



Analysis of the Effect of New Construction on Stormwater Runoff at UMass Amherst

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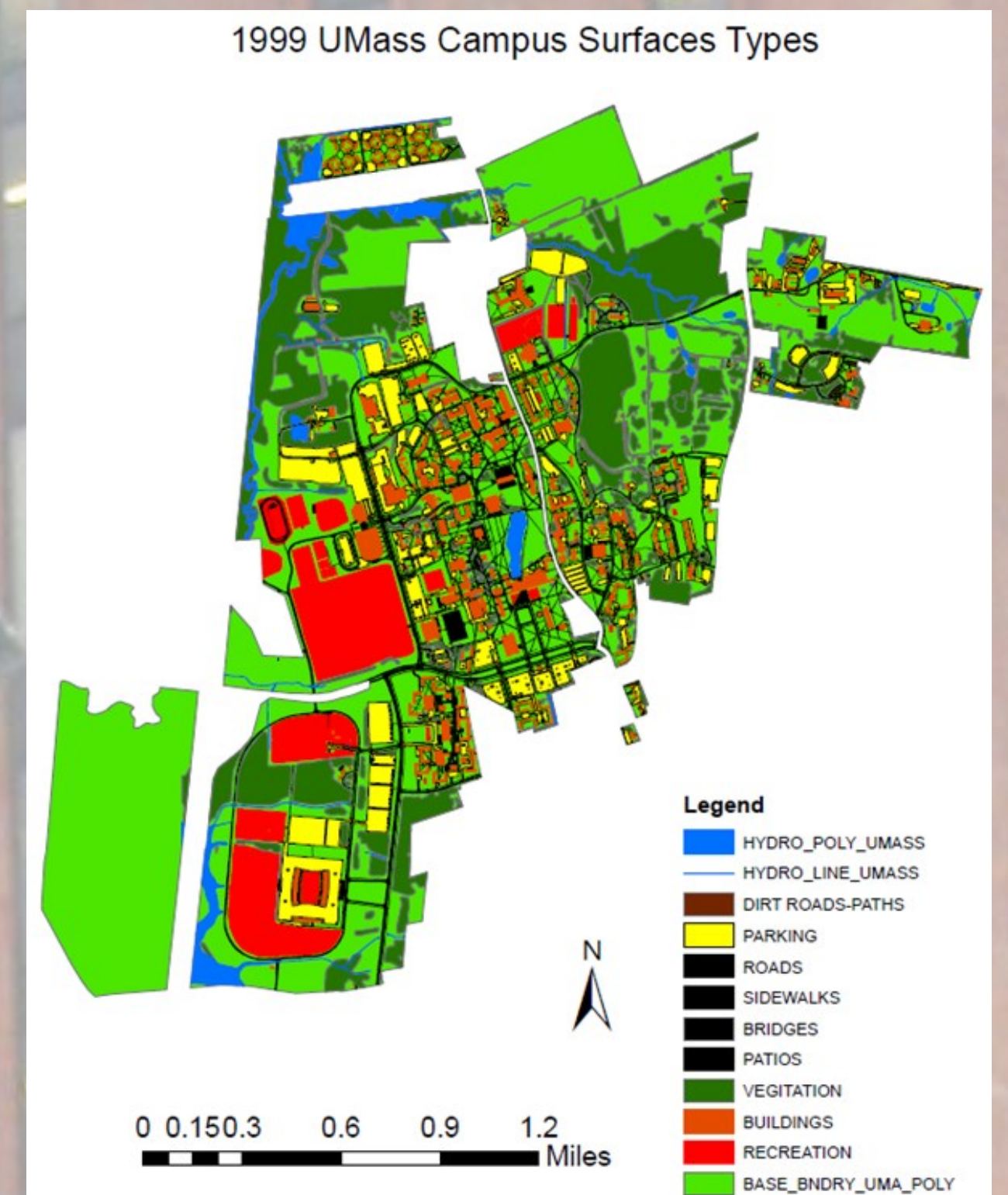
Initial Data

-Data Included:

- Campus Boundary
- Surfaces - Roads, buildings, fields, sidewalks, etc.
- Hydrological data - Streams and ponds
- Topographic Data – Contour lines

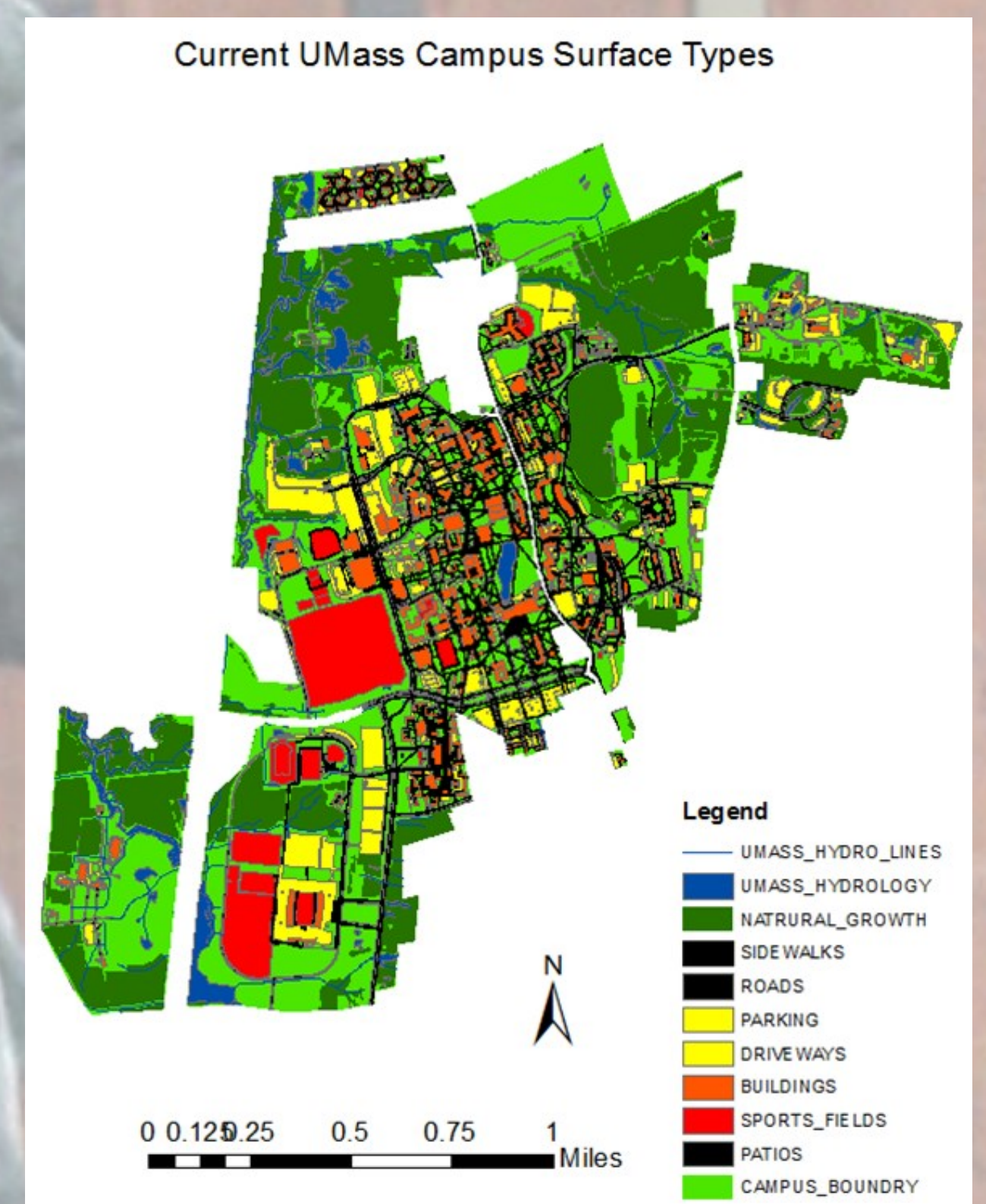
-2009 data was comprised of geodatabases for the UMass Campus

-1999 data was comprised of coverage files for the entire town of Amherst



GIS Tools

- Clip
- Statistics
- Select by Attribute
- Fill
- Poly to Raster
- Flow Direction
- Flow Accumulation



Results

1999	Storm	Storm Total Flow (cf)	Flow (cfs)
	25 yr 1 hr storm	210694.91	58.53
	25 yr 12 hr storm	2528338.86	58.53
	100 yr 24 hr Storm	6299856.23	72.92

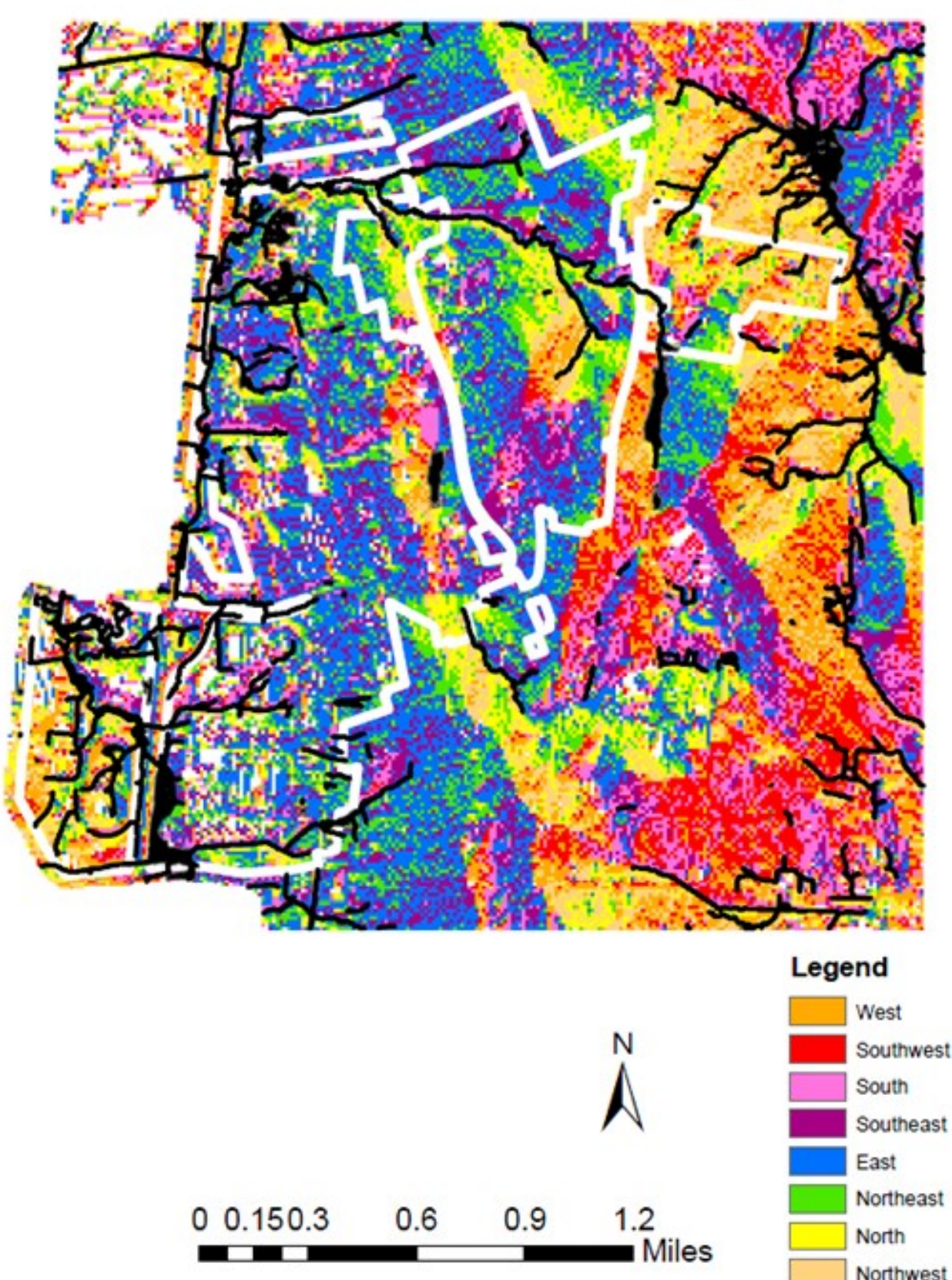
2009	Storm	Storm Total Flow (cf)	Flow (cfs)	Delta (cfs)	Delta (total)	% Change
	25 yr 1 hr storm	202441.22	56.23	-2.29	-8253.68	-3.91
	25 yr 12 hr storm	2861992.28	66.25	7.72	333653.42	13.19
	100 yr 24 hr Storm	7234522.99	83.73	10.82	934666.75	14.83

Analysis

Recommendations

- Bioretention Systems
- Tree Filter
- Porous Asphalt/Concrete
- Interlocking Permeable Pavers
- Proprietary systems such as StormTech Infiltration Chamber

Current Flow Direction Around UMass Campus



UMass Campus Flow Accumulation Map

