

Hybrid Classification

Pervious vs. Impervious Surfaces

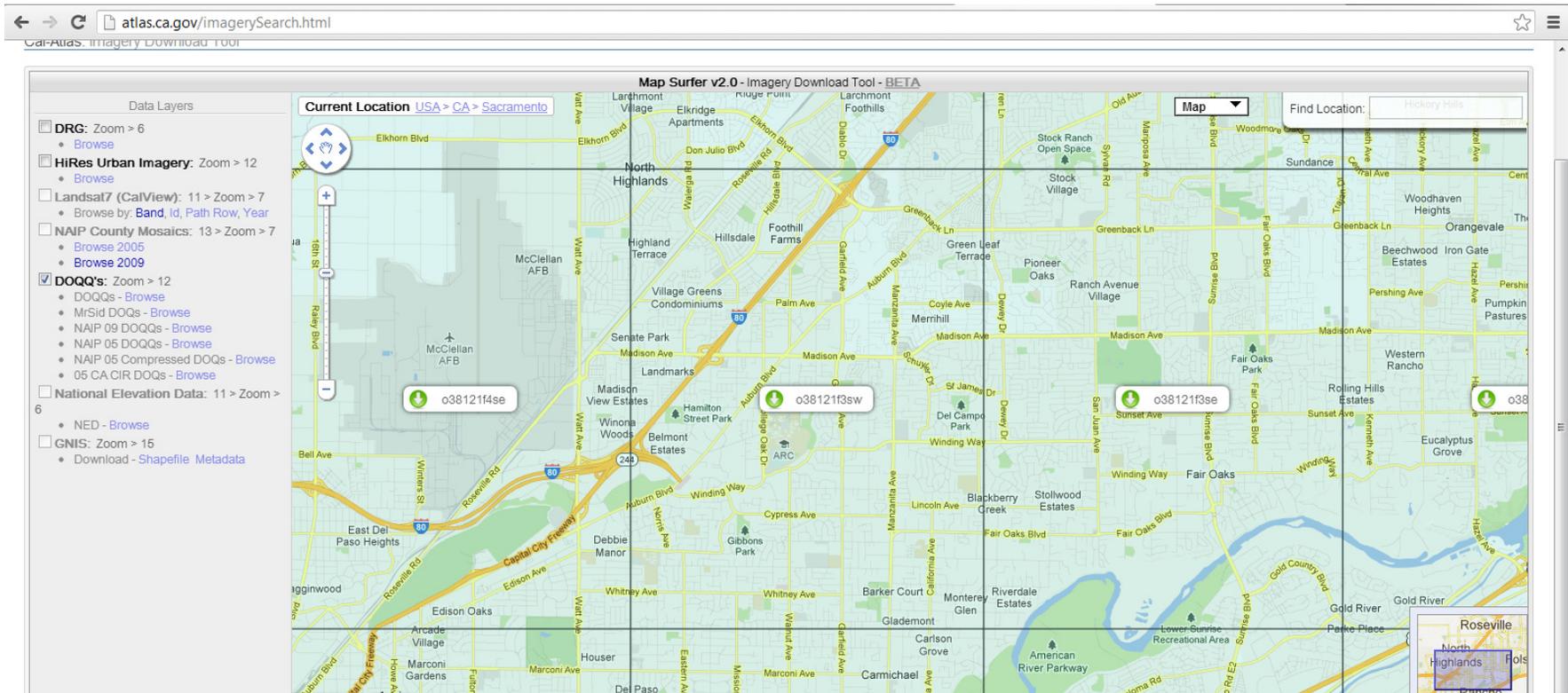
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GEOG 342

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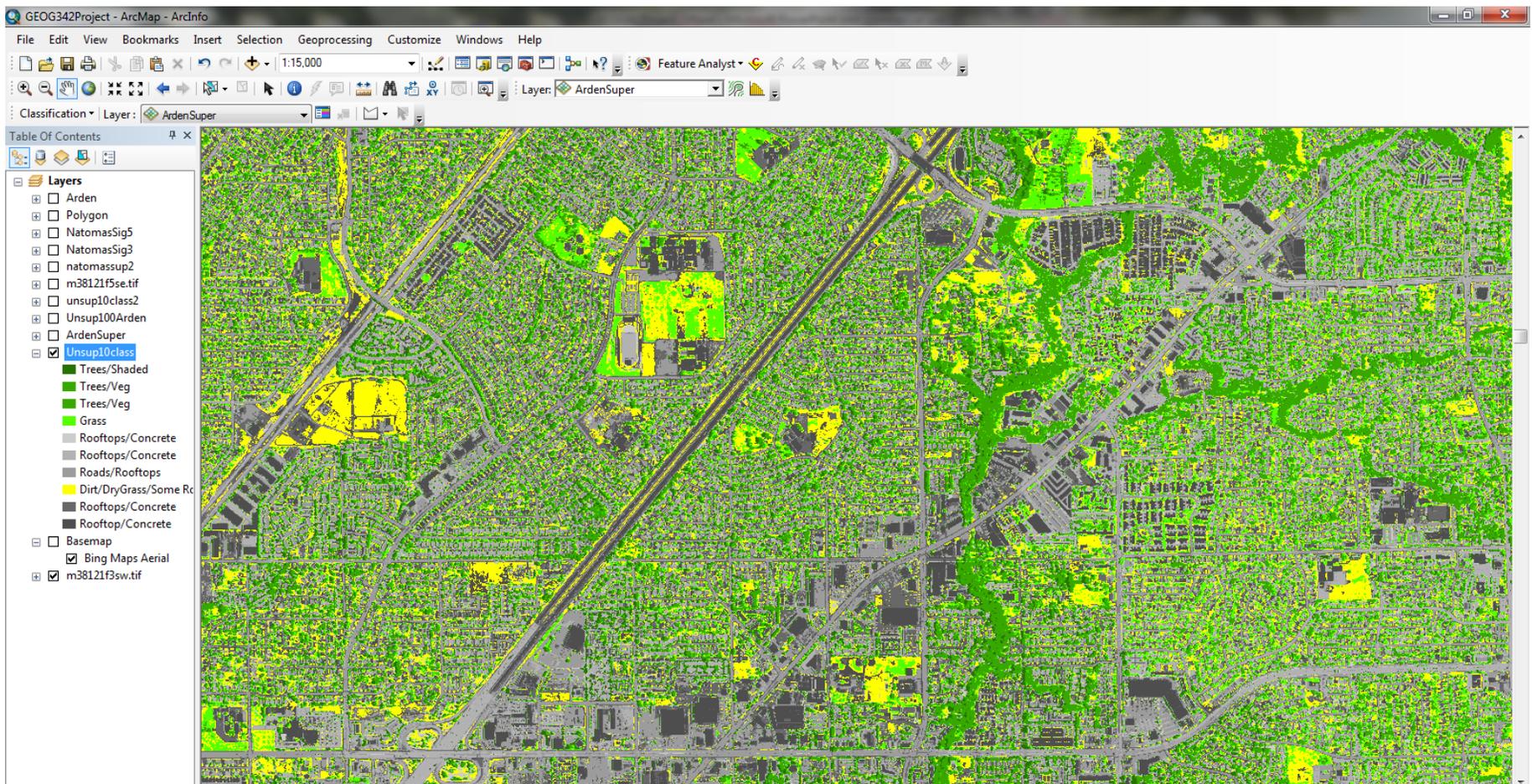
Study Area

- 2009 Combined NIR NAIP DOQQ
– Citrus Heights SW Quadrant



Unsupervised Classification

- Trees, Trees/Veg (x2), Grass, Rooftops/Concrete (x4), Roads/Rooftops (x2), Dirt/Dry Grass



Unsupervised Classification

- Asphalt and concrete were mixed
- Residential roofs and asphalt were mixed
- Commercial roofs were mixed with flat residential roofs and driveways
- Dry grass/dirt was mixed with asphalt
- Clay tile roofs were mixed with dirt

Supervised Classification

Training Samples (174)

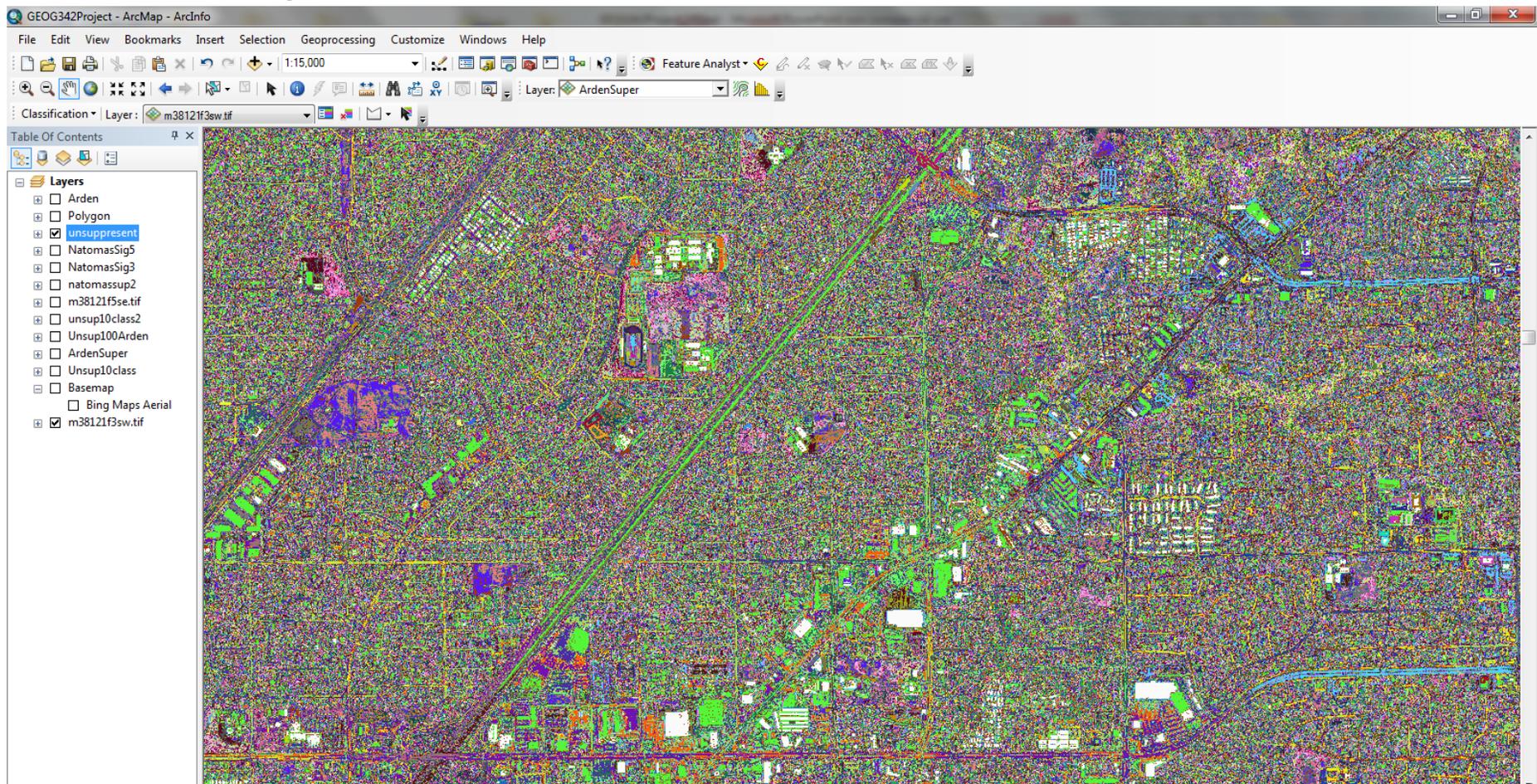
- 22 Dirt/Dry Grass
- 19 Asphalt
- 6 Concrete
- 30 Residential Roof
- 22 Commercial Roof
- 31 Trees
- 14 Green Grass
- 6 Shaded Road
- 8 Sidewalk
- 15 Pool

Bing Aerial Imagery was used to assist in creating training samples

ID	Class Name	Value	Color	Count
1	Dirt/Dry Grass_1	12	Dark Purple	1399
2	Dirt/Dry Grass_2	13	Grey	5424
3	Dirt/Dry Grass_3	14	Light Green	1069
4	Dirt/Dry Grass_4	15	Bright Green	1619
5	Dirt/Dry Grass_5	16	Pink	558
6	Dirt/Dry Grass_6	17	Green	56
7	Dirt/Dry Grass_7	18	Purple	247
8	Dirt/Dry Grass_8	19	Dark Purple	189
9	Dirt/Dry Grass_9	20	Light Green	80
10	Dirt/Dry Grass_10	21	Cyan	201
11	Dirt/Dry Grass_11	22	Purple	288
12	Dirt/Dry Grass_12	23	Cyan	72
13	Dirt/Dry Grass_13	24	Light Green	1210
14	Dirt/Dry Grass_14	25	Pink	306
15	Dirt/Dry Grass_15	26	Dark Green	129
16	Dirt/Dry Grass_16	27	Dark Red	1697
17	Dirt/Dry Grass_17	28	Light Green	624
18	Dirt/Dry Grass_18	29	Light Green	232
19	Dirt/Dry Grass_19	30	Purple	76
20	Dirt/Dry Grass_20	31	Blue	136
21	Dirt/Dry Grass_21	32	Orange	1478
22	Dirt/Dry Grass_22	33	Brown	2444
23	Asphalt_1	174	Light Green	273
24	Asphalt_2	175	Cyan	152
25	Asphalt_3	176	Pink	146
26	Asphalt_4	177	Grey	243
27	Asphalt_5	178	Green	203
28	Asphalt_6	179	Light Blue	60
29	Asphalt_7	180	Red	368
30	Asphalt_8	181	Dark Grey	113
31	Asphalt_9	182	Light Green	270
32	Asphalt_10	183	Dark Green	573
33	Asphalt_11	184	Yellow	243
34	Asphalt_12	185	Purple	81
35	Asphalt_13	186	Dark Purple	65
36	Asphalt_14	187	Purple	96
37	Asphalt_15	188	Blue	109
38	Asphalt_16	189	Red	107
39	Asphalt_17	190	Purple	140
40	Asphalt_18	191	Yellow	181
41	Asphalt_19	192	Dark Green	102
42	Concrete_1	193	Dark Blue	1352
43	Concrete_2	194	Pink	336
44	Concrete_3	195	Dark Red	1516

Unsupervised Classification

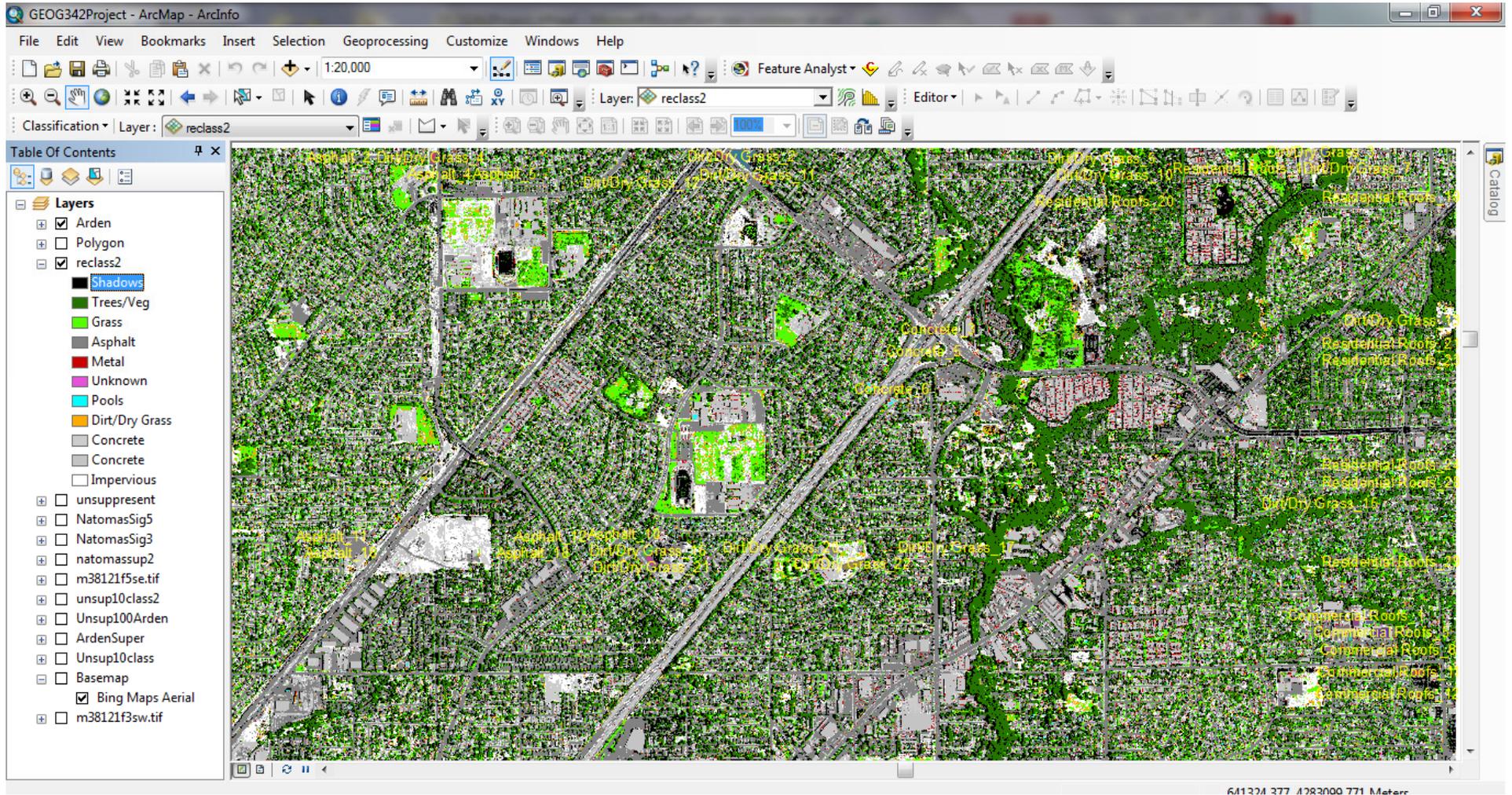
- Unsupervised classification with 99 classes



Spectral Signatures

- Combined known 174 signatures with the 99 unknown signatures
- Ran Dendogram Tool
- Identified known signatures that were most similar to each unknown signature
- Identified a land cover type for each unknown signature using dendogram and aerial photos

Reclass (12 Classes)



Pervious vs. Impervious Surfaces

- Pervious surface classes:
 - Trees/Vegetation
 - Grass
 - Dirt/Mulch
- Impervious surface classes:
 - Asphalt
 - Concrete
 - Roofs
 - Metal
 - Pools
- Unknown classes:
 - Shadows
 - Mixed

Pervious vs. Impervious Surfaces

Individual Class Proportions			Unknown, Pervious and Impervious			Pervious vs. Impervious	
Class	Area	%	Class	Area	%	Total minus unknown =	35551051
Shadows	8354971	17.6	Unknown	11787749	24.9	% Pervious =	42.3
Tree/Veg	10525637	22.2	Pervious	15036901	31.8	% Impervious =	57.7
Grass	3613228	7.6	Impervious	20514150	43.3		
Asphalt	13659020	28.9					
Metal	675801	1.4					
Unknown	93386	0.2					
Pools	85889	0.2					
Dirt/DryGrass	898036	1.9					
Concrete	2390909	5.1					
Concrete/Roofs	3702531	7.8					
Mixed	3339392	7.1					
Total	47338800	100.0					