Exercise 3: Vector & Raster Data

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Lab Section #03

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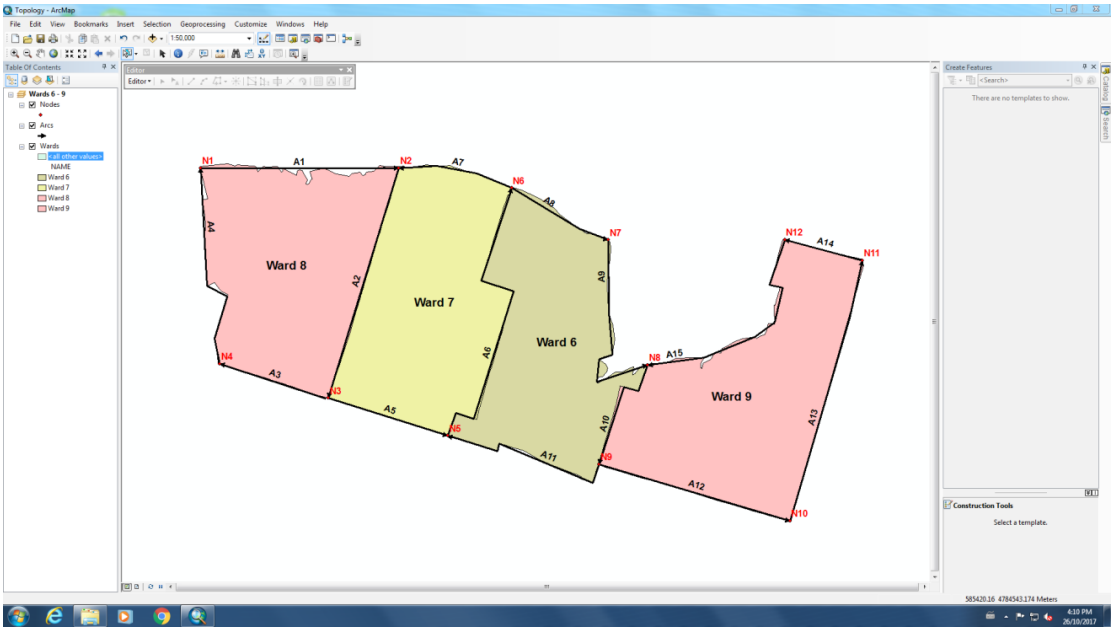
1. The coordinate system of the data frame is: NAD_1983_UTM_Zone_17N

2. If the layer, Census Tracts, was added first to the data frame, then the coordinate system would have been: GCS_North_American_1983. This is because ArcMap uses the first layer's coordinate system when setting the data frame's coordinate system.

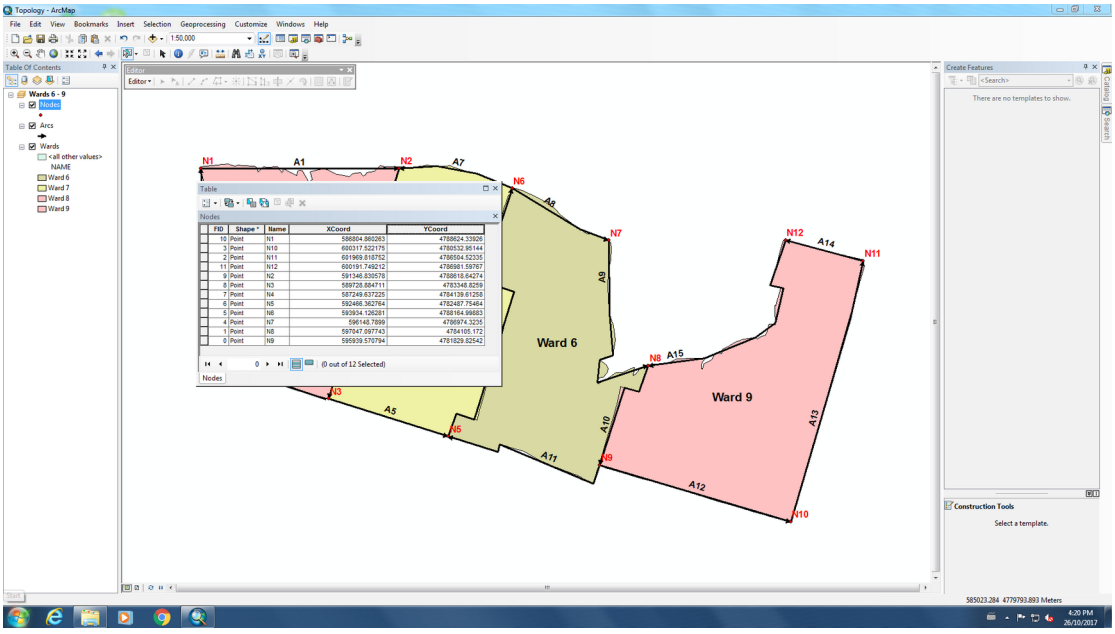
3. Without using the shift key, you can use: Select By Polygon, Select By Lasso, Select By Line

4. There are 15 census tracts within Ward 8's boundary

5.



6.



7.

ARC	FNODE	TNODE	LPOLY	RPOLY
1	1	2	0	1
2	2	3	2	1
3	3	4	0	1
4	4	1	0	1
5	3	5	2	0
6	5	6	2	3
7	6	2	2	0
8	6	7	0	3
9	7	8	0	3
10	8	9	4	3
11	9	5	0	3
12	9	10	4	0
13	10	11	4	0
14	11	12	4	0
15	12	8	4	0

POLY	ARCS
1 (Ward 8)	1, 2, 3, 4
2 (Ward 7)	2, 5, 6, 7
3 (Ward 6)	6, 8, 9, 10, 11
4 (Ward 9)	10, 12, 13, 14, 15

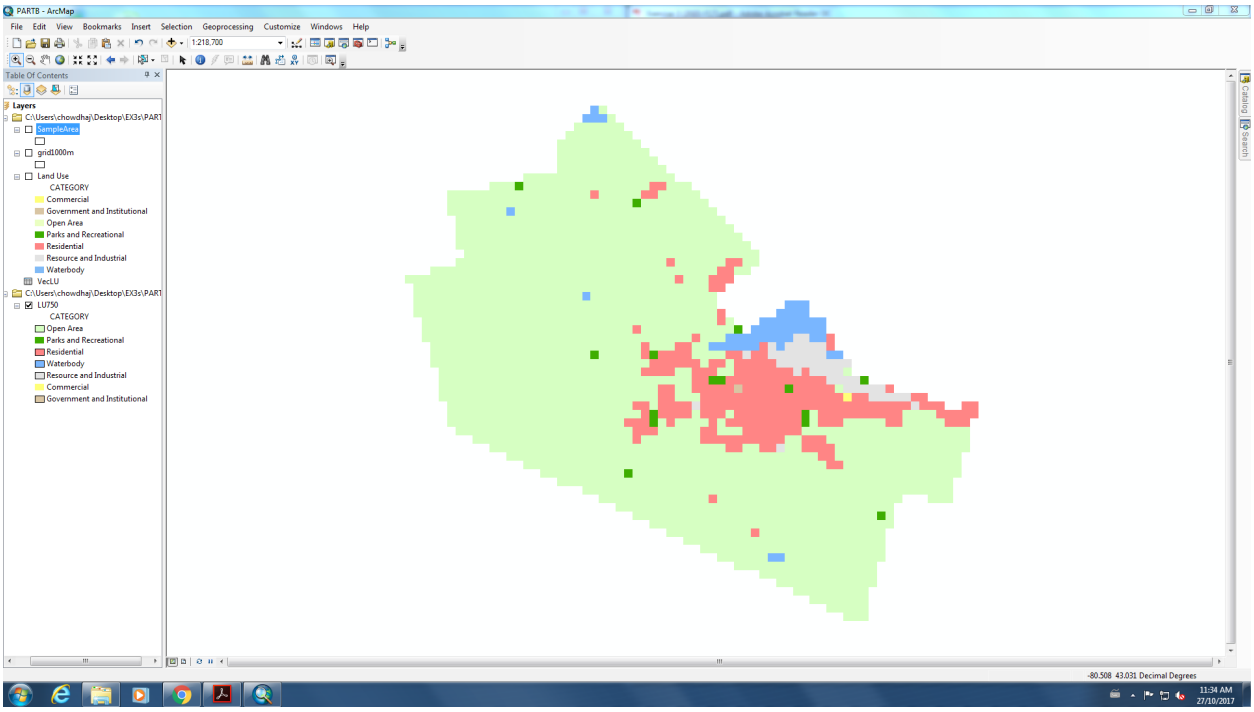
8. The system defaults to using the coordinate system of the data frame because different coordinate systems have different projections and distortions, leading to different calculations when it comes to area. Hence, the system uses the data frame's CS to calculate area.

9.

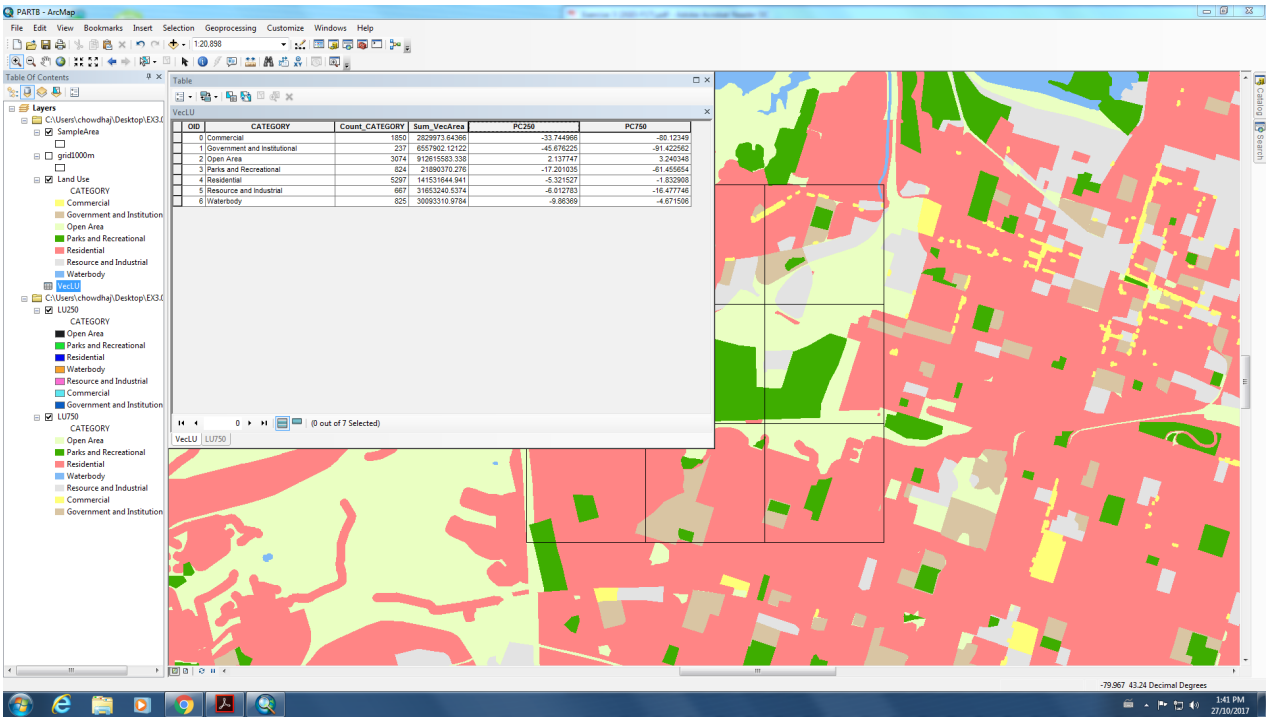
5	5	6
5	4	4
5	5	4

10. The resulting raster is not accurate because it omits a lot of important information. For instance, there are 7 different land uses inside "SampleArea" and the raster only reveals 3. The cell-center approach focuses on the center of the cell, while ignoring surrounding features and other variables like (total) area. Furthermore, sometimes a cell is dominated by one feature, but isn't represented because it isn't the center of the cell. Also, the cell-center approach completely omits smaller features, and the raster ends up representing the most prominent feature or the one in the center.

11.



12.



13. The absolute percent difference for LU250 is (generally) less than LU750, making LU250 a more accurate raster. LU250 does a better job at representing features – especially smaller features – than LU750. LU750 is fine at representing large features (i.e. Open Area), but struggles with smaller features (i.e. Commercial). On the other hand, LU250 can represent large and small features more accurately than LU750. See table below.

Category	VecLU	LU250	LU750		/ LU250	/ LU750
Commerical	2829973	1875000	562500		1.50931893	5.03106311
Government	6557902	3562500	562500		1.8408146	11.6584924
Open Area	912615583	943125000	942187500		0.96765072	0.96861355
Parks & R	21890370	18125000	8437500		1.20774455	2.59441422
Residential	141531644	134000000	138937500		1.0562063	1.0186713
Resource & I	31653240	29750000	26437500		1.06397445	1.19728567
Waterbody	30093310	27125000	28687500		1.10943078	1.04900427