

Example of Tools: Screening for Cumulative Impacts by Community



Source: CBE



Source: David Woo

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Our Screening Methodology

- Develop indicators of cumulative impact and community vulnerability that:
 - Reflect research on air pollution, environmental justice, and health
 - Are transparent and relevant to policy-makers and communities
 - Reviewed by community EJ groups, California Air Resources Board, academic peers and other agencies
- Apply EJ “screening method” to multiple uses:
 - Local land use planning (Los Angeles)
 - Regulatory decision-making and enforcement
 - Community outreach



Categories of Factors Considered

- Proximity to hazards and sensitive land uses
 - Based on EJ literature, ARB land use guidelines, and state data on environmental disamenities
- Health risk and exposure measures
 - Based on EJ literature, available state and national data, modeling from emissions inventories
- Social and health vulnerability
 - Based on epidemiological literature on social determinants of health and EJ literature on siting, emissions and air pollution risks

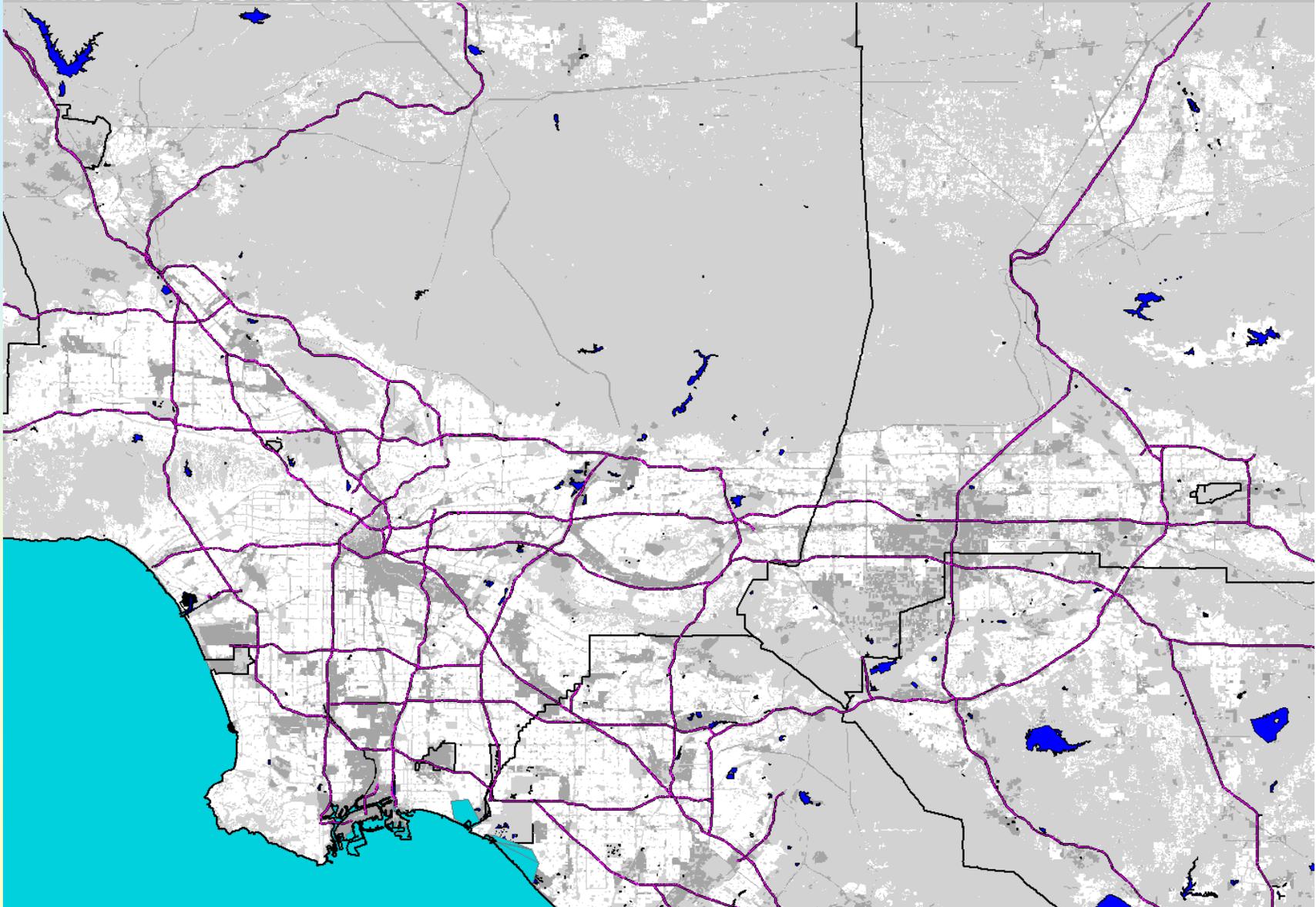


Land Use – Focus on where people live

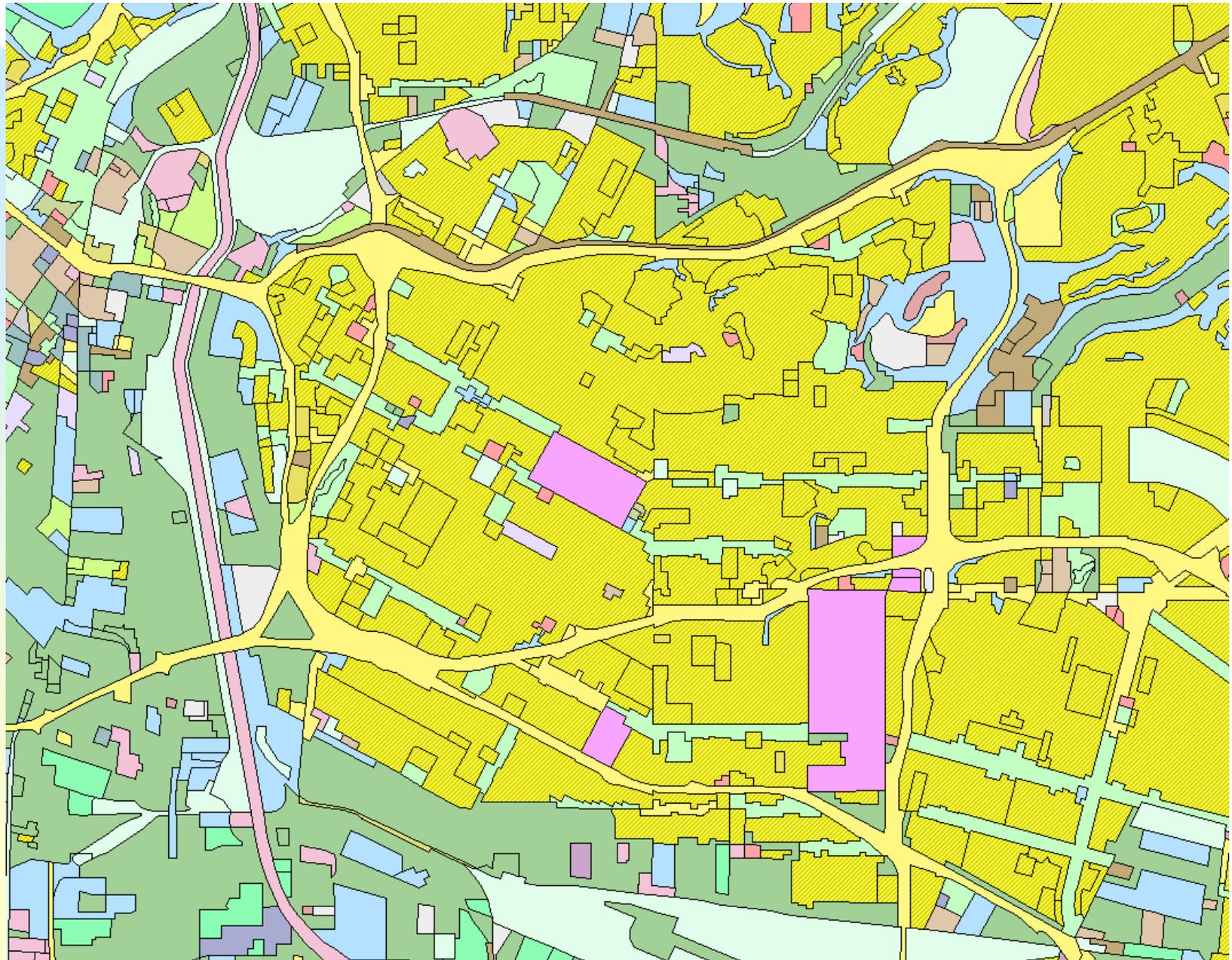
Dark Gray = Industrial, Transportation, etc.;

Light Gray = Open Space, Vacant, etc.

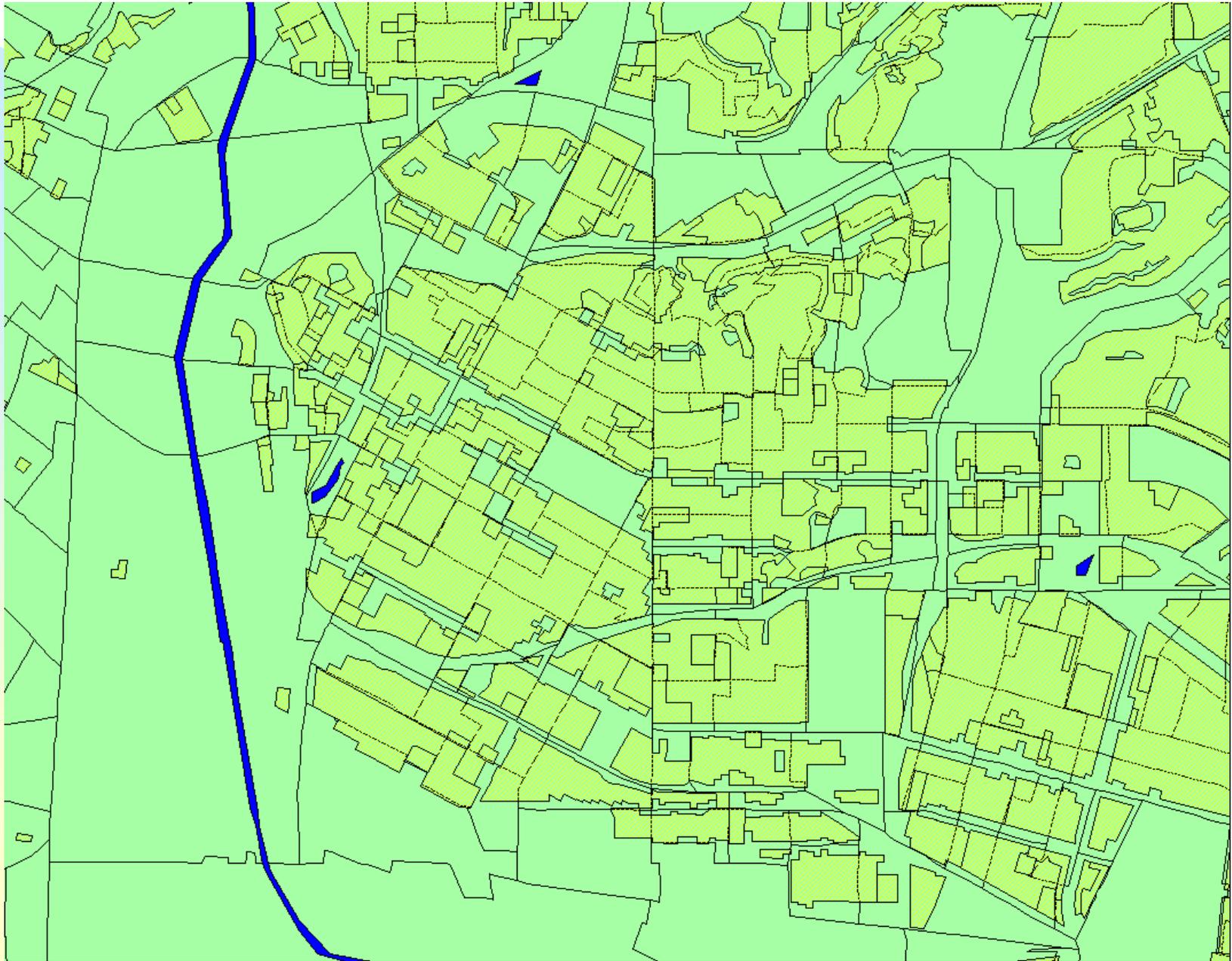
White = Residential and Sensitive Land Uses



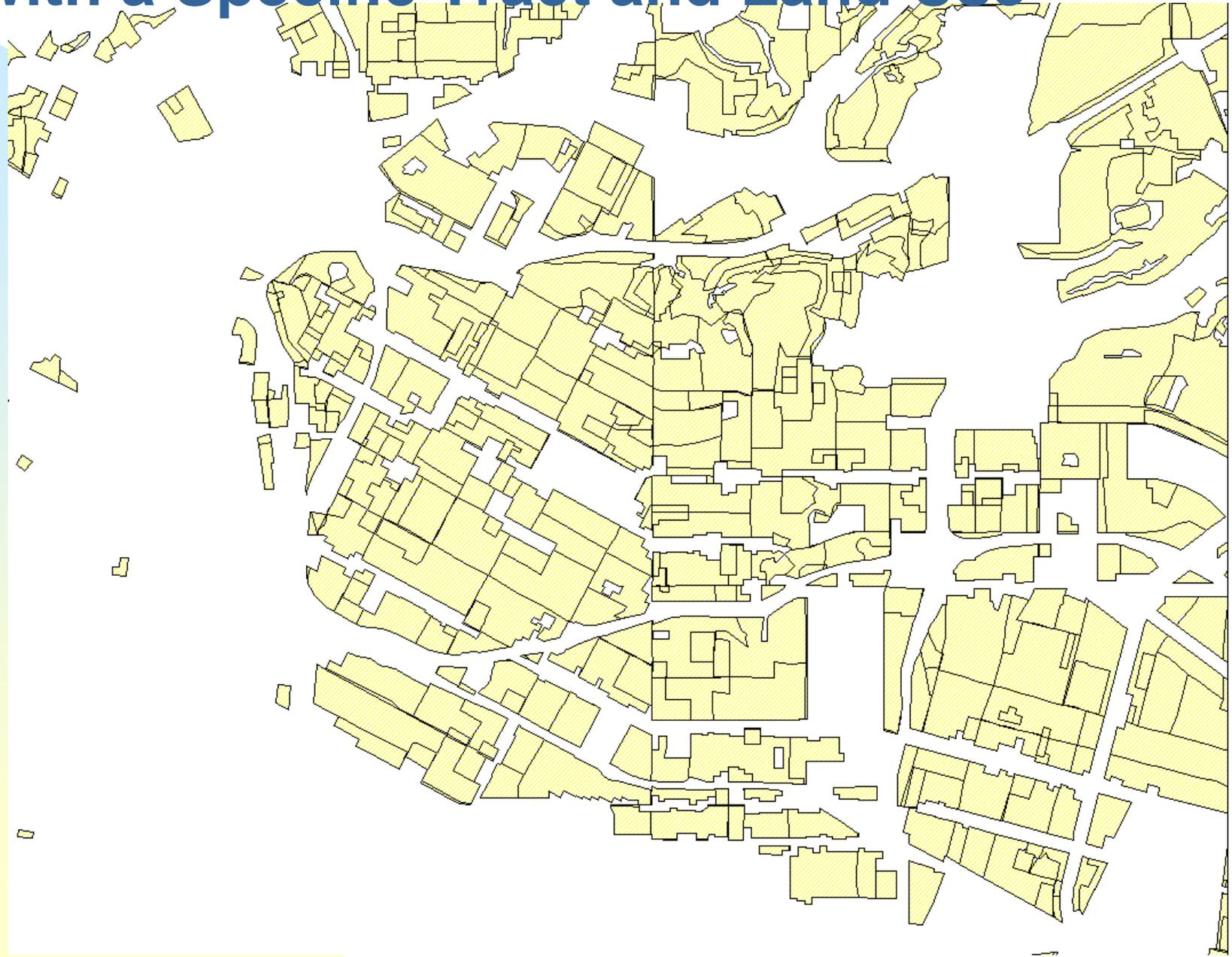
Select Sensitive Land Uses



Intersect Land Use Polygons with Block Groups



Result: Sliver Polygons, each associated with a Specific Tract and Land Use



Sensitive Land Uses

- Sensitive land uses as defined by ARB Air Quality and Land Use Guidelines, 2005
 - Childcare facilities (geocoded from SIC)
 - Healthcare facilities (CaSIL)
 - Schools (geocoded from CaDOE)
 - Parks (SCAG)
- Polygons containing sensitive land use(s) are given a score of 1 if they contain at least one sensitive land use category

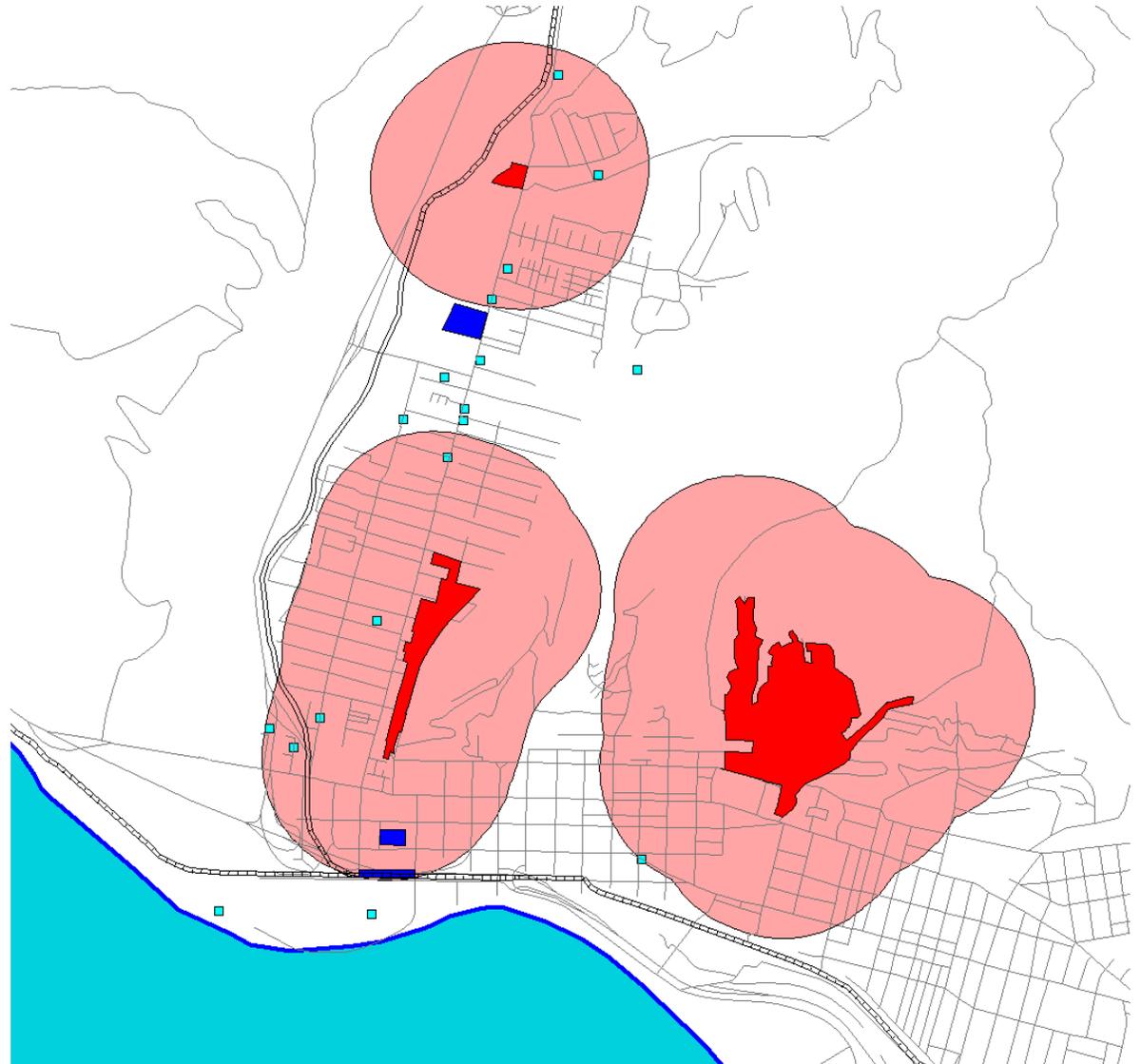
Hazard Proximity & Land Use Indicators

- CHAPIS (ARB)
 - AB2588 “hot spots” (ARB)
 - Chrome Platers (ARB)
 - Hazardous Waste TSDs (DTSC)
 - Federal Response (includes Superfund)
 - State response
 - Voluntary cleanup
 - Military evaluation
 - School investigations and cleanup
 - Rail
 - Ports
 - Airport
 - Refinery
 - Distribution facilities
 - Traffic Density (to be added)
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- Sum of sites within buffered distance of polygon edge
 - Score based on summing hazards and land uses, and normalizing from 0 (no hazards) to 4

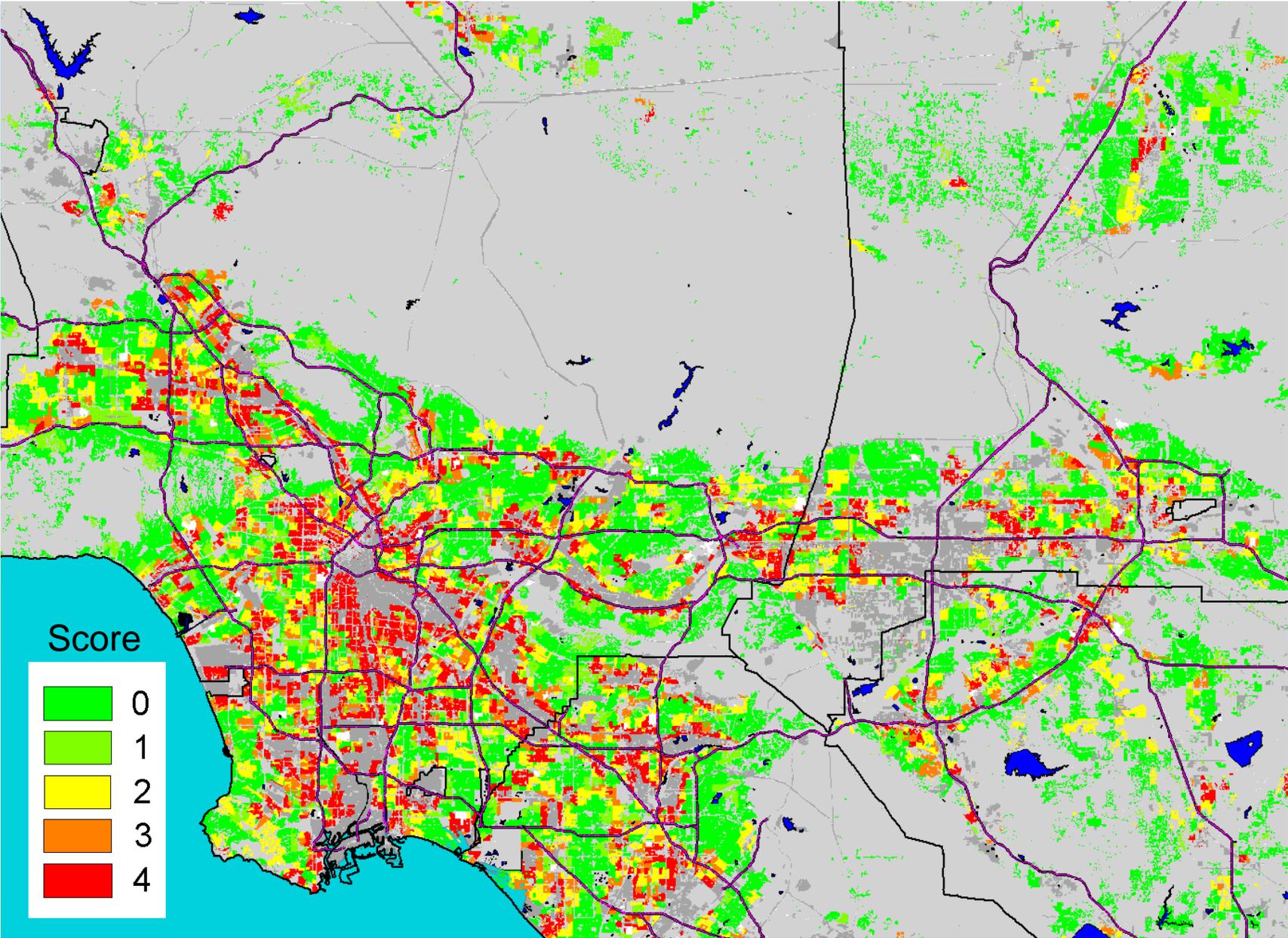


Distance Buffers – Defining Proximity

- Buffers on polygon boundaries
 - 2000 ft example
- Hazard Proximity and Land Use score based upon facilities inside buffer



Hazard Proximity/Land Use

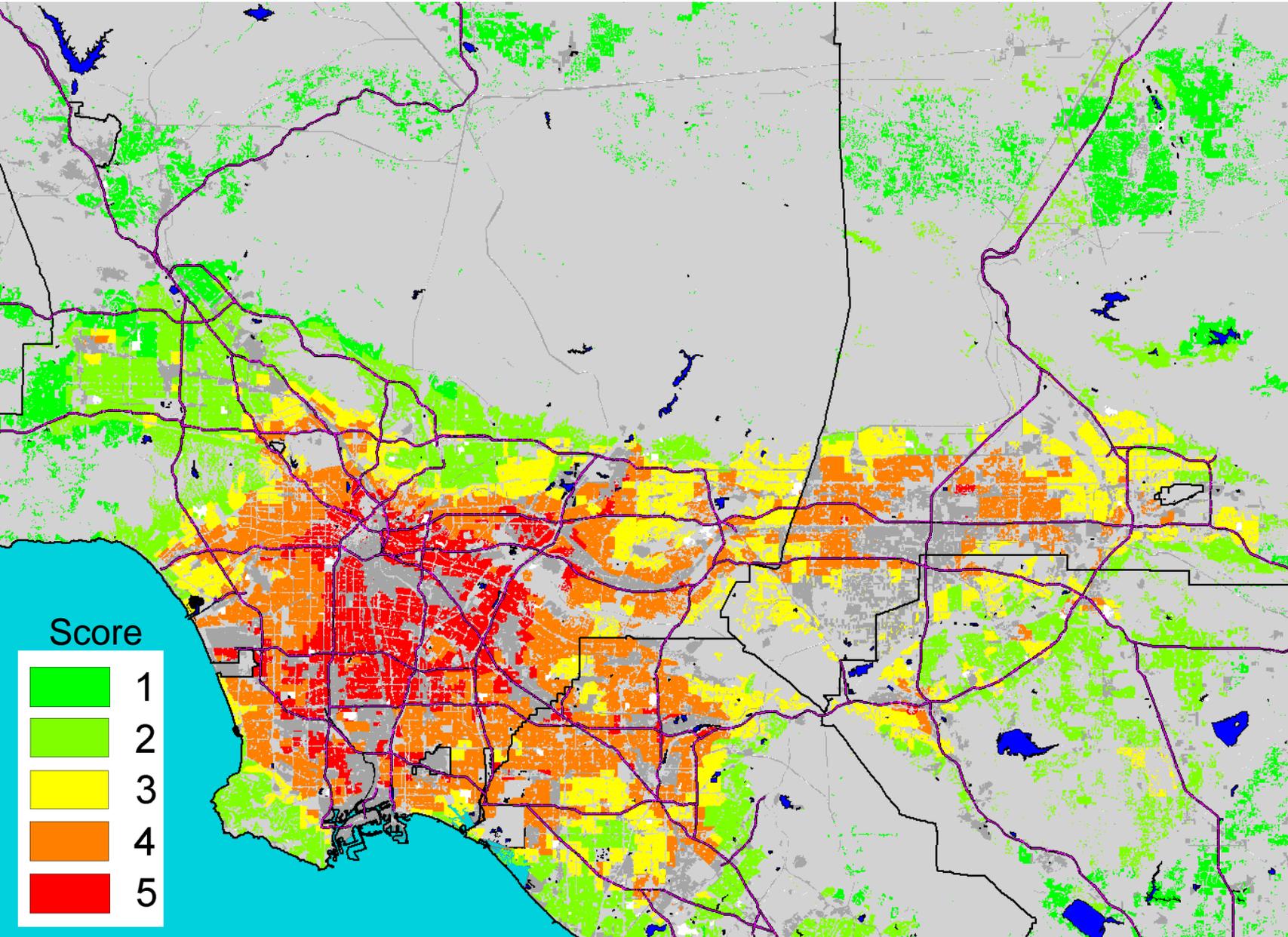


Health Risk Indicators

- RSEI (Risk Screening Environmental Indicators)
 - (2005) toxic conc. hazard scores
 - NATA 1999 (National Air Toxics Assessment)
 - Respiratory hazard from all air pollutants
 - ARB Estimated Inhalable Cancer Risk 2001
 - Calculated from modeled air toxics concentrations estimates
 - ARB estimated PM_{2.5} concentrations
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- Health risk measures are generated by ranking each measure by quintiles
 - Risk measures then added together and categorized into a scale from 1 to 5



Health Risk



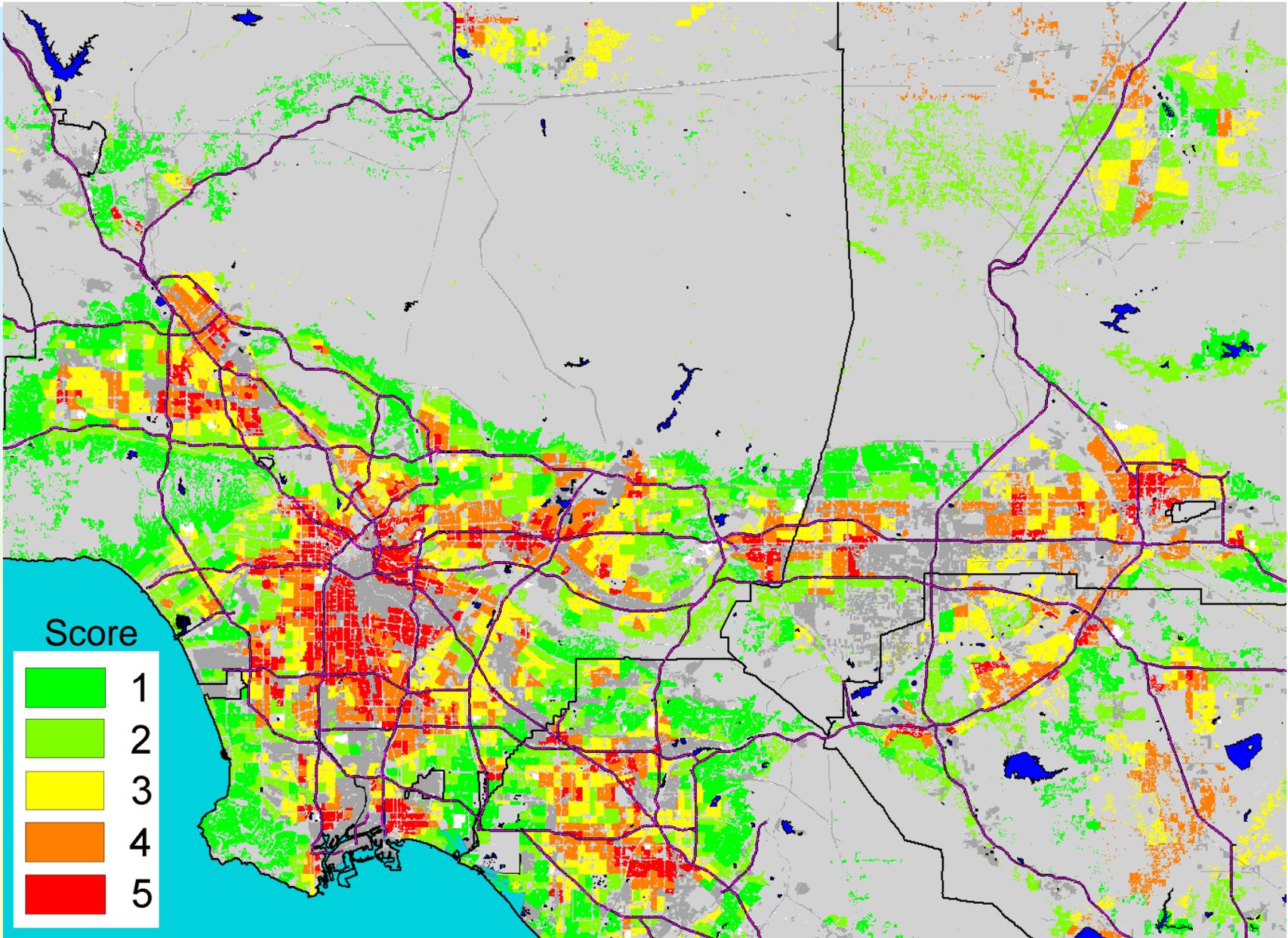
Social and Health Vulnerability

Census Tract Level Metrics (2000)

- ◆ % residents of color (non-White)
 - ◆ % residents below twice national poverty level
 - ◆ Home ownership - % living in rented households
 - ◆ Educational attainment – % population > age 24 with less than high school education
 - ◆ Age of residents (% <5)
 - ◆ Age of residents (% >60)
 - ◆ Linguistic isolation - % pop. >age 4 in households where no one >age 15 speaks English well
 - ◆ Voter turnout - % votes cast among all registered voters in 2000 general election
 - ◆ Birth outcomes – % preterm or SGA infants 1996-03
- Ranked from 1 to 5 using a quintile method on each dimension
 - Total scores are added (with a strategy to account for missing observations) and normalized to a scale of 1-5.



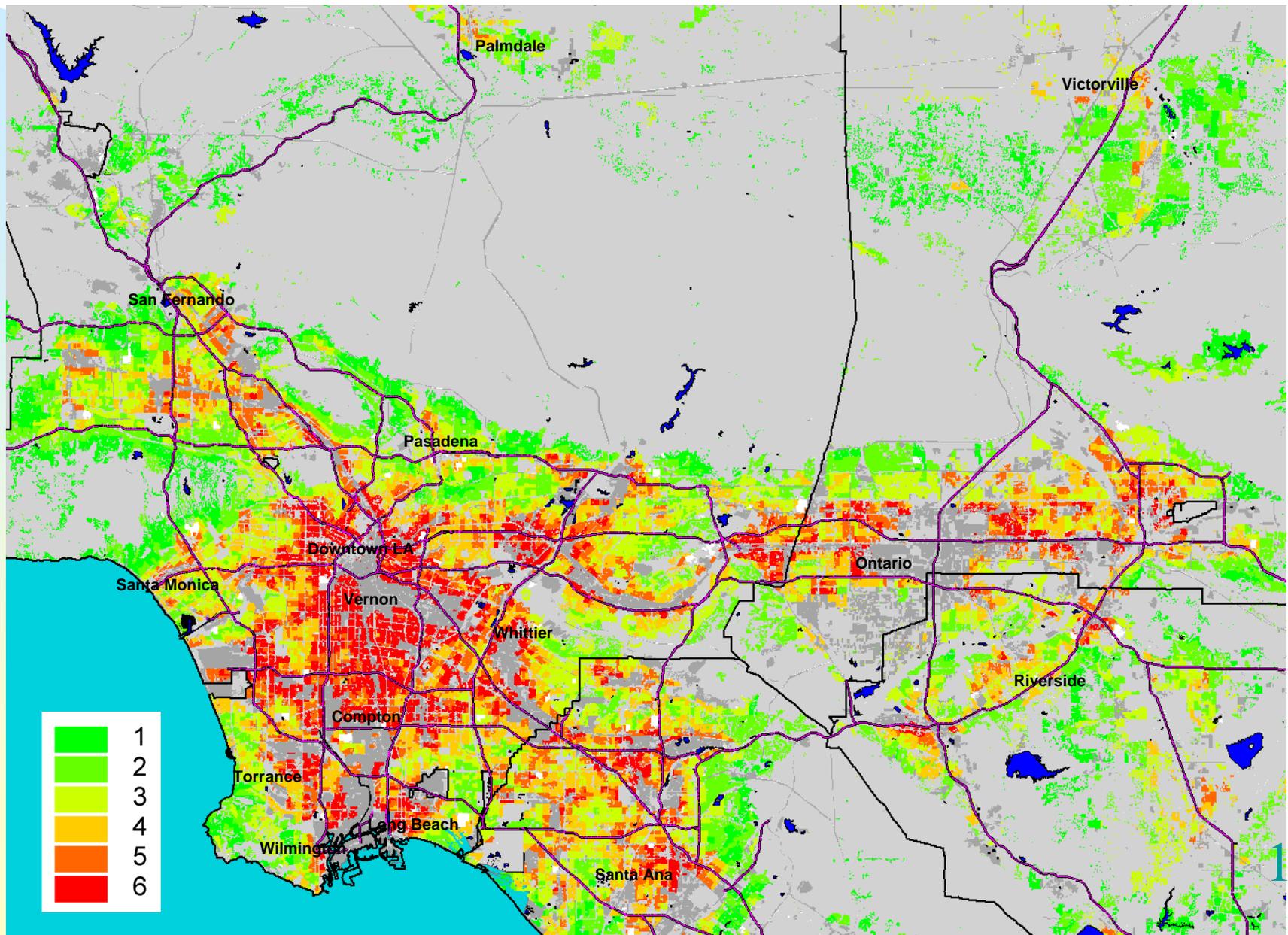
Social and Health Vulnerability



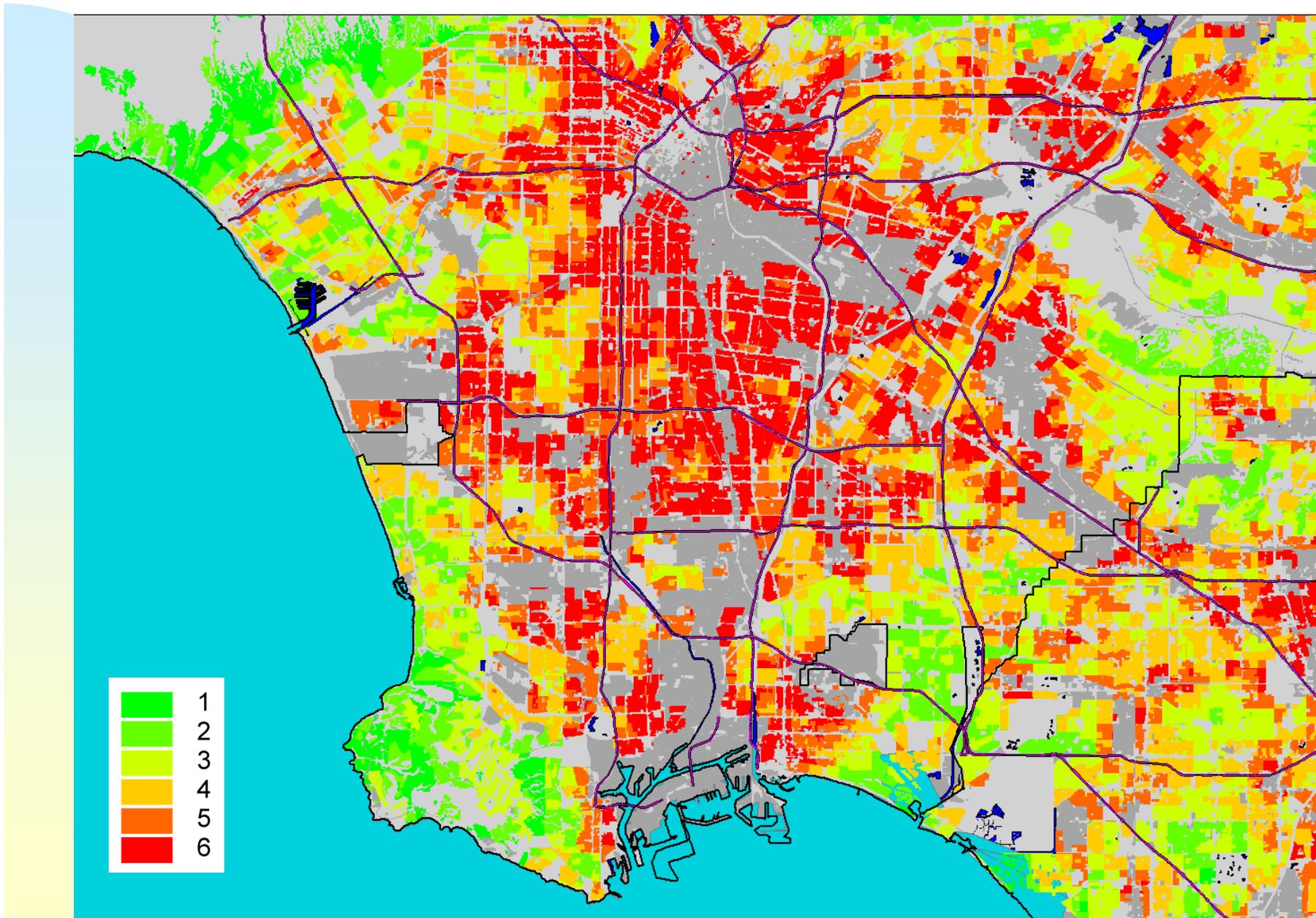
Southern California Cities



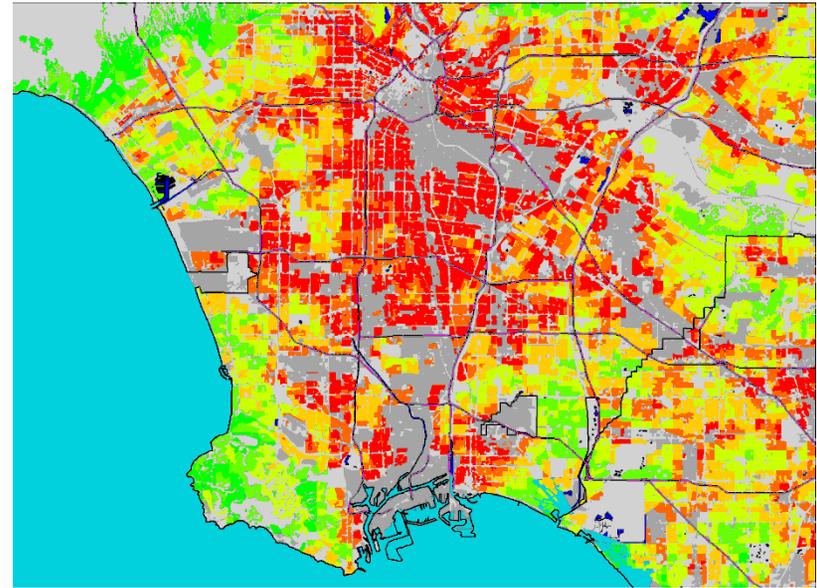
Cumulative Impact Score



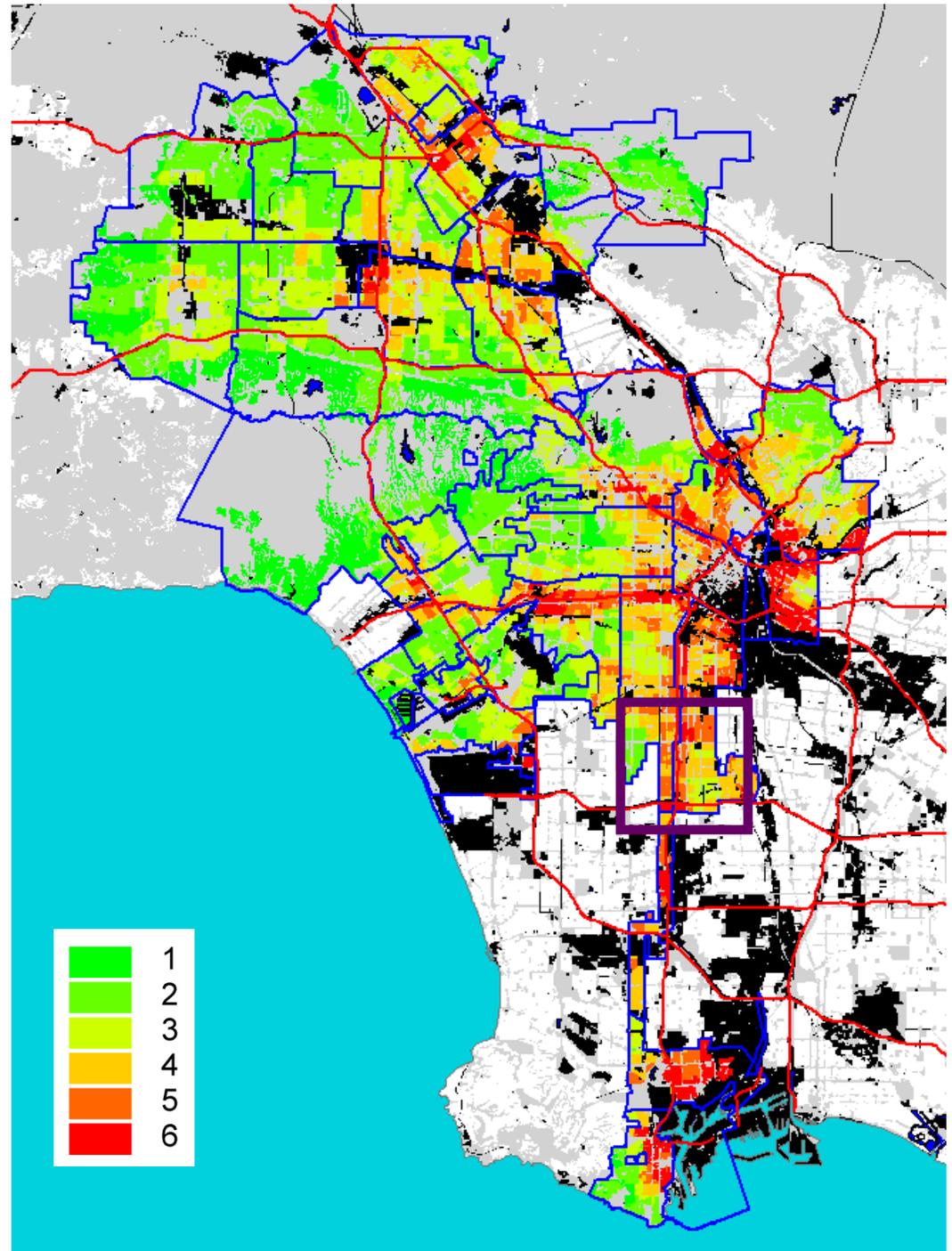
Cumulative Impact Score– Zooming In



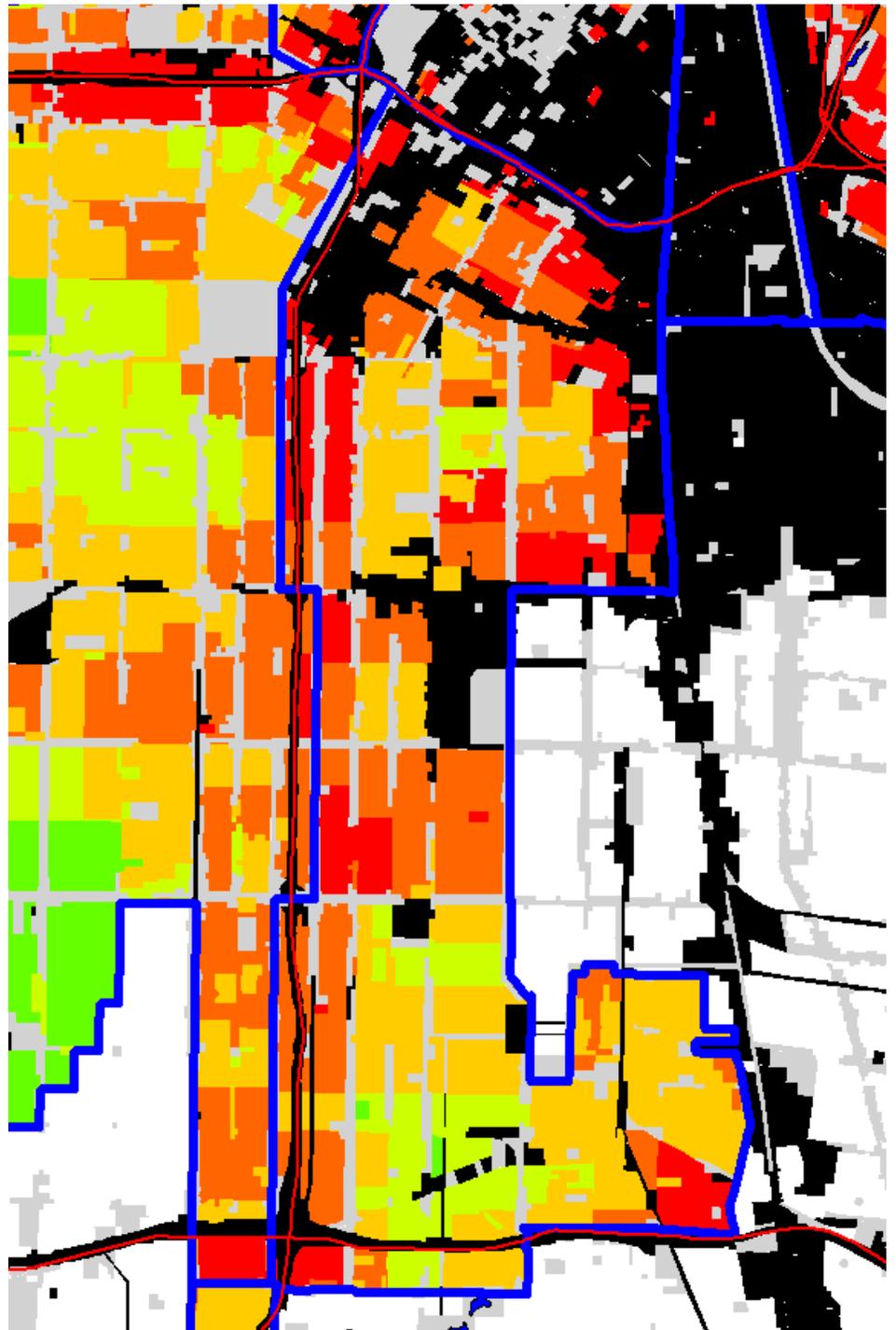
How Can CI Mapping Inform Land Use Planning?



CI Mapping Completed for LA Planning Districts



CI Mapping For SELA Planning Area

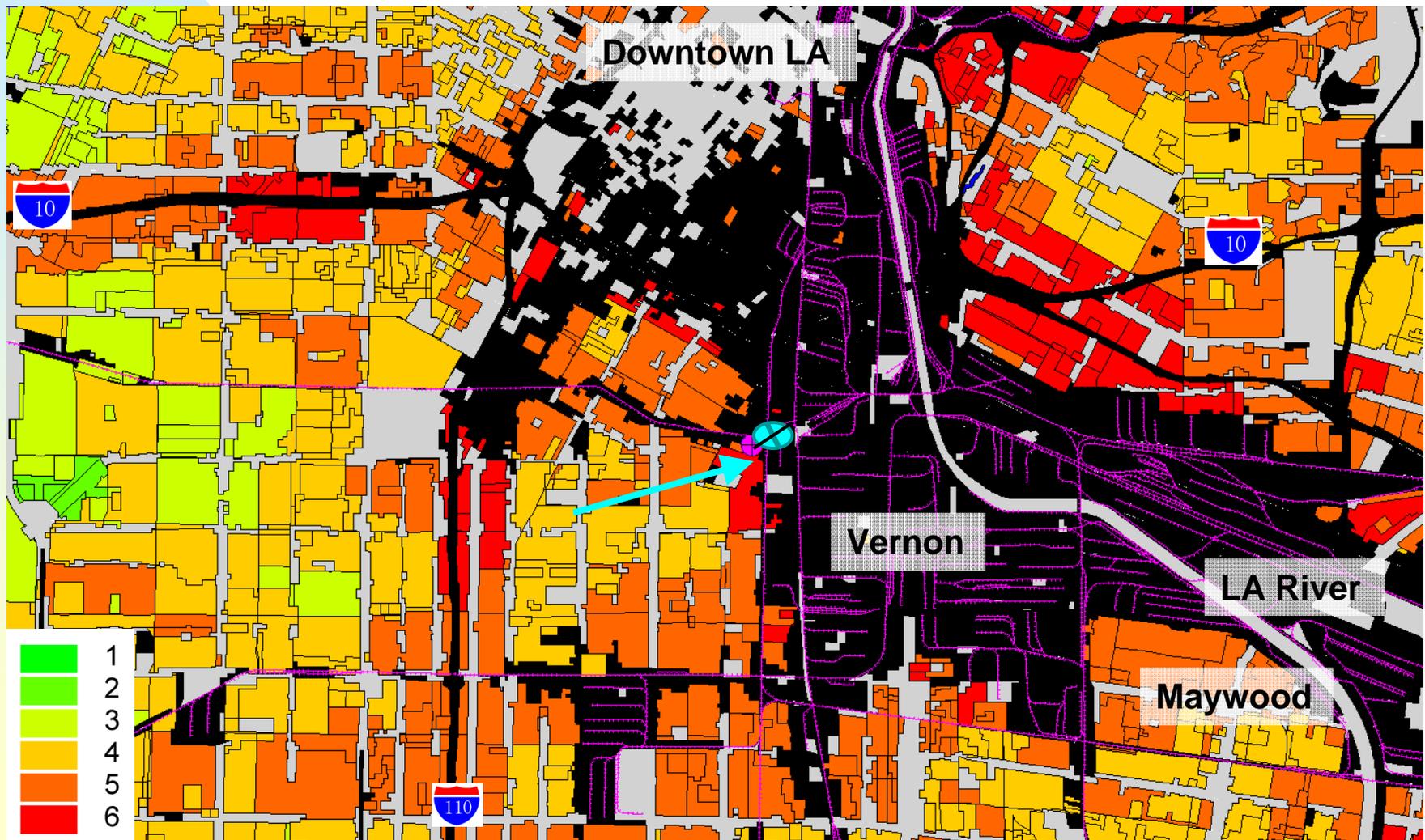


Proposed Charter High Schools

Case # CPC-2007-4645-CU-ZV-ZAA-ZAD-AR
1627 - 27th street, LA 90011



Proposed School Location within CI Map



Future Directions

Additional Indicators

- Land Use
 - Distance-weighted traffic density
- Health Risk
 - Ozone (concentration or morbidity estimates)

Land Use Buffer Distance

- Conducting sensitivity analysis by varying buffer distance
- 1 mile vs. ½ mile from polygon centroids
- 1000 feet and 2000 feet from polygon boundaries

Sensitivity Analysis

- Varying weighting and scoring schemes
- Dropping in and out single measures



Collaborators & Funding

- Manuel Pastor, University of Southern California
- James Sadd, Occidental College
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