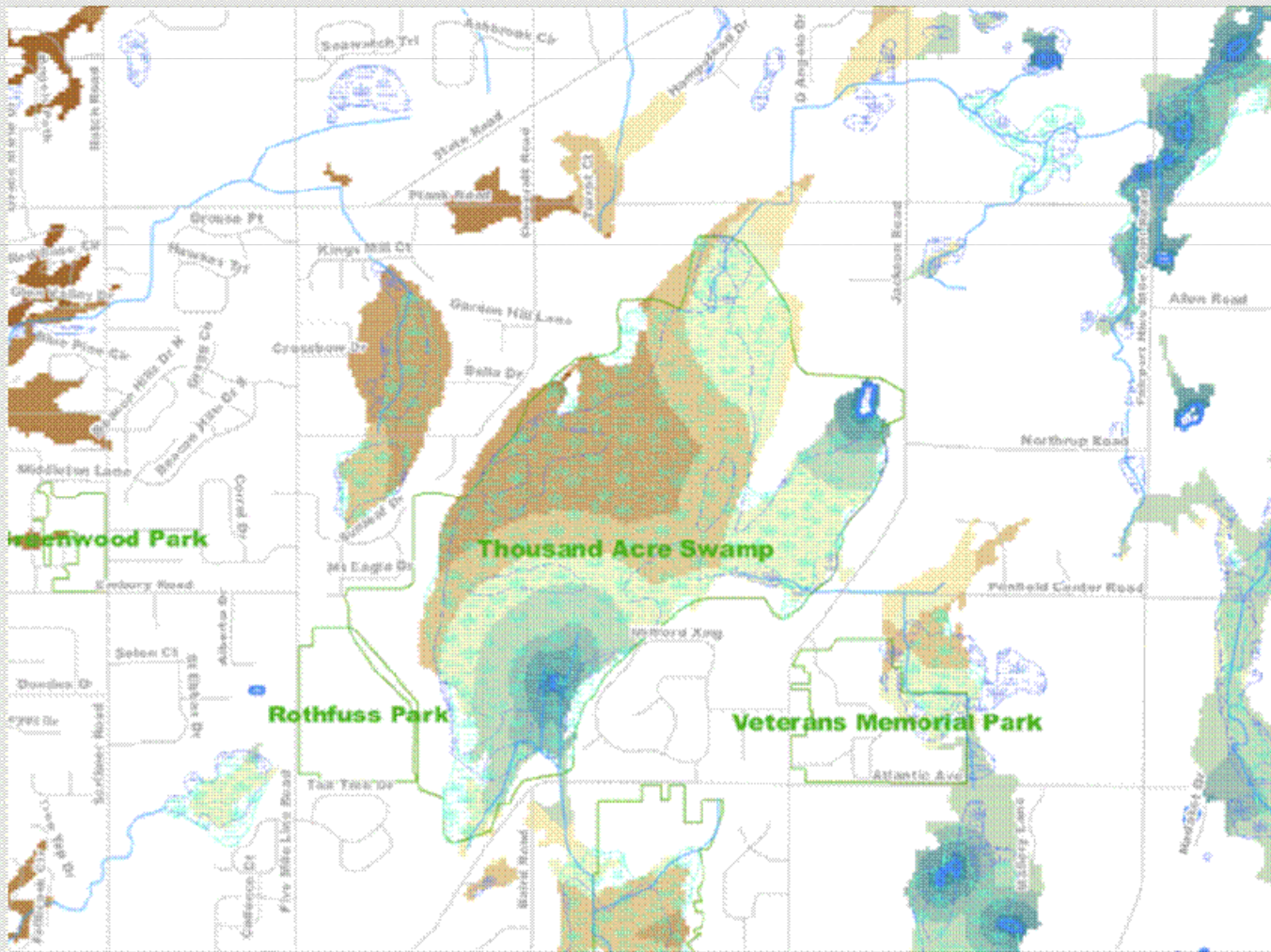


GIS Analysis of Potential Wetland Mitigation Sites in Monroe County, NY



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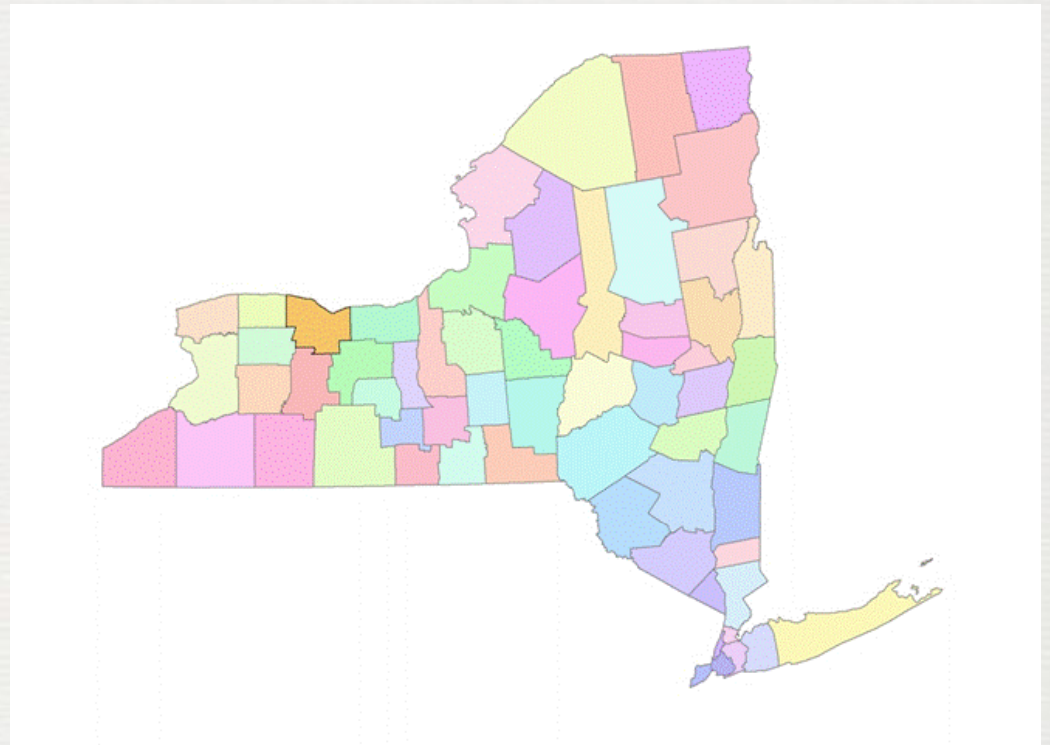


Agenda

- Introduction to Monroe County and the project
- Literature Review
- Conceptual GIS Model
- Creating the Different Dataset and Classification Values
- Preliminary Results
- Site Visit Analysis
- Monitoring the Wetland
- Summary

Introduction to Monroe County

- Monroe County is located on the South Shore of Lake Ontario
- As of the 2000 Census the population is 735,343
- Comprised of the City of Rochester, 19 Towns, and 10 Villages



Introduction To The Project

- Monroe County has had a lot of growth in the suburbs in the last few years
- Much of this growth comes at the expense of natural habitat such as wetlands
- Monroe County facilities, such as the airport or fleet facilities are also expanding
- Thus instead of doing after-the-fact re-mediation the County Executive asked the Department of Environmental Services to look at the prospective of a wetland mitigation bank
- The site would be for both County Projects and some for public development

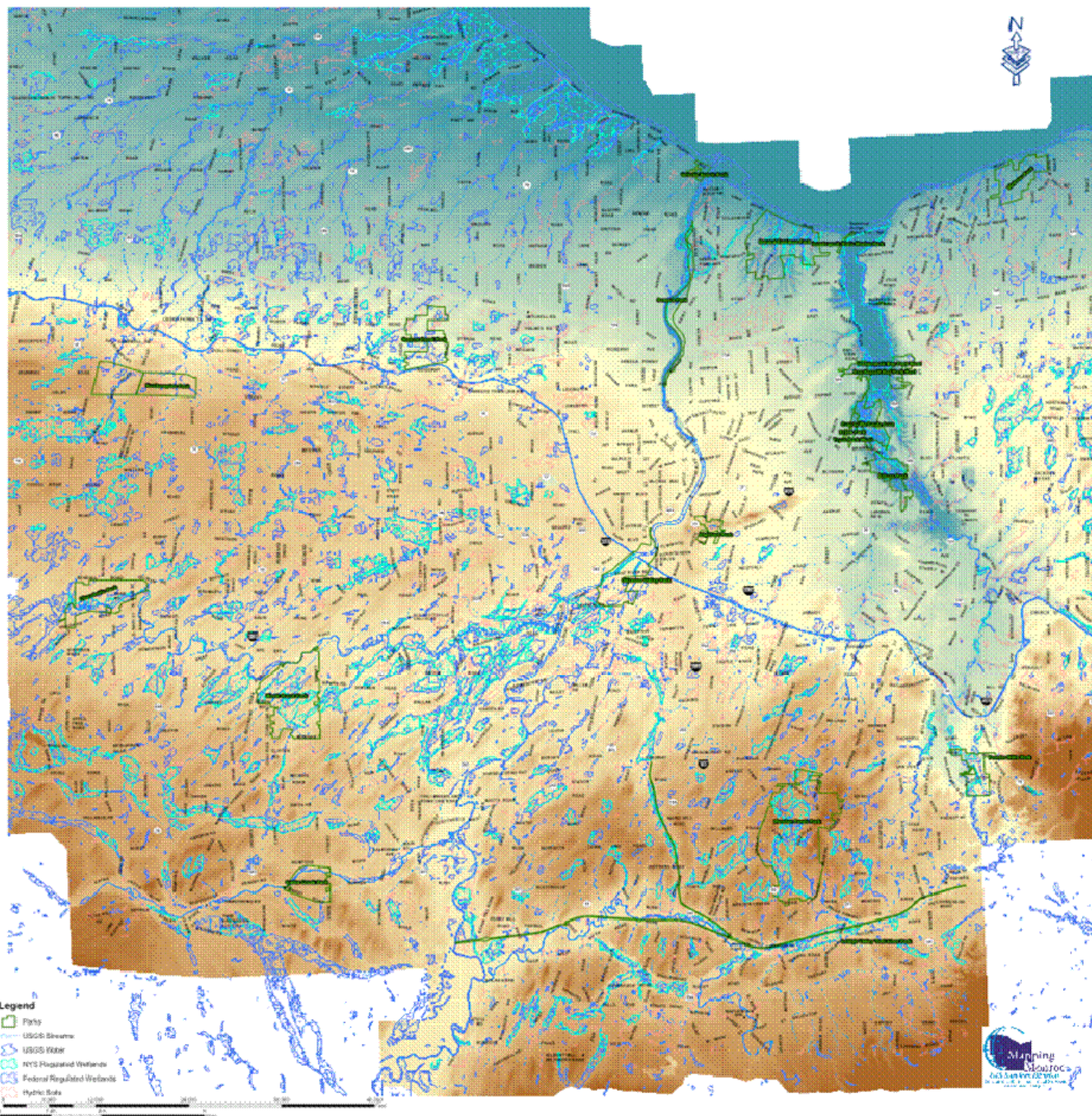
Literature Review

- As a basis for the analysis I decided to work with the Army Corps of Engineers 1987 definition of a wetland
 - Hydrology
 - Soils
 - Plant Life
- McCauley and Jenkins in 2005 published their model to find isolated wetlands which when combined with the EPA's 2008 mitigation guidelines can be used to assist in locating wetland sites to enhance.

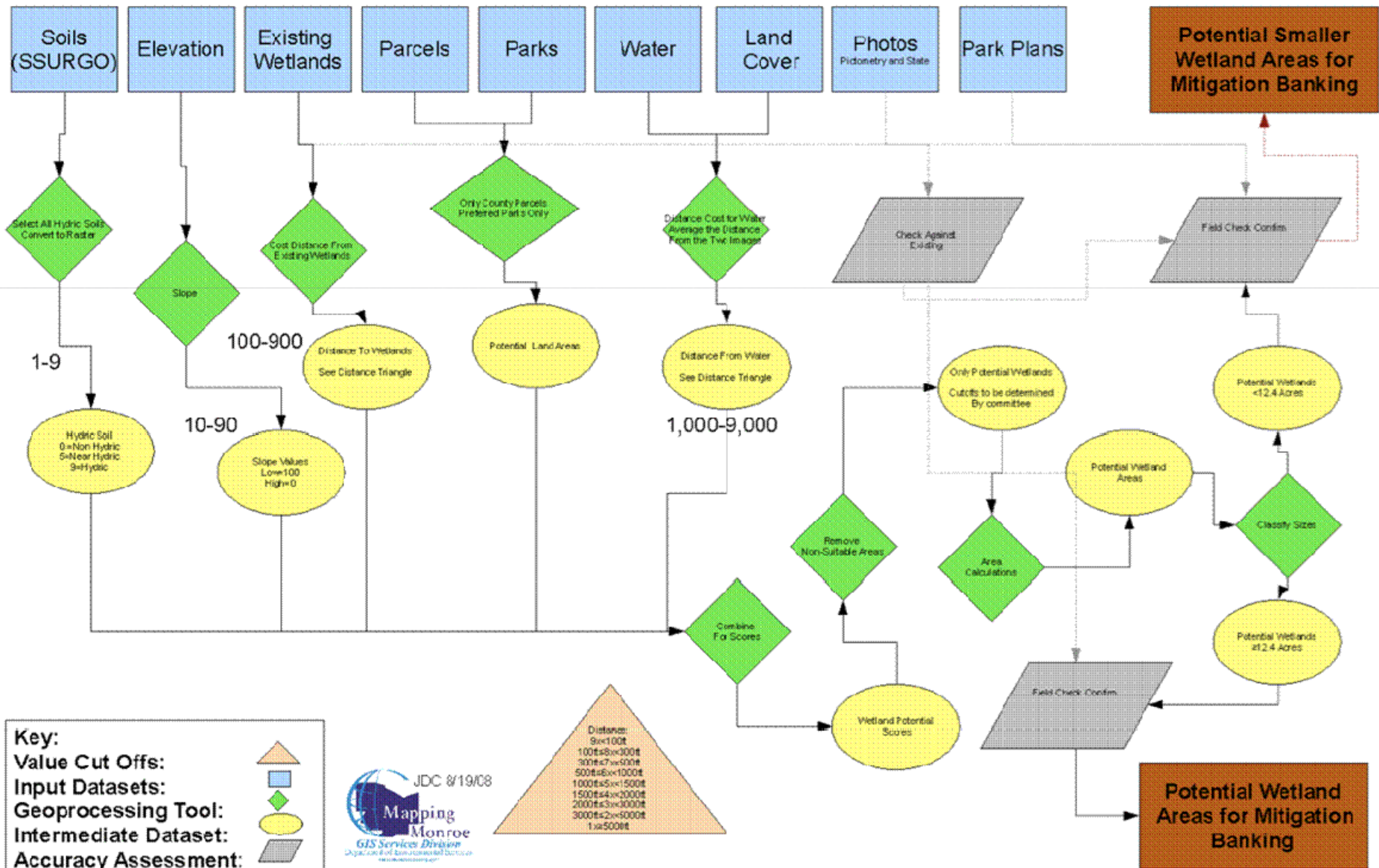
Datasets Used For The Analysis

- Vector
 - SSURGO (Soils Database)
 - NYS DEC Wetland Data
 - Federal Fish and Wildlife Wetland Data
 - USGS Water Body and Stream Data
 - Monroe County Parcel Data
 - Monroe County Parks Records
 - Monroe County LiDAR Data
- Aerial Photography
 - Historic (1930, 1950, 1961, 1971, 1988, 1999)
 - State Digital Ortho Program (2002, 2005)
 - Pictometry (2001, 2002, 2003, 2005, 2006)

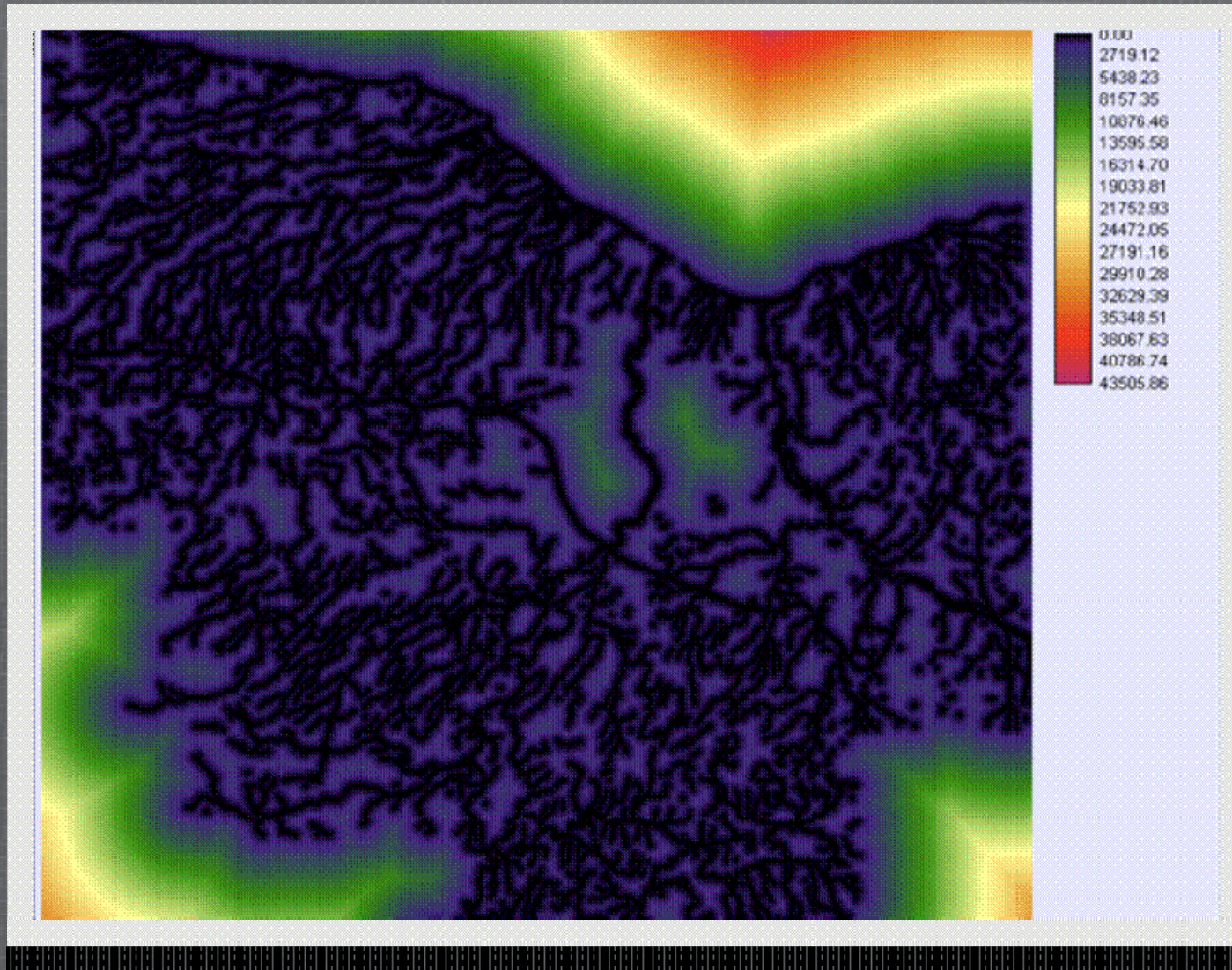
Overall County Layers Used



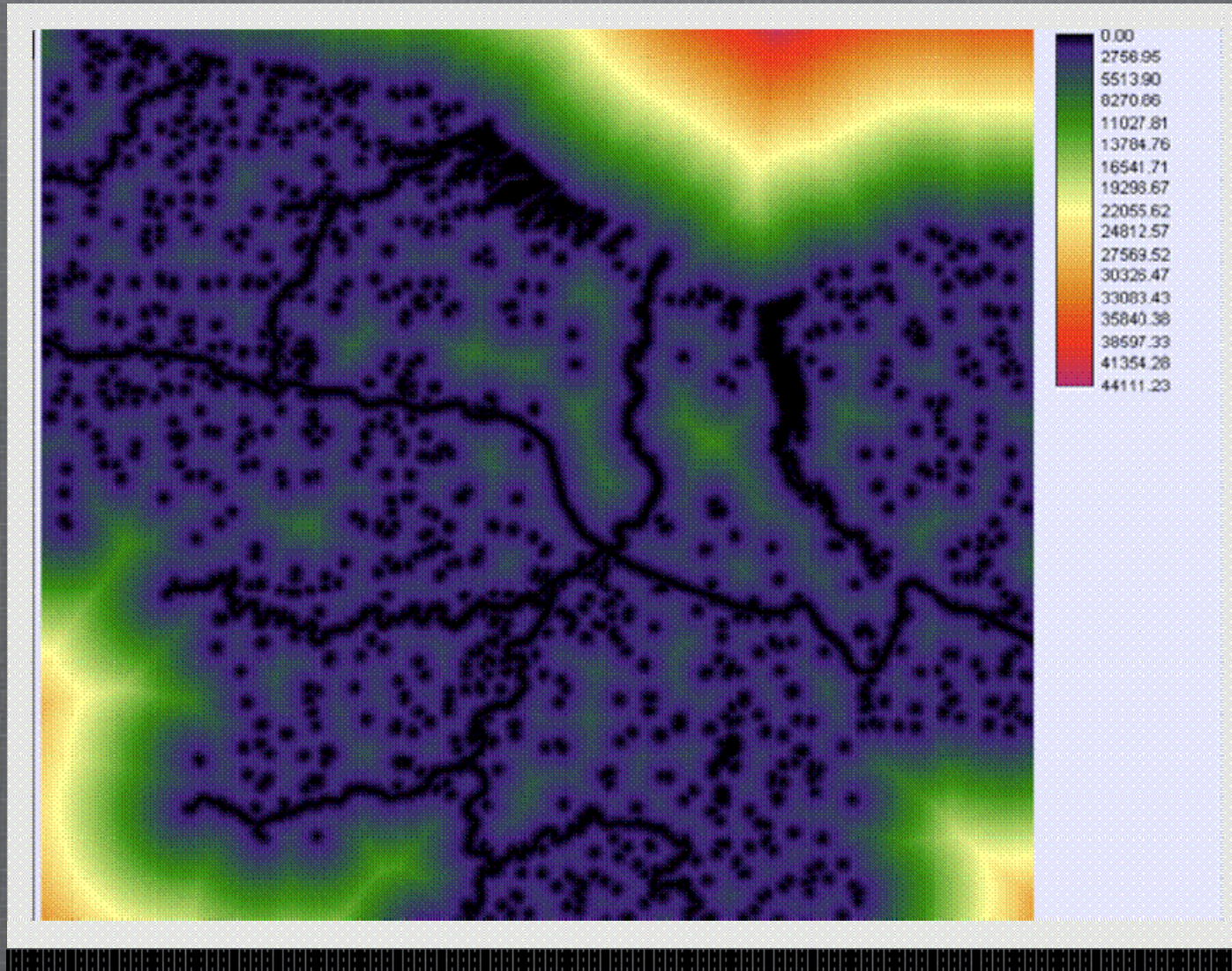
Data Model



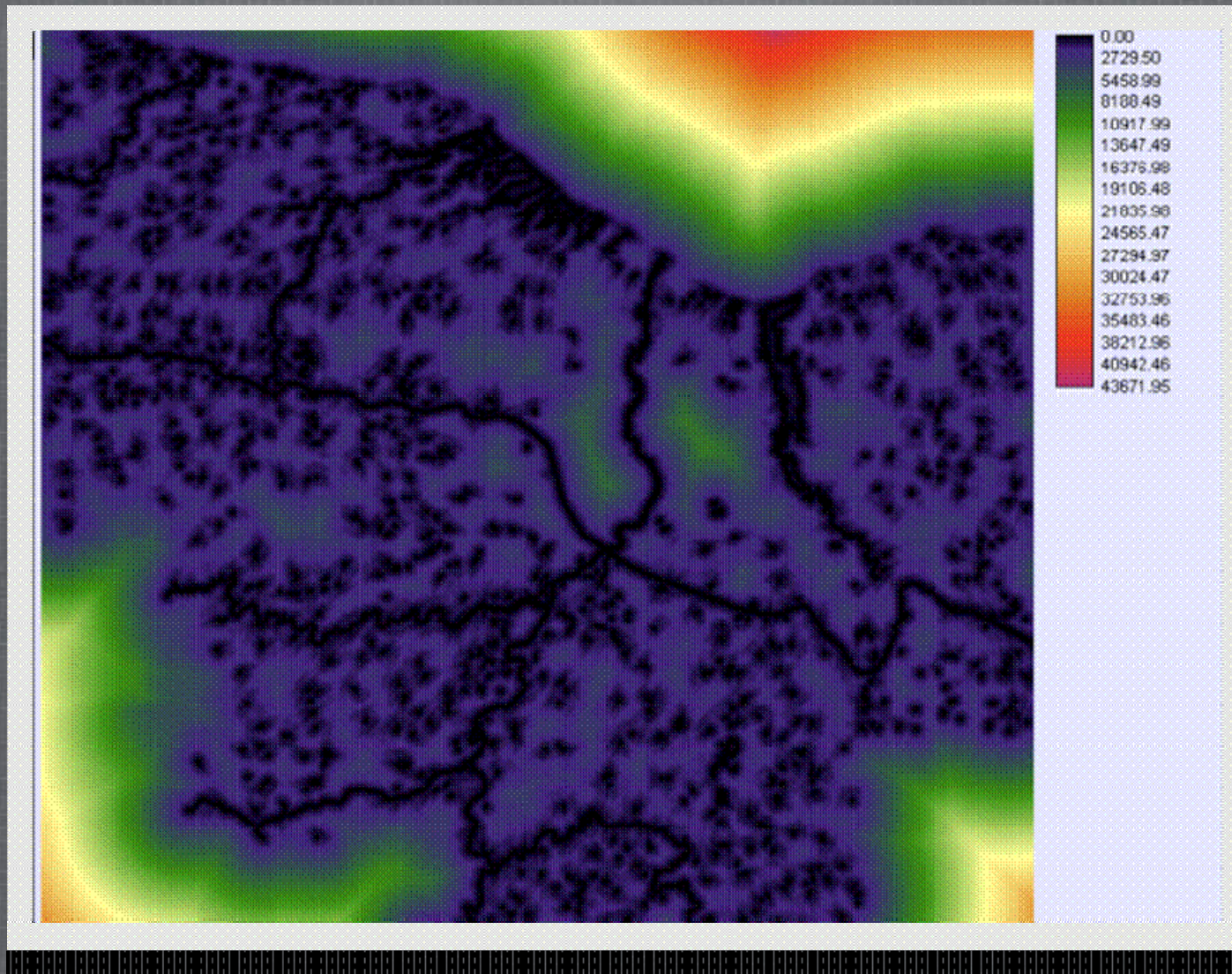
Distance from USGS Streams



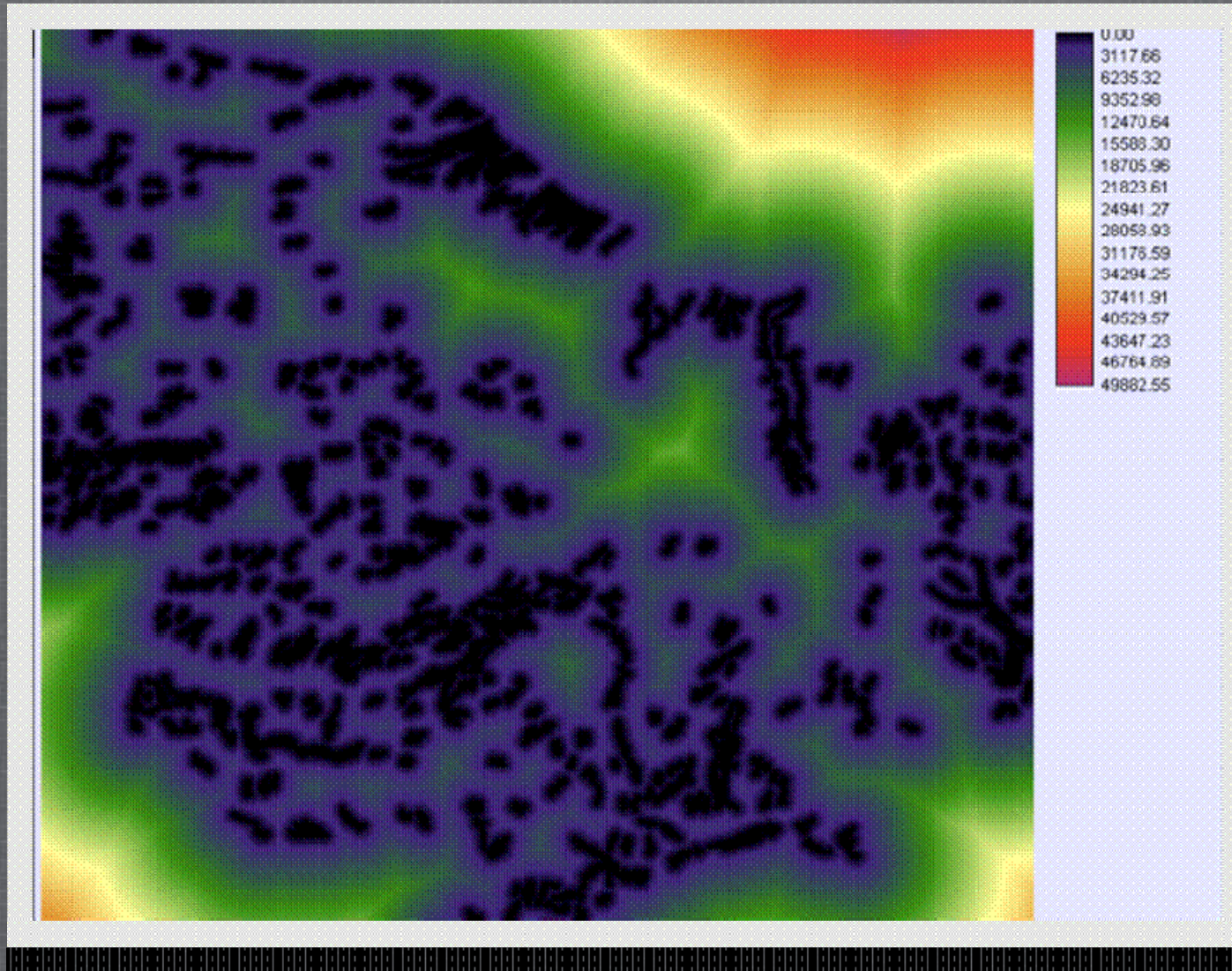
Distance from USGS Water



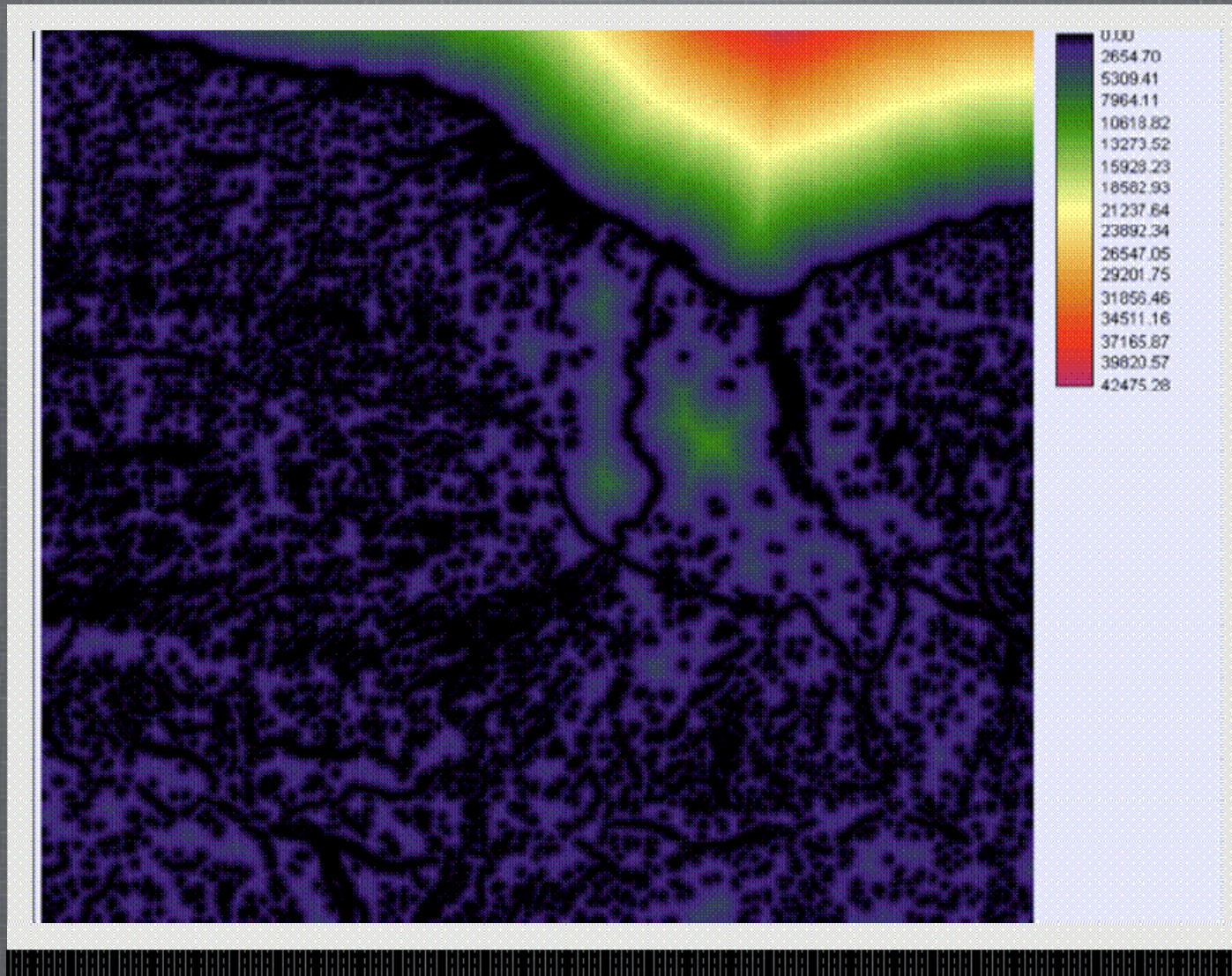
Average Distance from All USGS Water Sources



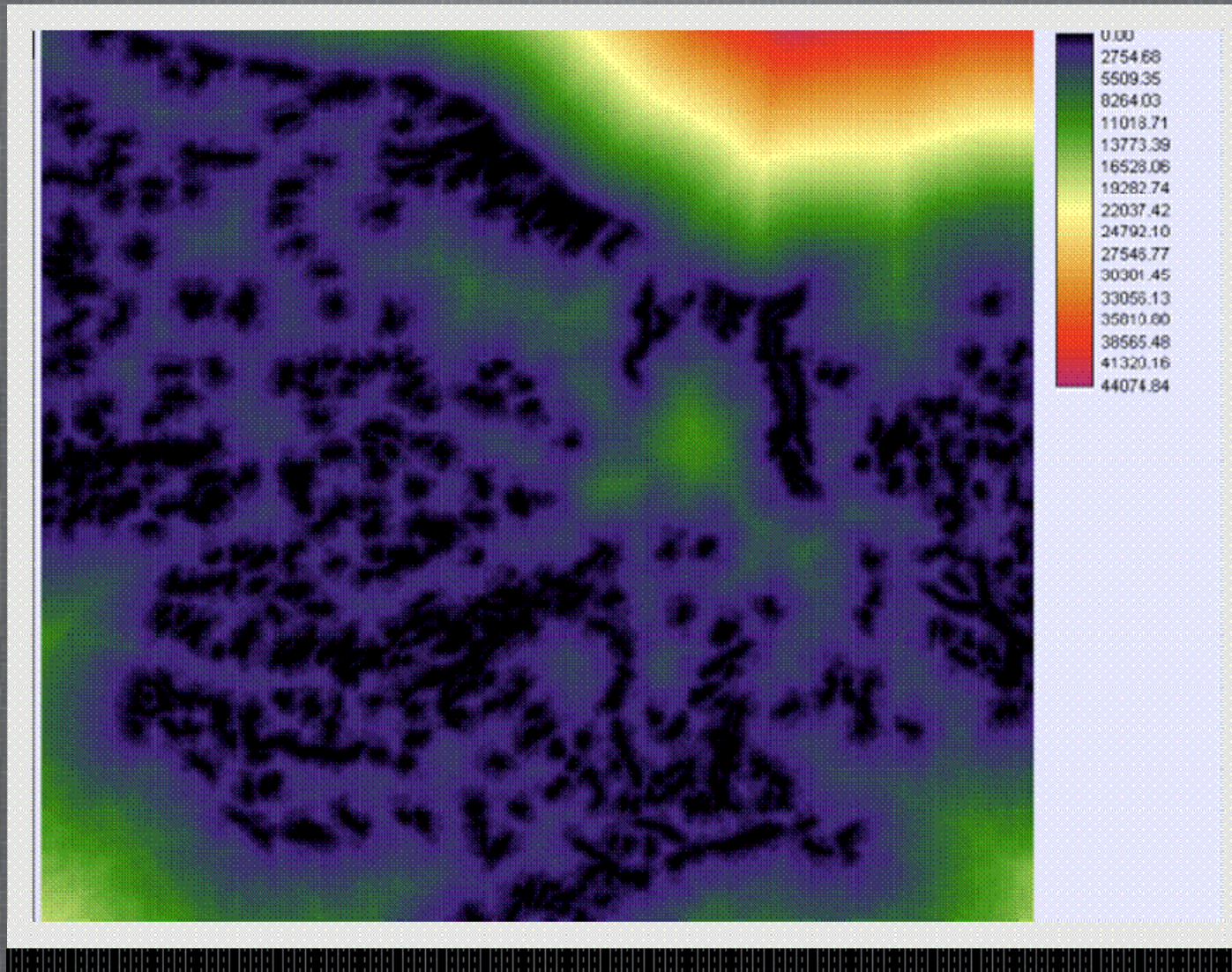
Distance from New York State Classified Wetlands



Distance From Federal Fish And Wildlife Classified Wetlands



Average Distance from All Mapped Wetlands



Scoring of the Difference Values

Distance:

$$9x < 100\text{ft}$$

$$100\text{ft} \leq 8x < 300\text{ft}$$

$$300\text{ft} \leq 7x < 500\text{ft}$$

$$500\text{ft} \leq 6x < 1000\text{ft}$$

$$1000\text{ft} \leq 5x < 1500\text{ft}$$

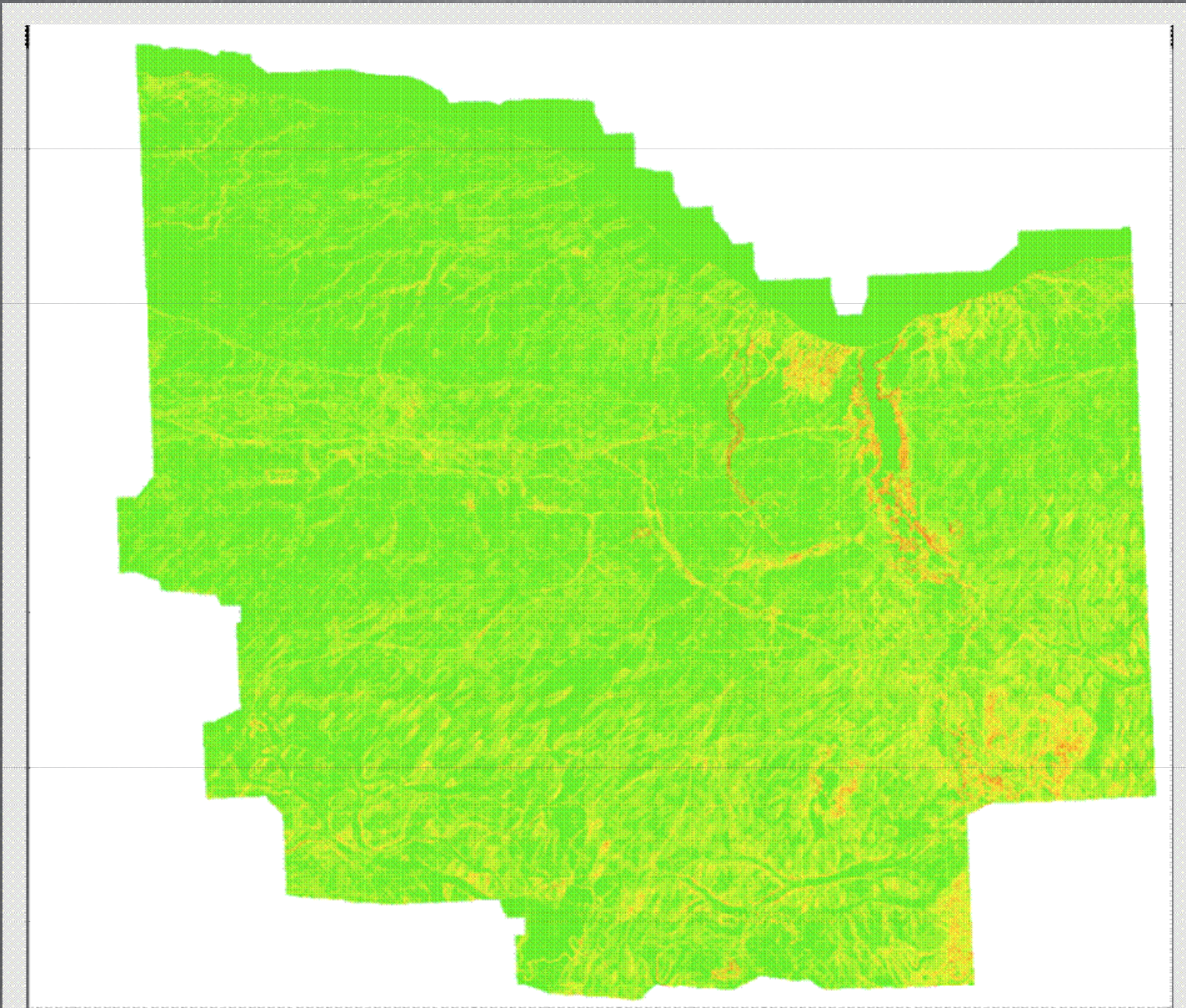
$$1500\text{ft} \leq 4x < 2000\text{ft}$$

$$2000\text{ft} \leq 3x < 3000\text{ft}$$

$$3000\text{ft} \leq 2x < 5000\text{ft}$$

$$1x \geq 5000\text{ft}$$

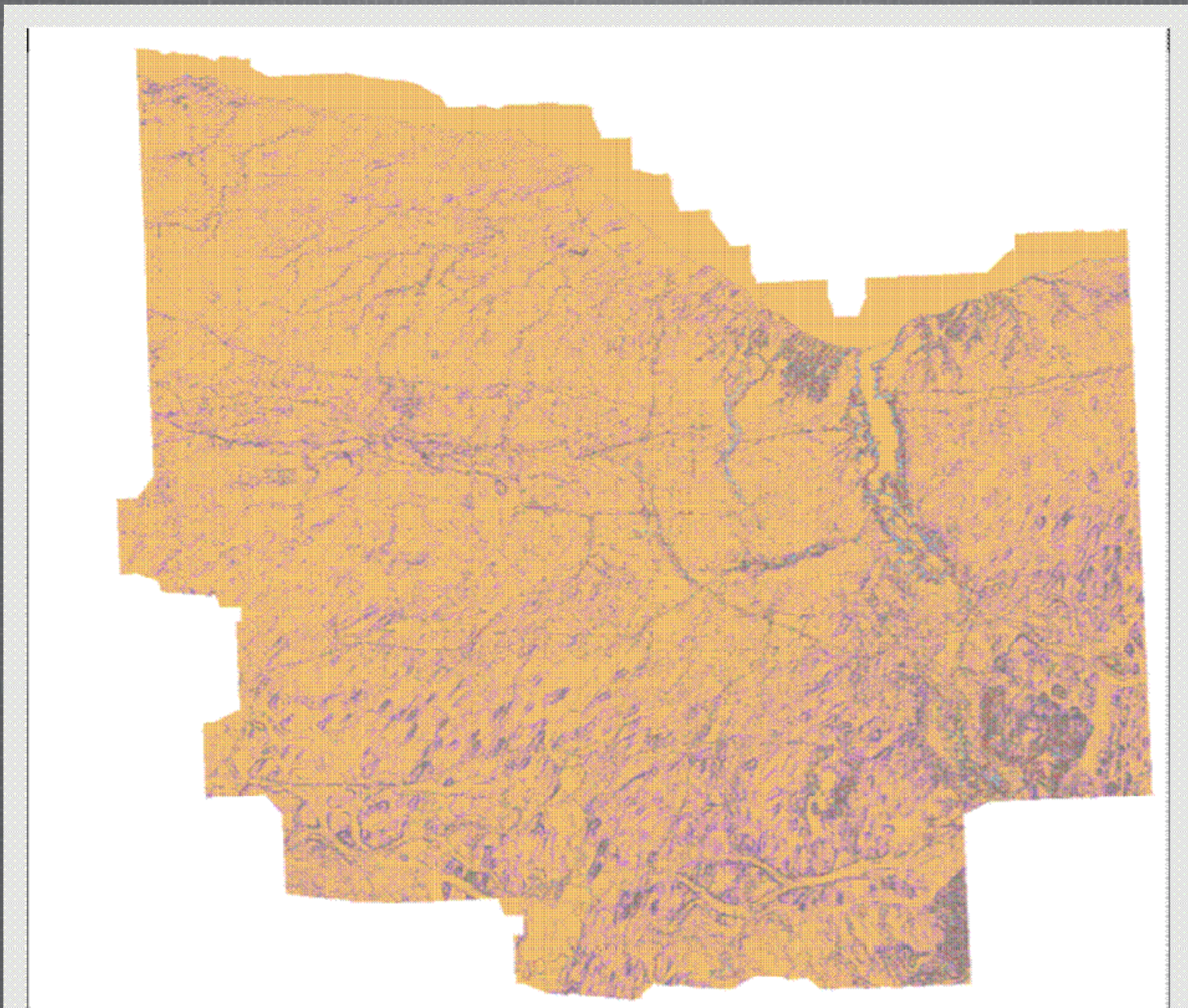
Slope image from the 2006 Lidar collection



Scoring the Slope Image

90	=	0%	-	5%
80	=	5%	-	10%
70	=	15%	-	20%
60	=	20%	-	25%
50	=	25%	-	30%
40	=	30%	-	35%
30	=	35%	-	40%
20	=	40%	-	50%
10	≥	50%		

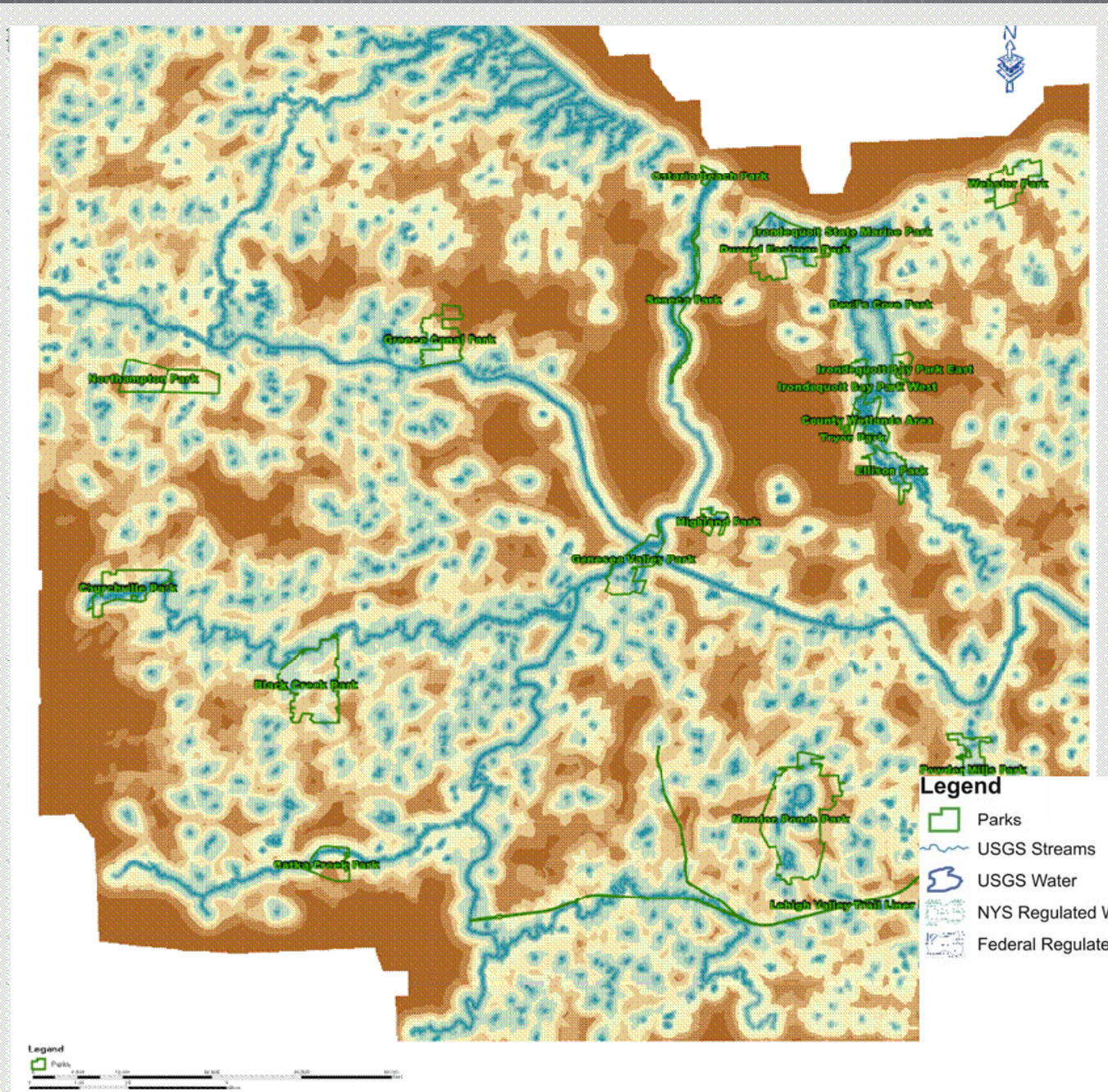
Scoring of the Slope Image



Hydric Soils (From the SSURGO Database)



Overall Results



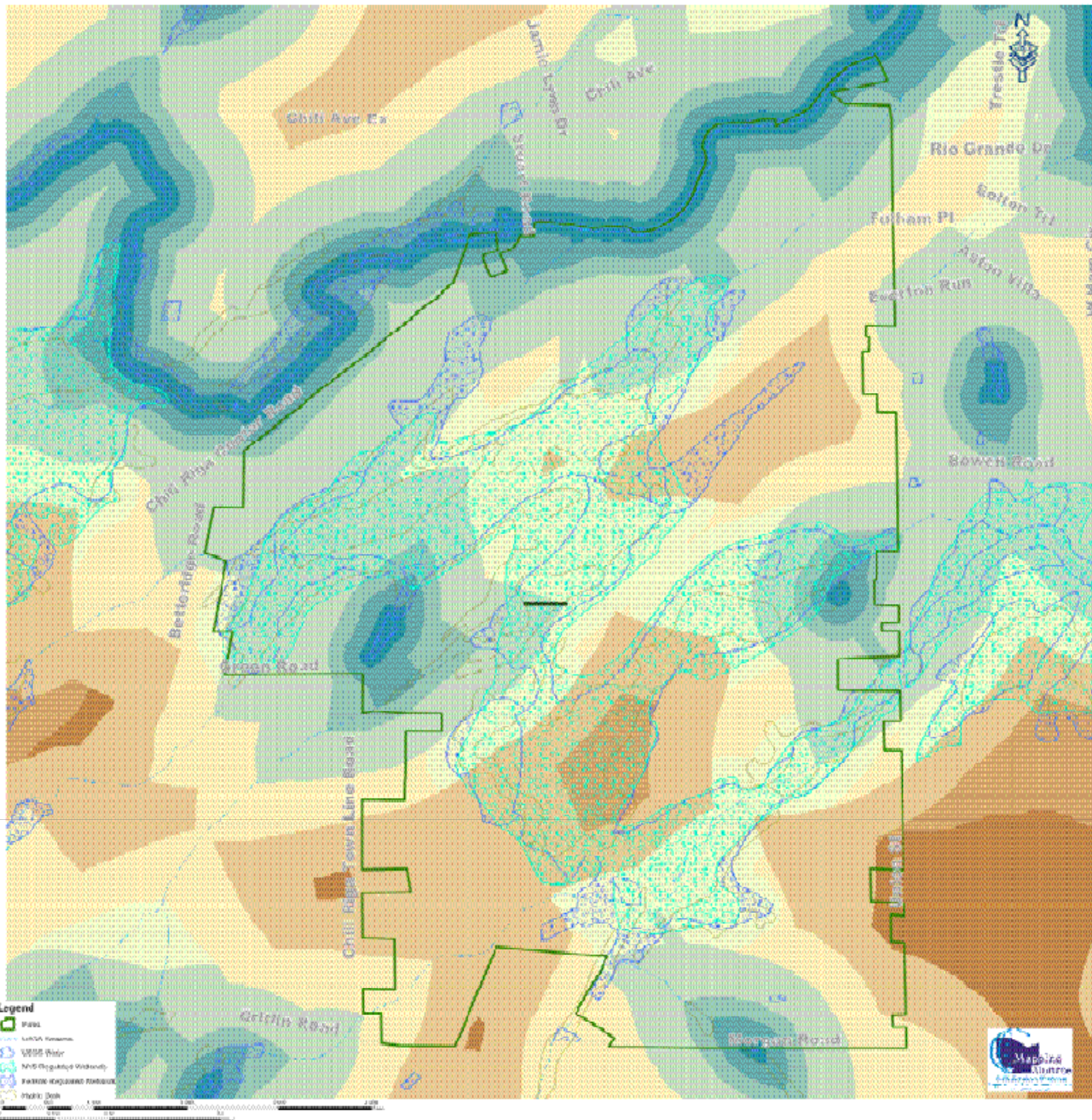
Potential Location Scores

VALUE	Score Range
	1,270 - 2,790
	2,790 - 3,640
	3,640 - 4,360
	4,360 - 5,150
	5,150 - 5,790
	5,790 - 6,440
	6,440 - 7,290
	7,290 - 8,290
	8,290 - 9,290
	9,290 - 9,990

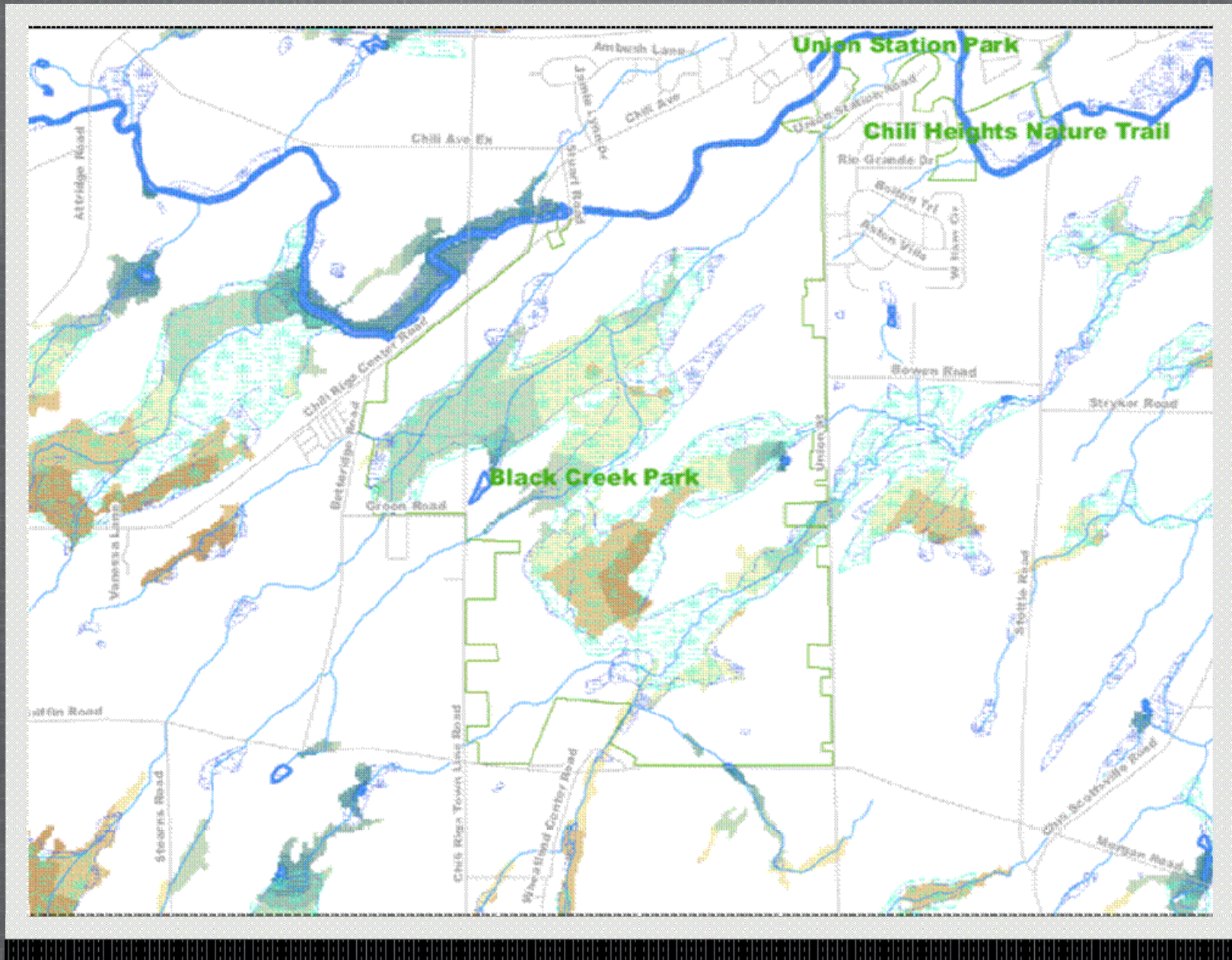
Limits of the Results

- We limited the results to only county owned parks due to their accessibility
- Also, areas that were heavily forested were not considered
- Because of these criteria and the current push for development on the west side of the county, Black Creek Park was chosen as the optimal site to investigate

Black Creek Park



Black Creek Park and Hydric Soils



Site Visit to Black Creek Park

- In the spring of 2009 the planning team visited the site at the south of Black Creek Park
- We found that much of the area is near wetland with the dominate species being dogwoods, grasses, and rush.
- We found small pockets of definite wetland areas
- Each photo during the site visit was geotagged for future reference



Site Visit Continued



Monitoring The Wetland

- Part of the Wetland Mitigation Site is to monitor the site to make sure it has the correct characteristics
- Piezometer Wells were established at this location during a past wetland mitigation project conducted 5 years ago
- We are planning on using a web based map and monitoring program after the wetland is constructed



Summary

- The methodology worked well as a tool for finding places to investigate for wetland mitigation
- Using a raster based analysis showed more variability in the results. This allowed for ability to locate isolated wetlands for enhancement through creation of a wetland mitigation bank.
- The site that was chosen from the GIS analysis turned out to be a very suitable site and we are going ahead with the monitoring portion of the analysis

Questions

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