Shawn Stiver
ARC Fall Semester, 2015
Geography 342
Remote Sensing

Heritage Park Subdivision Vegetation Coverage Levels Woodland, CA 2012 – 2014

Project Concept and Goals:

- The city of Woodland, CA has mandated mandatory water usage be reduced by residential customers by 25%.
- Residential landscaping can account for 30 – 50% of a household's water usage.
- Reduction of outdoor irrigation is a common method for water use reduction.
- Is the use of remote sensing imagery feasible for determining changes in residential areas?.

Source Data:

- National Agriculture Imagery Program (NAIP)
- USDA's Farm Service Agency, (FSA) Aerial Photography Field Office, Salt Lake City
- 1 meter resolution, 4 – Band (RGB, NIR), True Color, CIR False Color, NDVI

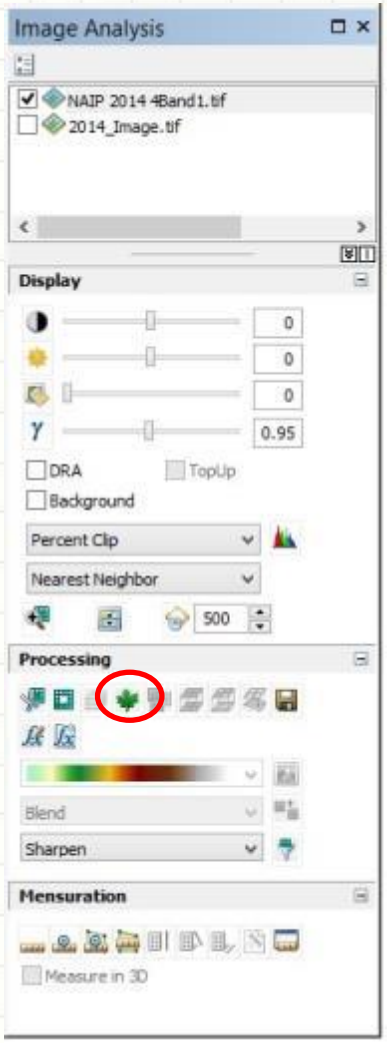
https://www.dfg.ca.gov/biogeodata/gis/map_services.asp

Imagery Preparation

Export (TIFF)

Clip/Mask

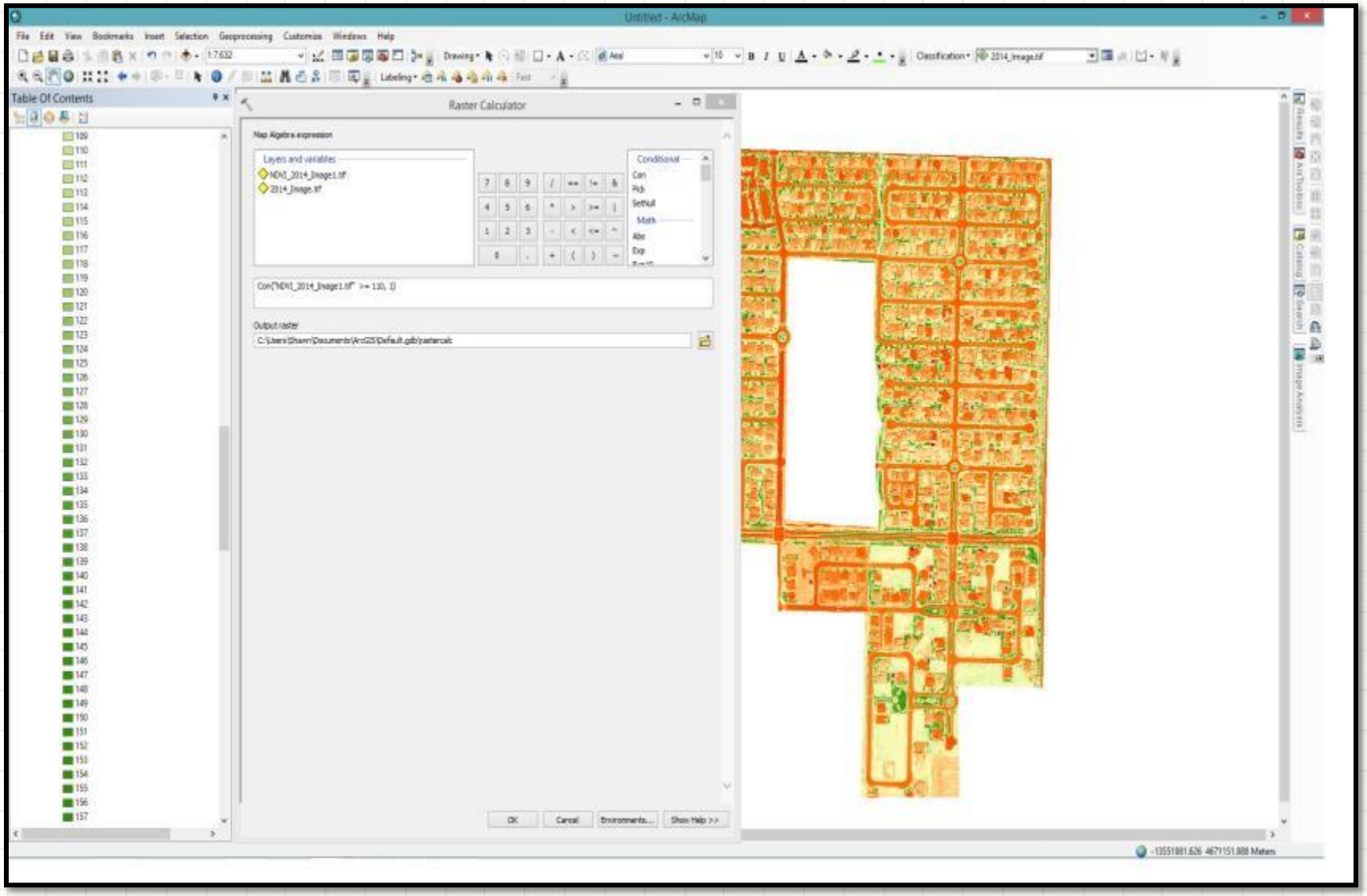
Imagery Preparation



Normalized Difference Vegetation Index (**NDVI**)

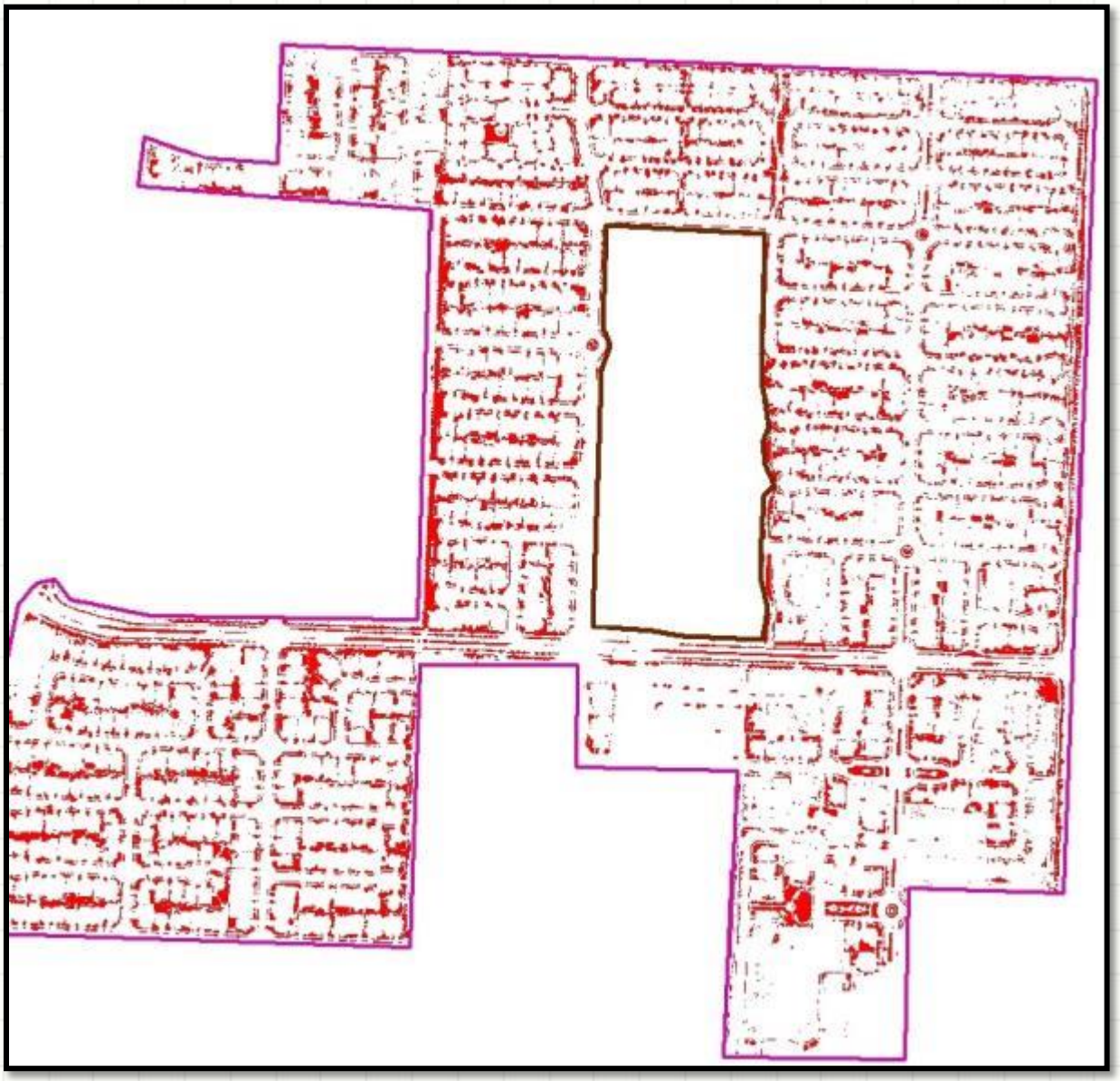
$$NDVI = \frac{(NIR - RED)}{(NIR + RED)}$$

Geoprocessing

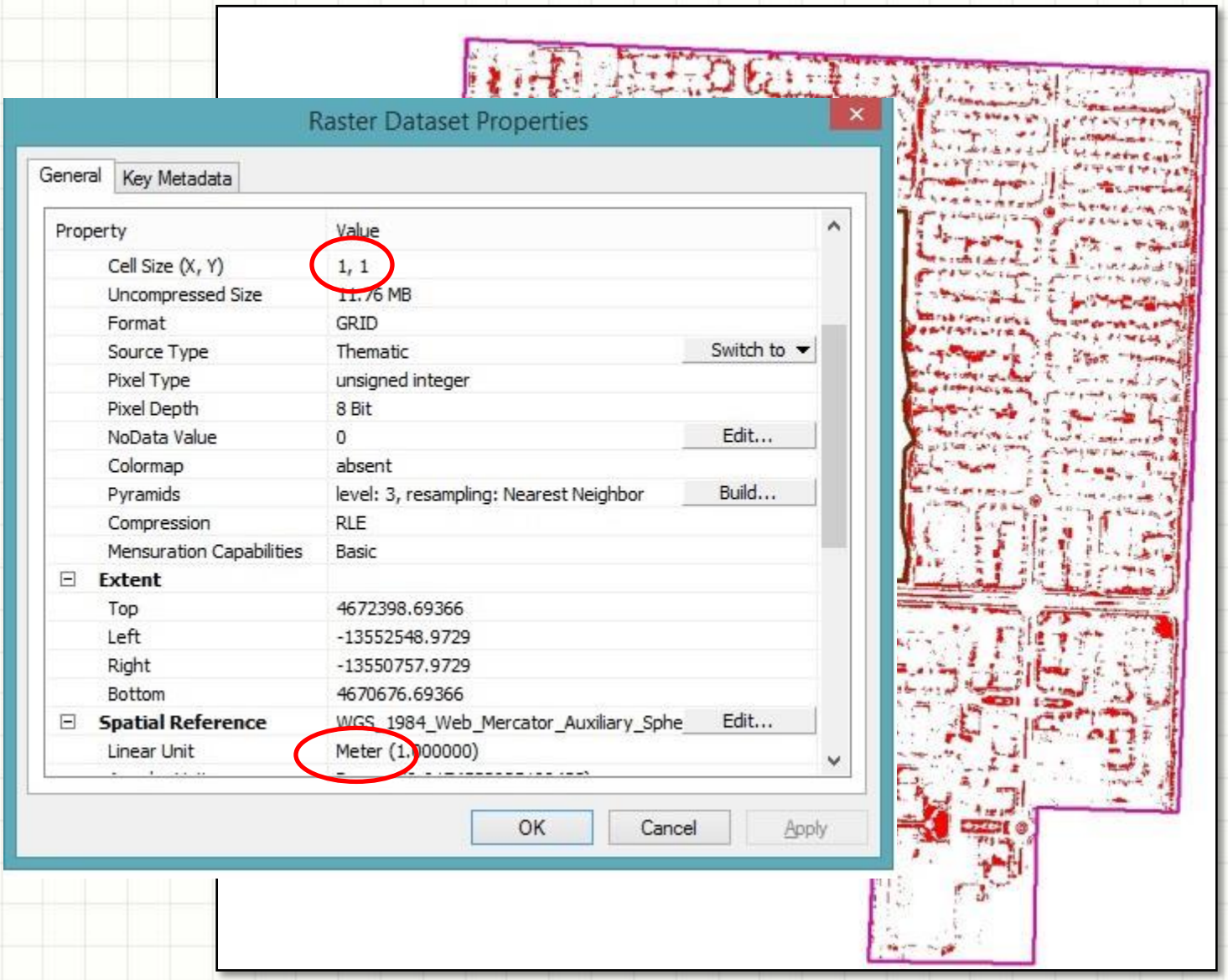


Con("NDVI_2014_Image1.tif" >= 110, 1)

Geoprocessing



Geoprocessing



Attribute Table View

Table

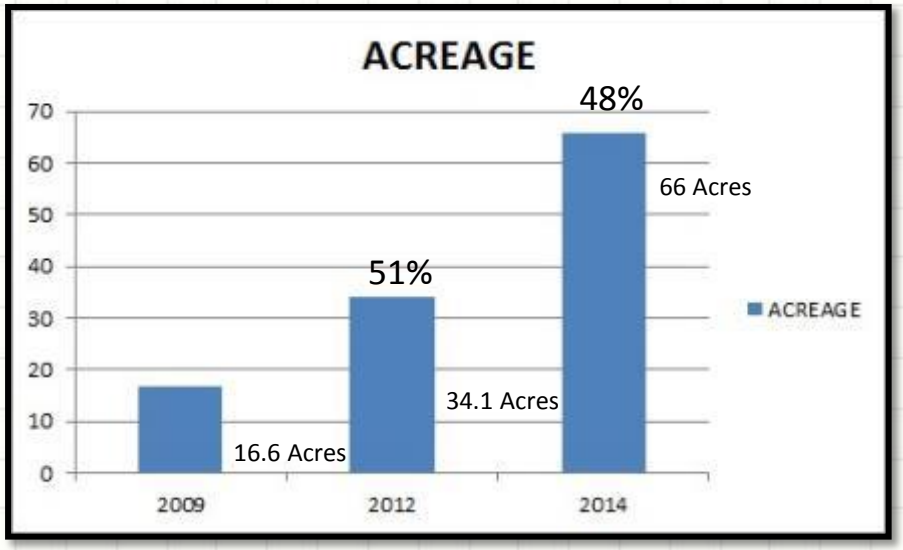
2014NDVI_calc

Rowid	VALUE	COUNT	AREA	ACRES
0	1	267006	267006	66

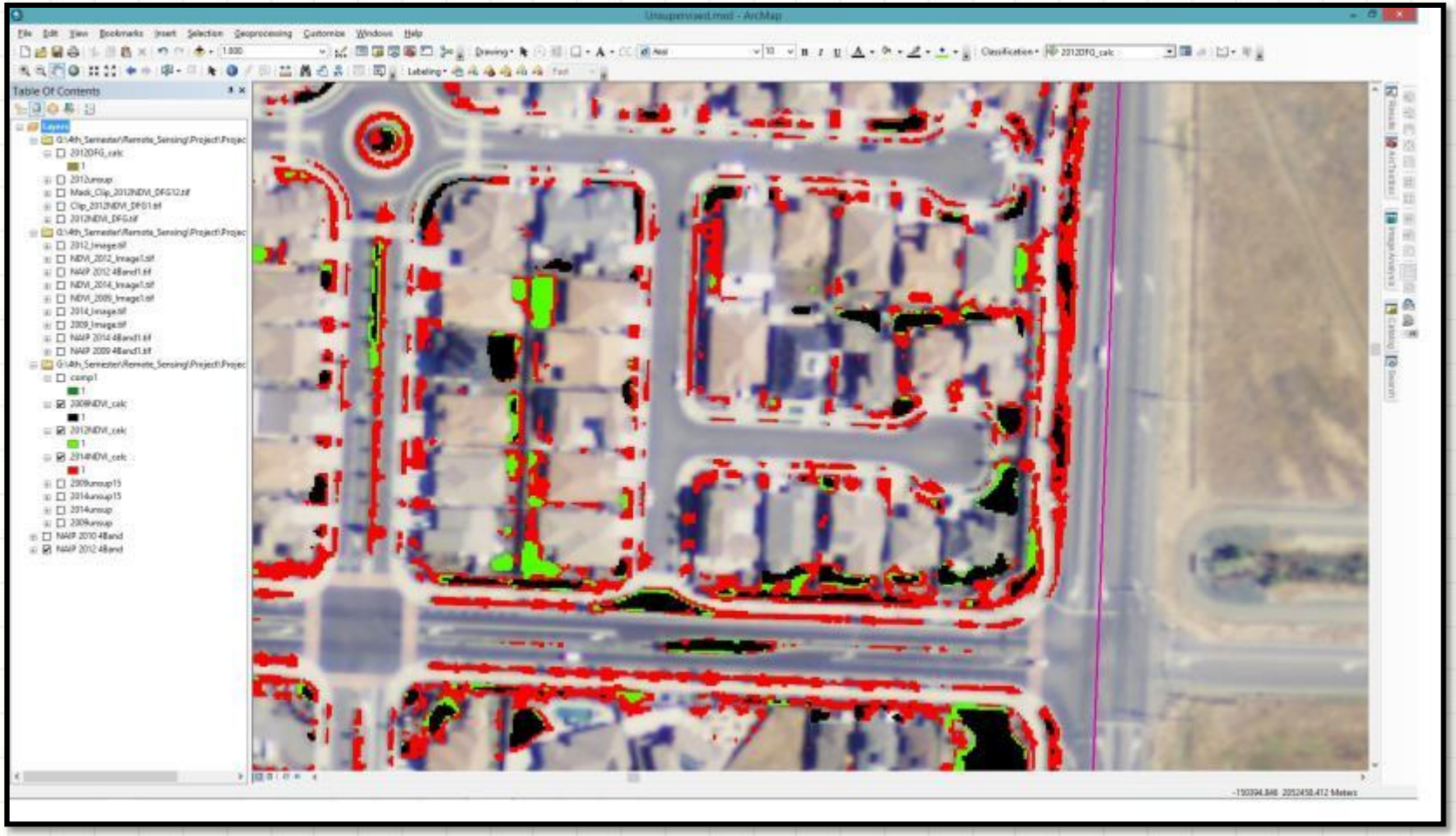
1 (0 out of 1 Selected)

2014NDVI_calc

- Count = Area (m^2)
- Area x 0.000247105 = ACRES

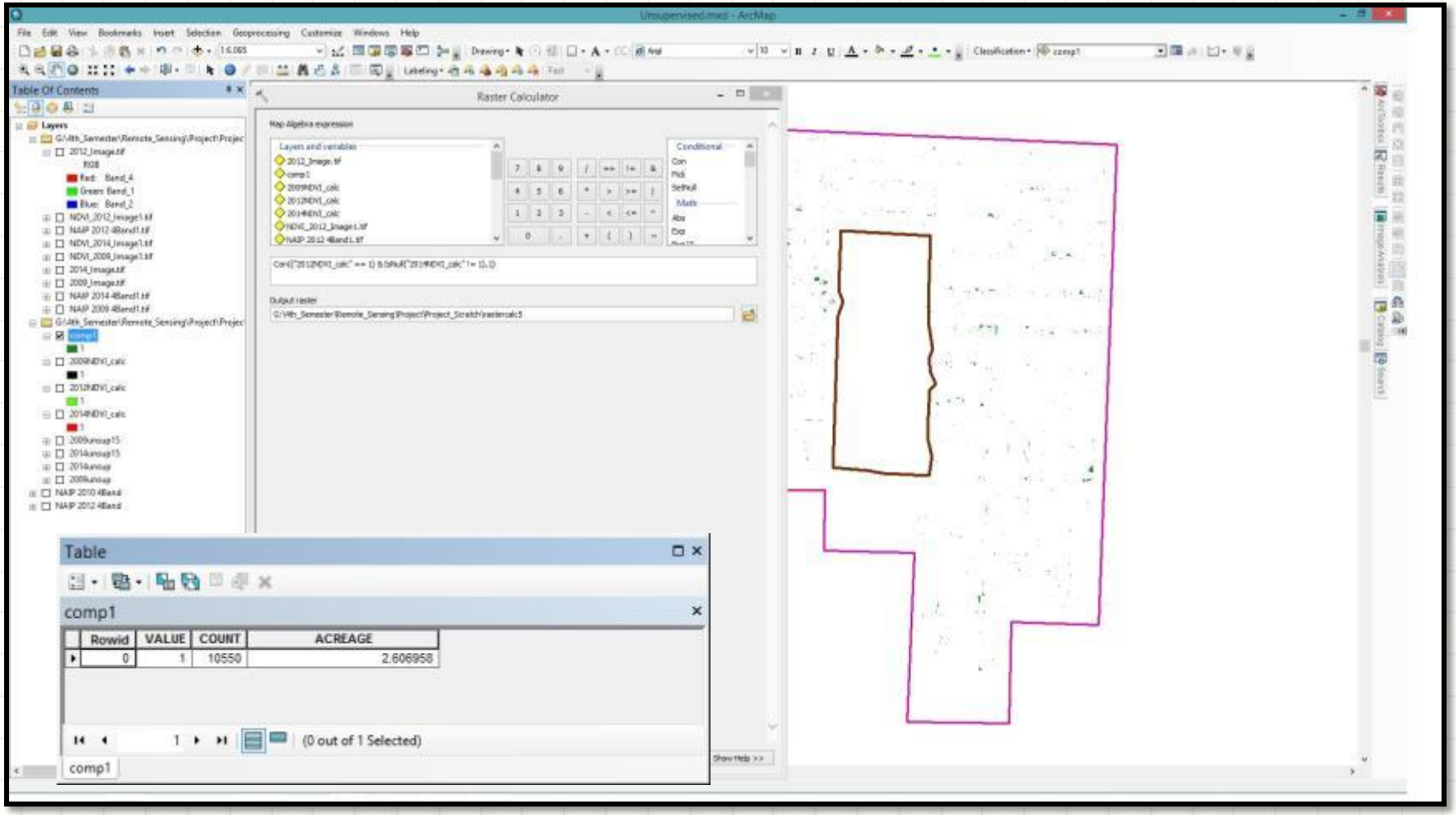


Map Results



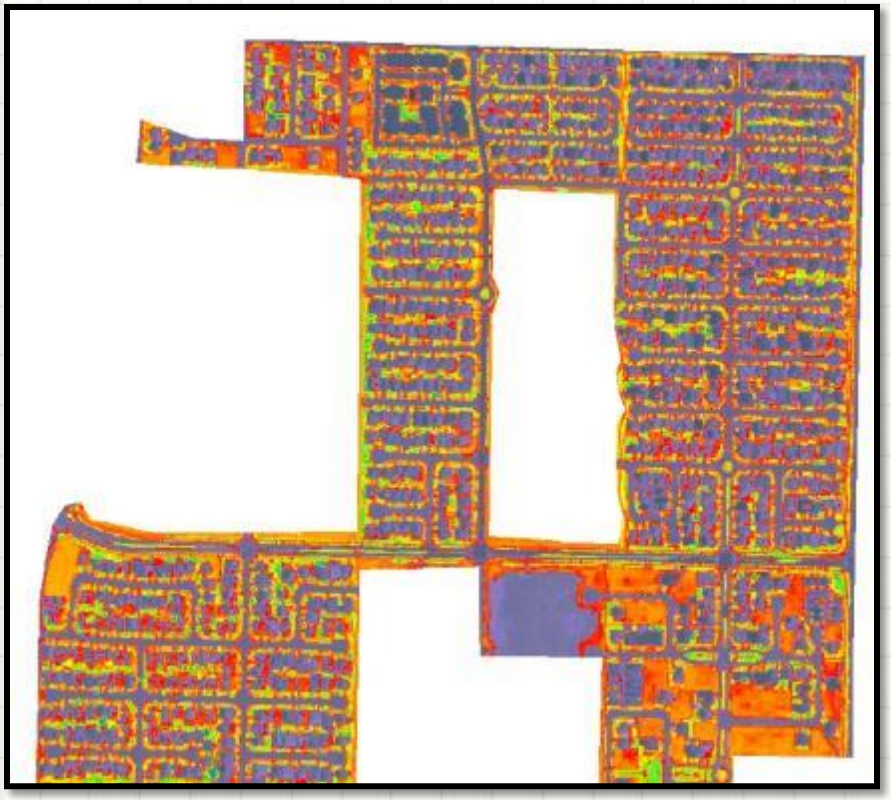
2009 2012 2014

Map Results

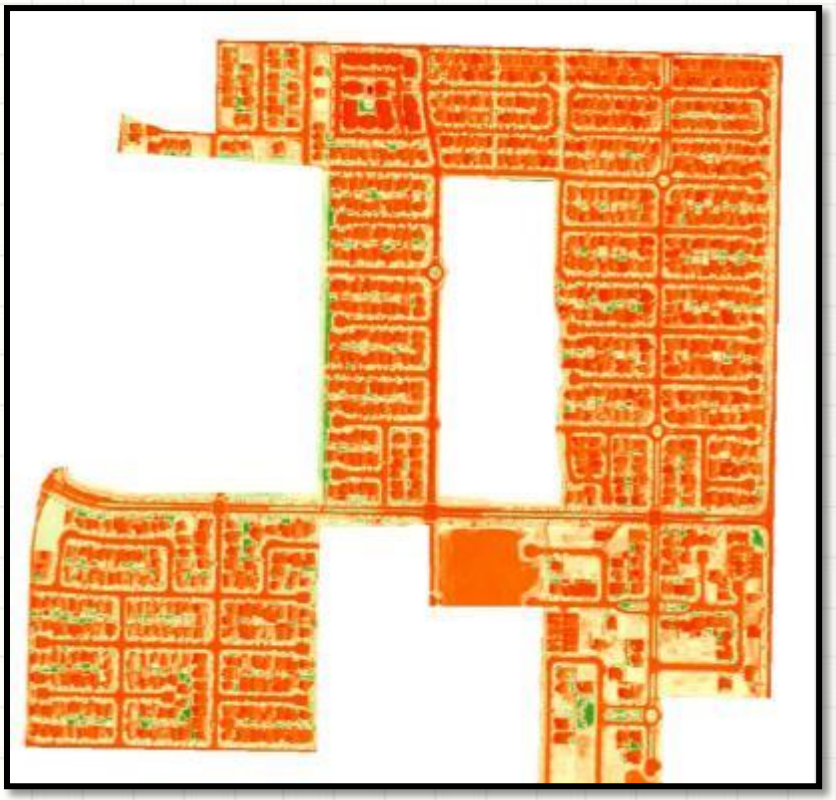


Con(("2012NDVI_calc" == 1) & IsNull("2014NDVI_calc" != 1),1)

ESRI NDVI vs. NAIP NDVI

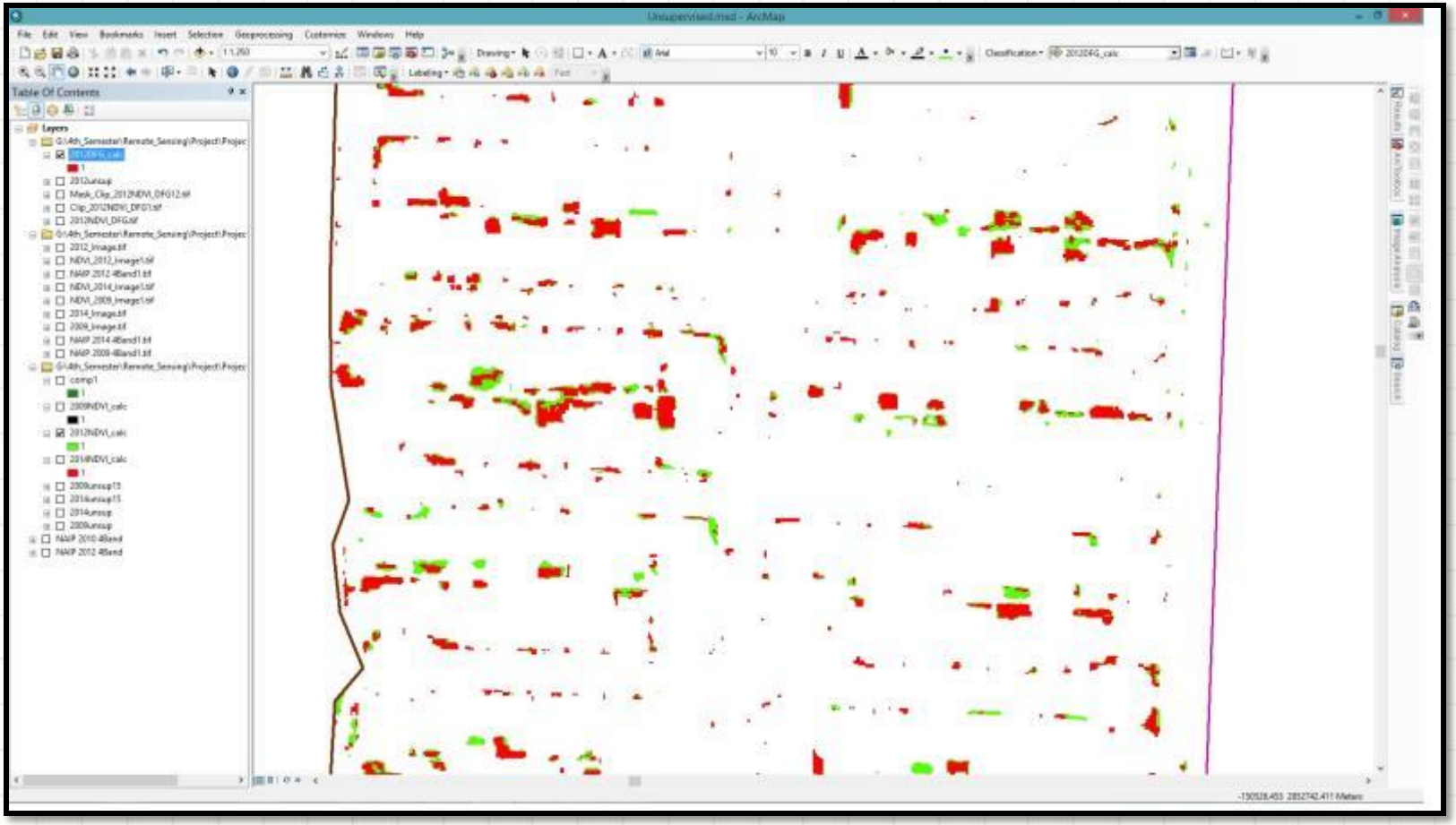


NAIP



ESRI

ESRI NDVI vs. NAIP NDVI



NAIP

ESRI

Project Challenges

- Data Acquisition and Conversion
- Raster Calculator Expressions
- Presentation Design and Power Point Learning Curve

Summary

- Data acquisition and preparation is indeed the most time consuming aspect of a project.
- Allow sufficient time and resources for “Plan B”.
- Verify results whenever possible