zones within 2 miles of Candidate Stand 41. You will then edit the attribute table of those Potential Landing Zones (PLZs) in a way that breaks up the distance from the PLZs to the candidate stand in half mile increments.

A. Identify PLZs Within 2 Miles of Candidate Stand

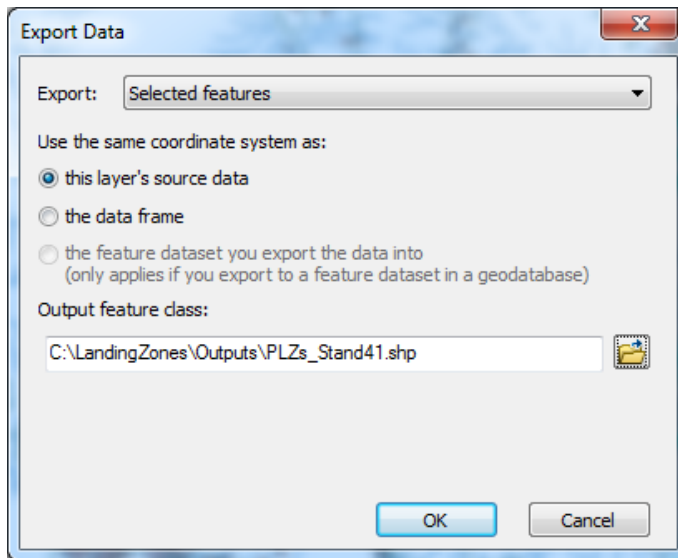
1. Click the **Selection** dropdown at the top of the ArcMap window and click **Select By Location**.
2. In the **Target layer(s):** field, choose **LandingZones_Segments**.
3. Change the **Source layer** to **CandidateStand_41**.
4. Click the drop down below **Spatial selection method for target layer feature** and choose the **are within a distance of the source layer feature** option.
5. At the bottom of the window, change the search distance to **2** and change the units to **Miles** (see below).



6. Click **OK**. The result is that **506 polygons** have been selected (see below), all of which are within 2 miles of the candidate stand. You will now need to create a separate shapefile that contains all of these selected PLZs.



7. Right-click **LandingZones_Segments**, hover over **Data** and select **Export Data**
8. In the **Export Data** window, click the folder icon next to the Output feature class field and navigate to the **Outputs** folder.
9. Name the output **PLZs_Stand41**, select **Shapefile** as the **Save as type**, and click **Save**.
10. Click **OK** in the Export Data window (see below) and click **Yes** when asked if you want to add the exported data to the map as a layer. PLZs_Stand41 should be added to the top of the TOC.

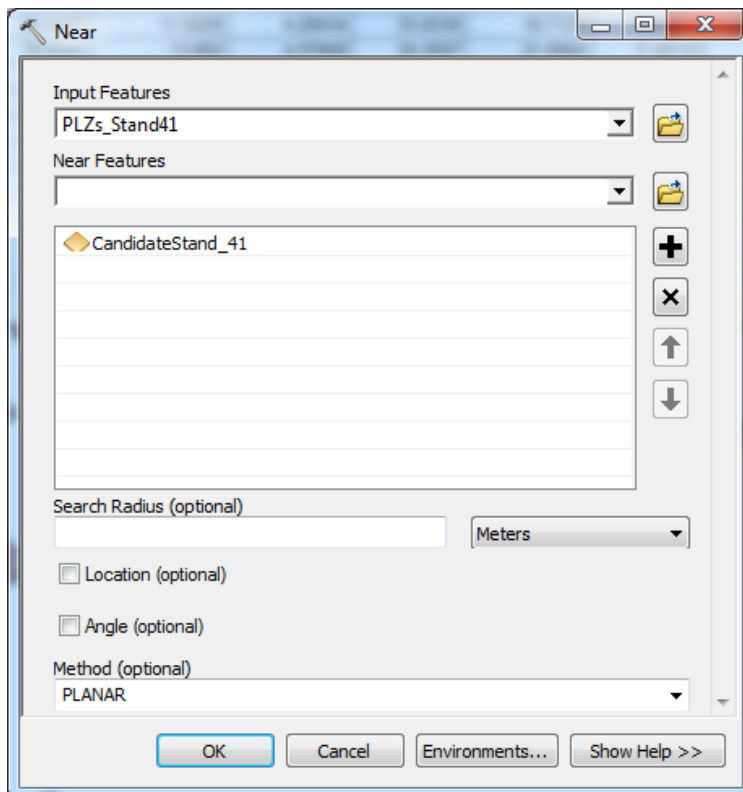


11. Turn off **LandingZones_Segments** in the TOC by unchecking the box next to it in the TOC. You can also turn off the Roads and NHD_lines shapefiles to clear up the workspace a bit.

Part 4: Calculate Distances to Stand 41

A. Use the Near Tool to Calculate Distances to Stand

1. Open the **Near** tool by opening the **ArcToolbox** and navigating to **Analysis Tools, Proximity**.
2. For the **Input Features** parameter, select **PLZs_Stand41**.
3. Set the **Near Feature** as **CandidateStand_41** and click **OK** (see below).



4. The only output of this tool that is pertinent is the **NEAR_DIST** field, so you can delete the **NEAR_FID** column.
5. Right click **NEAR_FID** and select **Delete Field**.
6. The final table should look similar to the below images, which have been split up into to images in order to fit them in.

Table

PLZs_Stand41_wArea

FID	Shape	ID	Height_Max	HeightMean	Height_STD	Cover_Max	Cover_Mean	Cover_STD	Slope_Max	Slope_Mean	Slope_STD
0	Polygon	127	32.3048	16.2156	8.38797	94	77.0135	11.0582	32.6079	7.60135	4.11089
1	Polygon	155	37.3851	22.3651	8.63434	95	84.8409	6.56417	30.3683	7.8275	4.45646
2	Polygon	155	37.3739	19.9809	8.41359	93	82.8736	7.97958	74.748	12.8996	6.29412
3	Polygon	160	34.3507	16.9174	8.40458	90	78.3333	9.26088	35.6241	9.54434	4.4206
4	Polygon	160	32.8386	18.3747	6.92735	95	83.0654	6.92992	54.7011	13.7598	5.73925
5	Polygon	167	34.491	22.2571	6.15063	93	86.0568	4.90676	38.2633	13.1932	5.75722
6	Polygon	169	37.4434	25.3221	6.51	93	86.1667	3.94194	33.9062	8.6313	4.25519
7	Polygon	169	37.4087	24.6676	7.25835	94	85.875	5.51965	35.4739	10.114	4.62257
8	Polygon	177	40.1853	15.0313	7.31254	96	81.63	11.2202	43.3961	14.613	6.60503
9	Polygon	192	32.9396	20.636	5.15688	91	86.5349	2.60008	50.6871	13.6358	7.44565
10	Polygon	195	13.4798	4.19666	2.9419	79	55.0667	15.2307	37.5707	14.7541	6.92685

(0 out of 506 Selected)

PLZs_Stand41_wArea

Buff_Max	Buff_Mean	Buff_STD	DIST_Water	FID_Road	DIST_Road	X_Coord	Y_Coord	Area	NEAR_DIST
33.4288	17.2823	7.93044	151.085	41	1179.72	-121.887716	45.851744	1.80412	2937.263525
45.7268	19.6888	10.0007	117.579	222	0	-121.90543	45.853776	1.13224	2952.938392
47.7612	20.2199	9.53479	117.777	222	19.8089	-121.906462	45.853921	2.06259	2948.584832
32.601	17.2333	7.51879	132.804	41	1139.94	-121.887633	45.852358	1.09542	2892.429176
33.8885	18.0091	7.50515	24.6889	41	1039.63	-121.888242	45.852966	2.54963	2783.419544
36.3163	21.672	7.29094	31.4366	41	1033.5	-121.886893	45.852967	2.17255	2795.660855
38.2481	23.8568	8.79737	181.922	222	2.93882	-121.905238	45.85269	1.39145	3059.993281
36.9333	23.899	7.48869	184.958	222	25.93	-121.906061	45.853302	1.39392	3022.097972
36.445	14.3885	7.51221	29.5621	222	22.9072	-121.903311	45.8585	2.35714	2386.286104
32.7662	18.9738	7.4702	93.5242	41	8.55727	-121.883509	45.862446	1.024	1771.811815
13.9003	3.20806	2.99586	138.494	222	172.342	-121.900333	45.861643	1.02178	1998.368968

7. Save your ArcMap session by clicking the **Save** button in the top left of the ArcMap window.

Congratulations! You have successfully completed this exercise. You now know how to identify a variety of PLZs for a given candidate stand, as well as how to generate a suite of pertinent statistics relating to canopy cover, canopy height, slope, distance to the nearest stream, distance to the nearest road and surrounding canopy heights. This suite of information can prove critical for decision makers responsible for choosing the landing zone that checks all the boxes (i.e. affordability, topographic suitability and the amount of forest clearing required).