

# Economic Development Analysis Using Business Analyst Online & Community Tapestry

J. M. Pogodzinski

Department of Economics

San Jose State University

[j.m.pogodzinski@gmail.com](mailto:j.m.pogodzinski@gmail.com)

# Agenda

- Refurbishing the San Jose/Santa Clara Water Pollution Control Plant: an economic development problem
  - Background & Overview
  - Economic Development issues
    - New land uses
    - Sensitive receptors
    - Jobs
- GIS tools
  - GIS layers
  - ArcGIS Desktop
  - ArcGIS Business Analyst Desktop
  - ArcGIS Business Analyst Online (BAO)
- Result of the analysis

# Background

- Expanding capacity for wastewater treatment essential for economic growth
- New technologies for wastewater treatment have implications for land use
  - Reduced size of buffer zone frees up land for economic development
  - Some current buffer lands are environmentally sensitive
  - Proximity of sensitive receptors
  - Jobs
  - Other fiscal implications

# Overview

## California and Santa Clara County



# Orientation

California, Santa Clara County and San Diego County



# Overview

## The Wastewater Treatment Plant

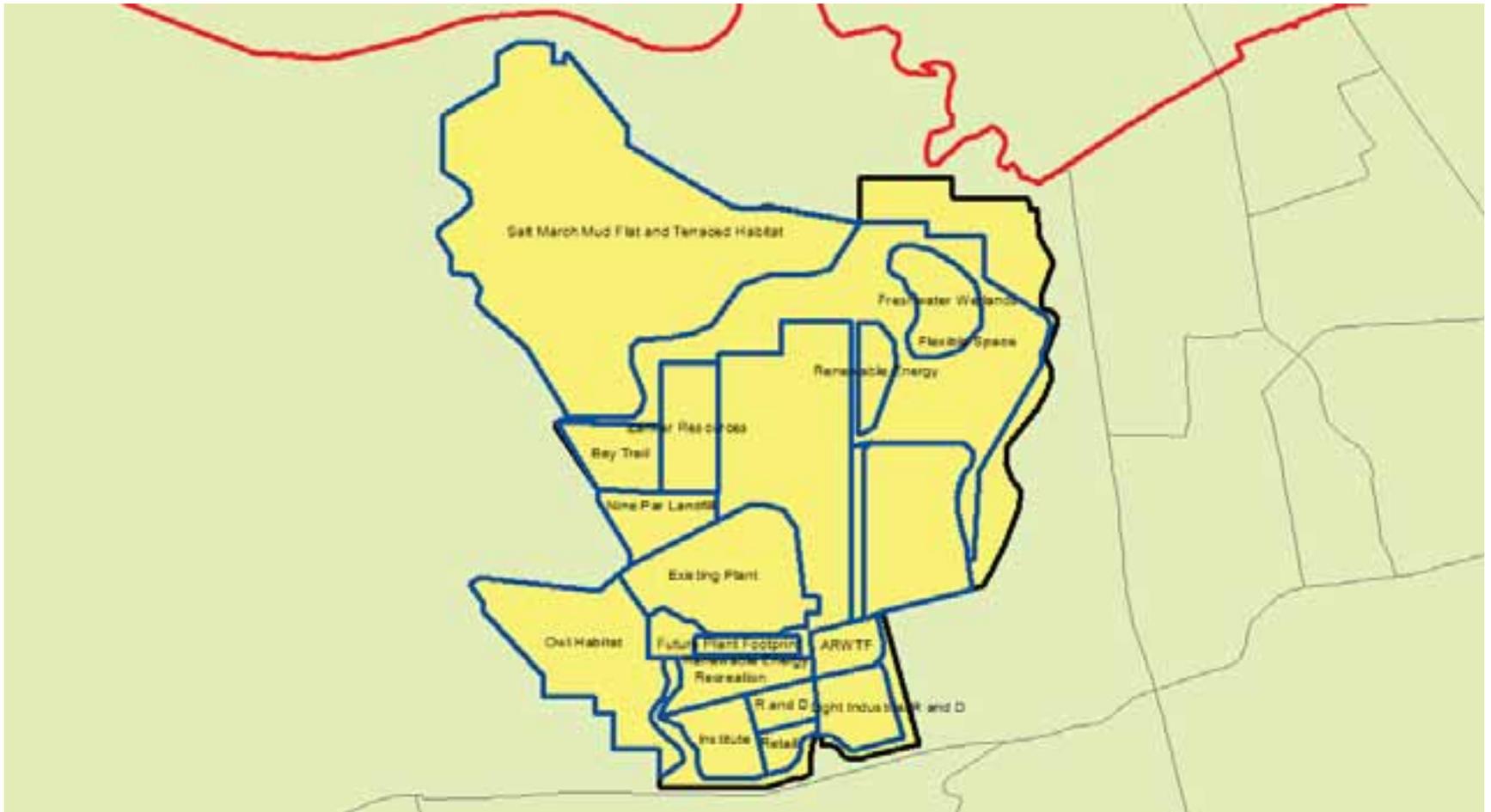




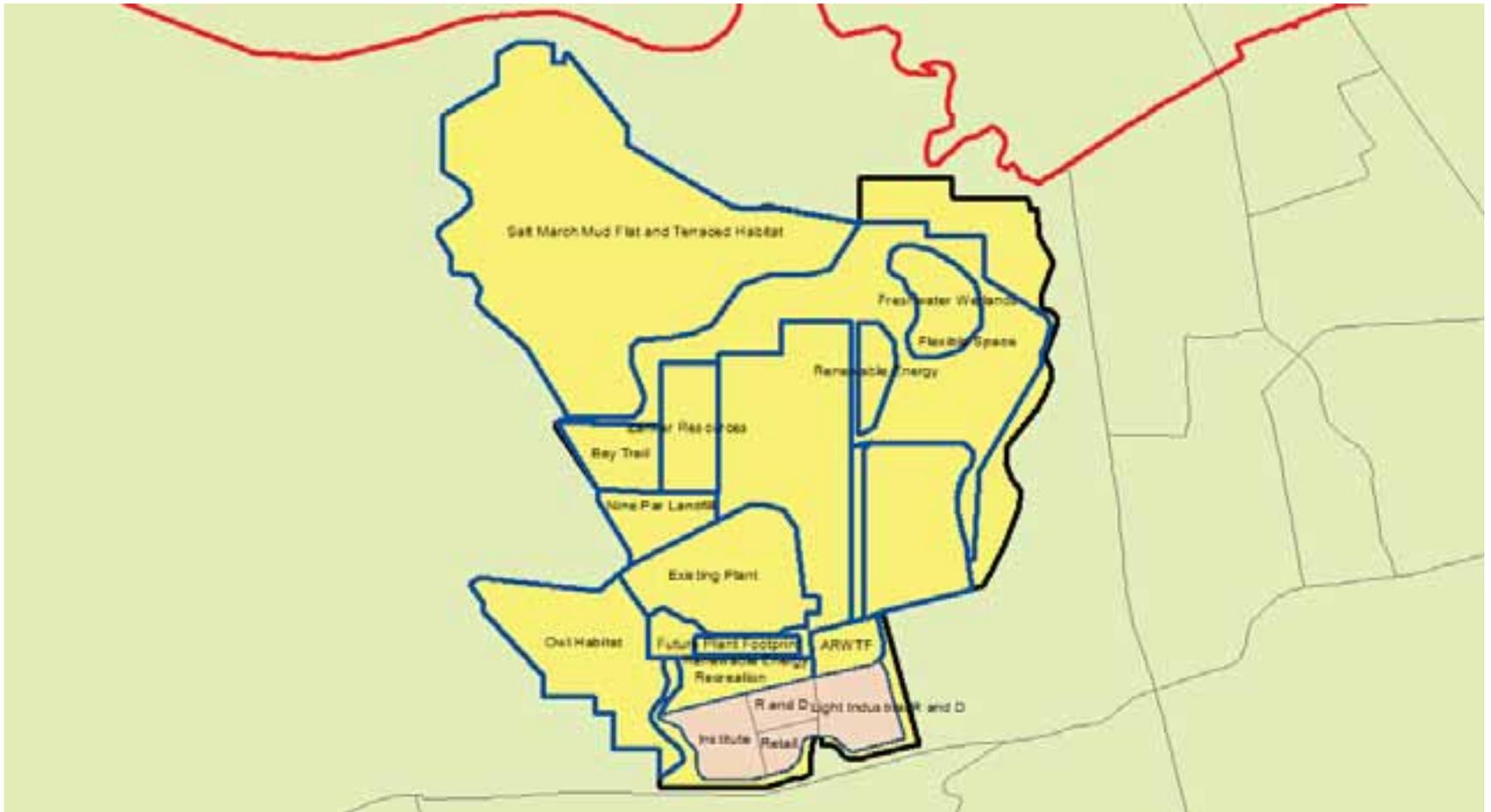
Source: Draft Master Plan <http://environment.sanjoseca.gov/DocumentCenter/View/5604>, p. 4

# Overview

## Plant Areas Under the Master Plan



# Plant Developable Areas



# New Possible Land Uses

- Retail
- Research and Development
- Industrial

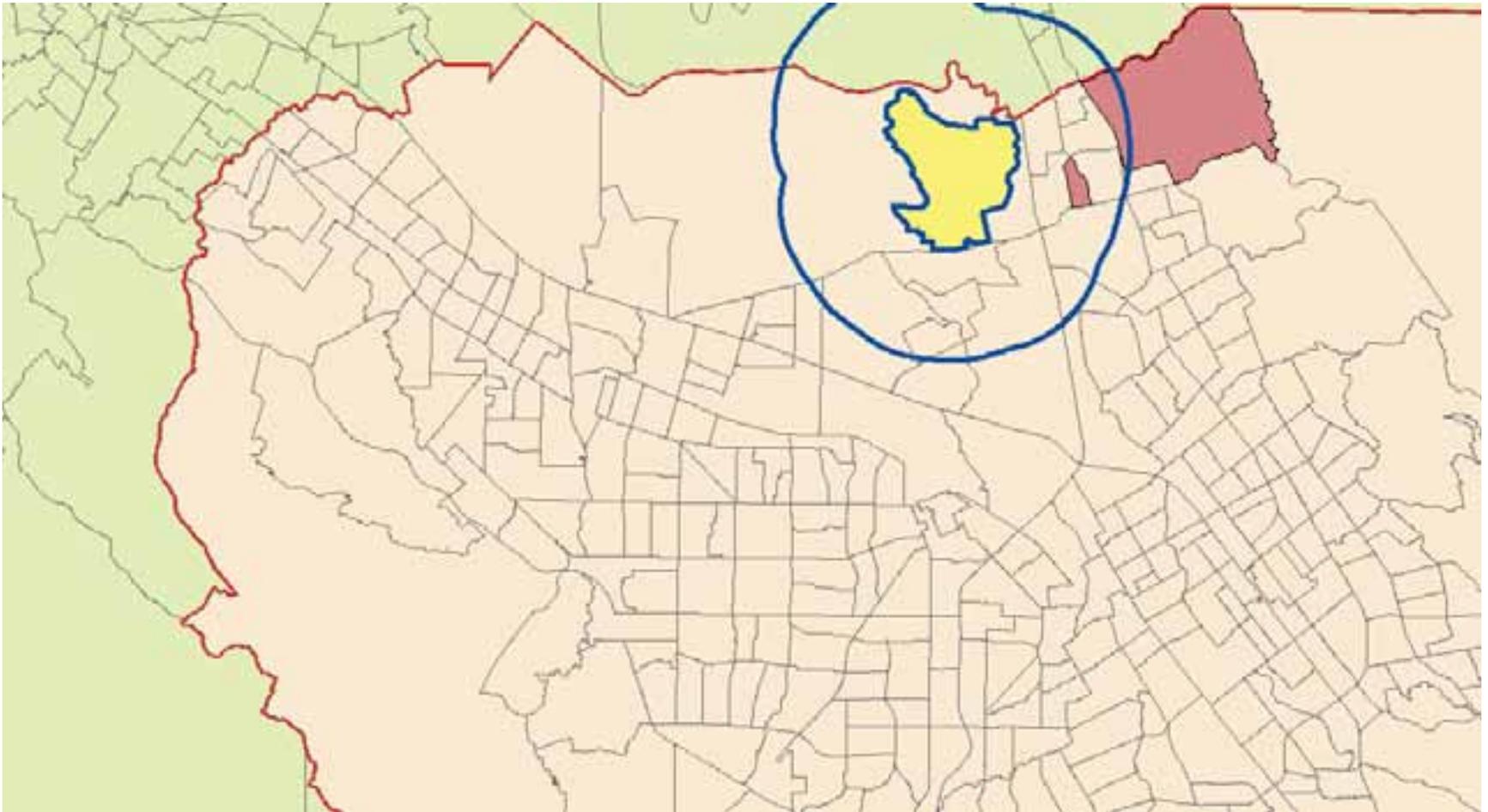
# GIS Layers from Public Sources

- Plant border & plant areas as designated in the proposed Master Plan
- Census Tracts
- ZIP Code Tabulation Areas
- All Roads & Primary and Secondary Roads
- Hydrology
- Municipalities
- Private and public schools
- Long term care facilities
- Hospitals

# Additional Public Data

- American Community Survey (ACS)
  - Income
  - Age distribution
  - Minority status – African American, Asian (by ethnic subgroup), Hispanic
  - Linguistic isolation
- Economic Census – establishments by size by industry for ZCTAs
- Economic Research Service, USDA: Food Access Research Atlas Data
  - Alternative measures (broken down by age)
    - Based on distance
    - Based on income and distance
    - Based on vehicle availability, income, and distance
    - Based on vehicle availability, income, distance, and housing characteristics

# Linguistic Isolation\*



\*Percent of households responding: No one age 14 and over speaks English only or speaks English "very well" exceeds 20%

# ZIP Code Data

Six ZIP Codes fall largely within a 2 mile buffer around the plant boundaries:

94538

94539

95002

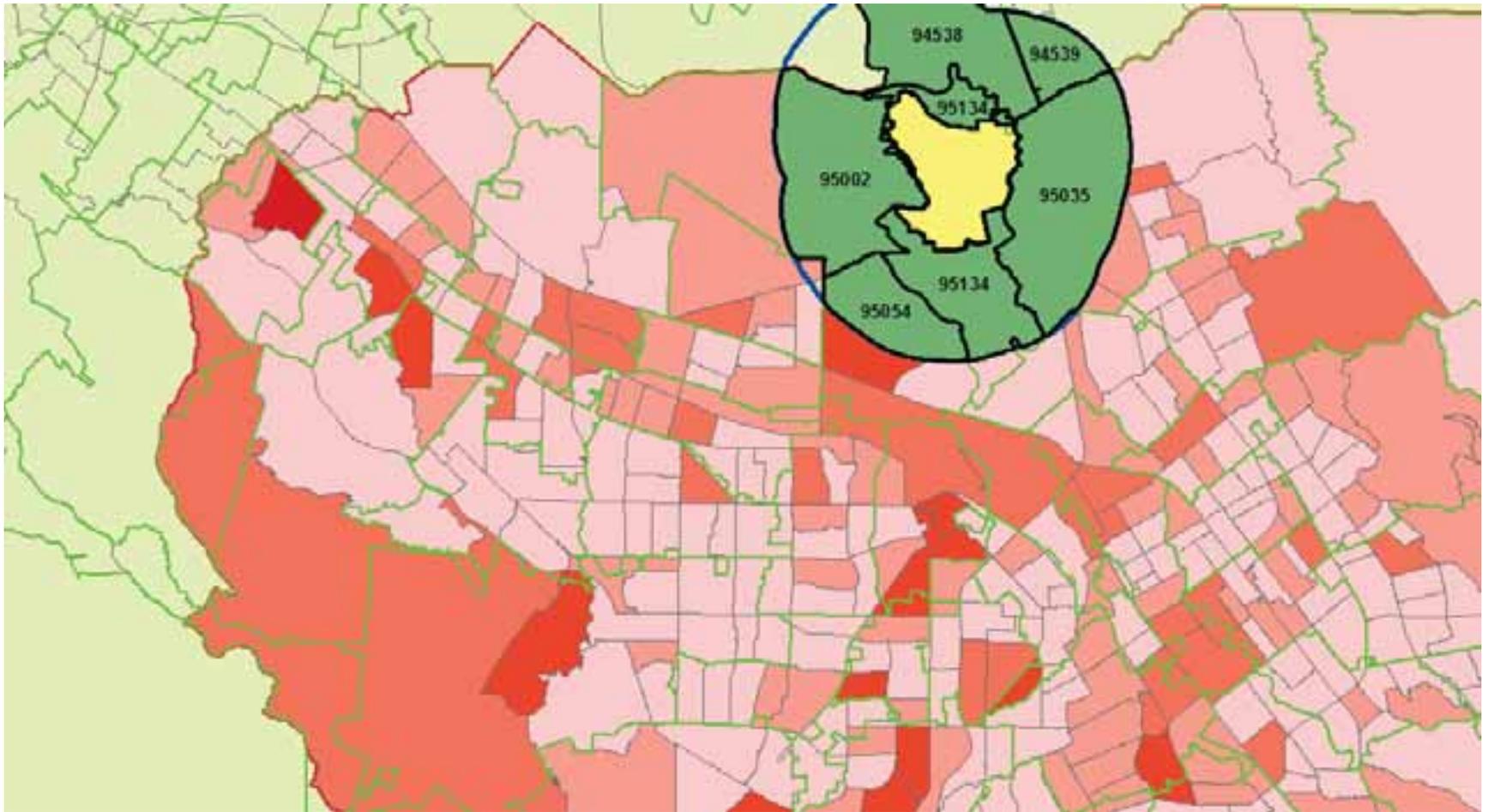
95035

95054

95134

For these ZIP Codes, data about establishment size by industry was obtained from the Economic Census 2010.

# ZIP Codes within 2 Miles of the Plant



# Business Analyst Data

- Existing retail establishments
- Existing industrial establishments
  - Spatial extent of industry clustering

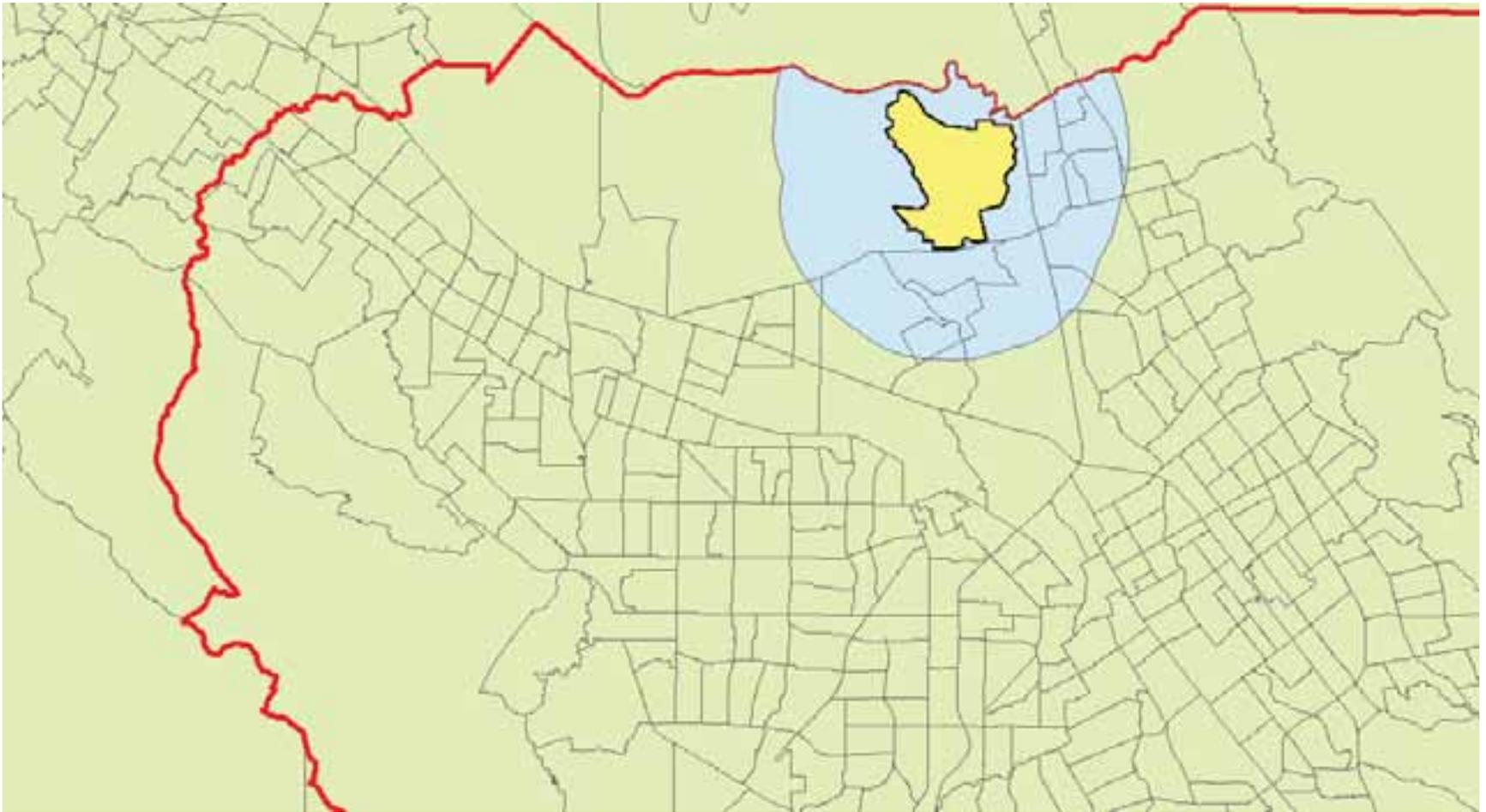
# Economic Development Issues

- Sensitive receptors
  - Schools, Long Term Care Facilities (usually for the aged), Hospitals
  - Demographics of population (young people and old people, minorities, linguistic isolation)
- Economic Development Potential
  - Existing transportation infrastructure
  - Retail potential
    - Income
    - Food deserts (<http://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas.aspx>)
  - Industrial potential
    - Workforce: age distribution, educational attainment, unemployment, industry clustering
  - Tax implications

# Analysis of Sensitive Receptors

- Can conduct analysis at various distances from the Master Plan boundary
- Selected 2 miles as a benchmark distance
- Within 2 miles of the plant boundary:
  - 10 public schools (8 elementary schools, 1 middle school, 1 high school) operated by two unified school districts
  - 3 private (religious) schools (offering grades K-9, K-9, and 1-12, respectively)
  - No hospitals
  - 1 Long Term Care facility

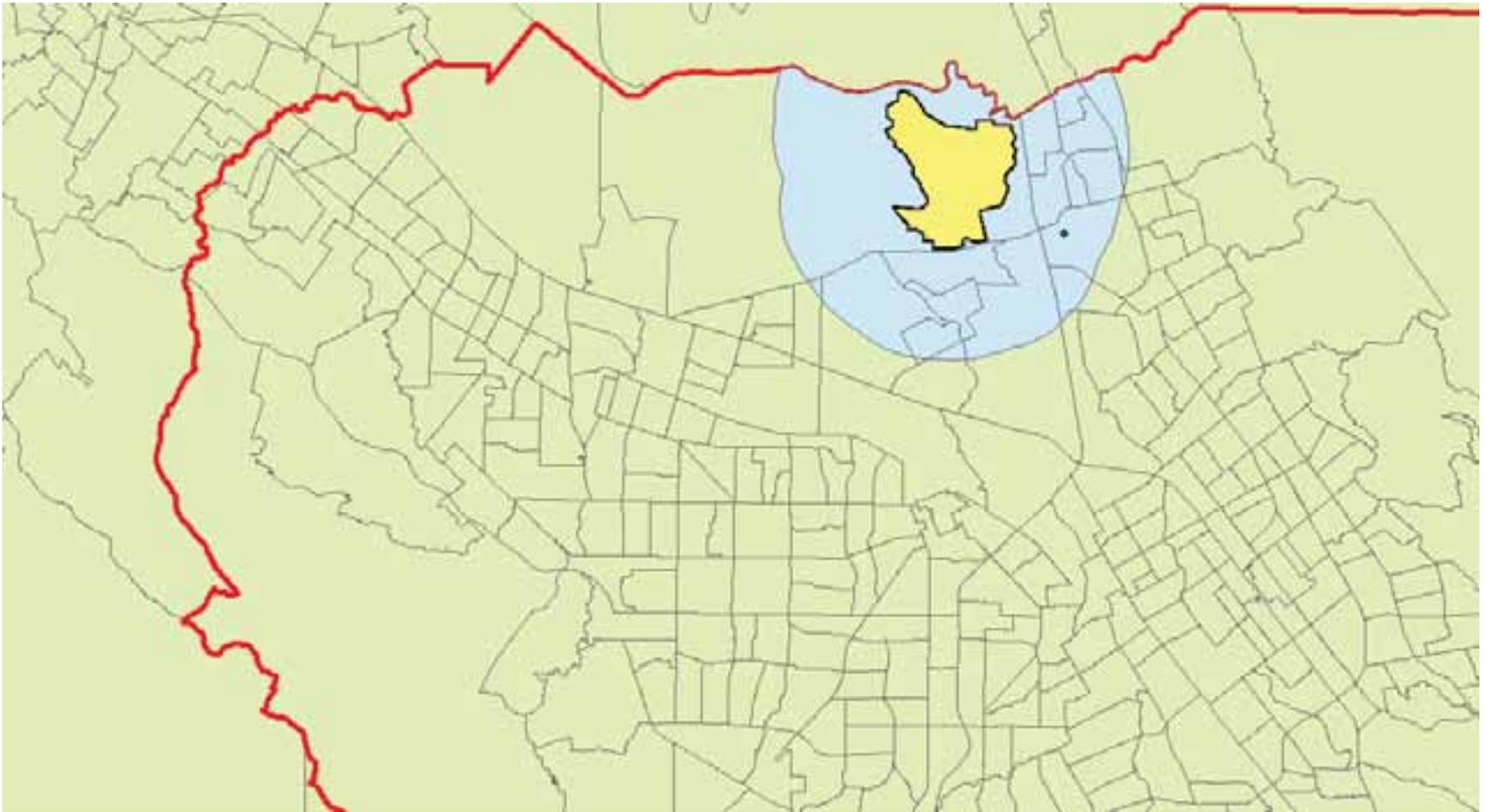
# Plant and 2 Mile Boundary



# Schools within the 2 Mile Boundary



# Long Term Care Facility within 2 Mile Boundary



# Municipalities within 2 Mile Boundary



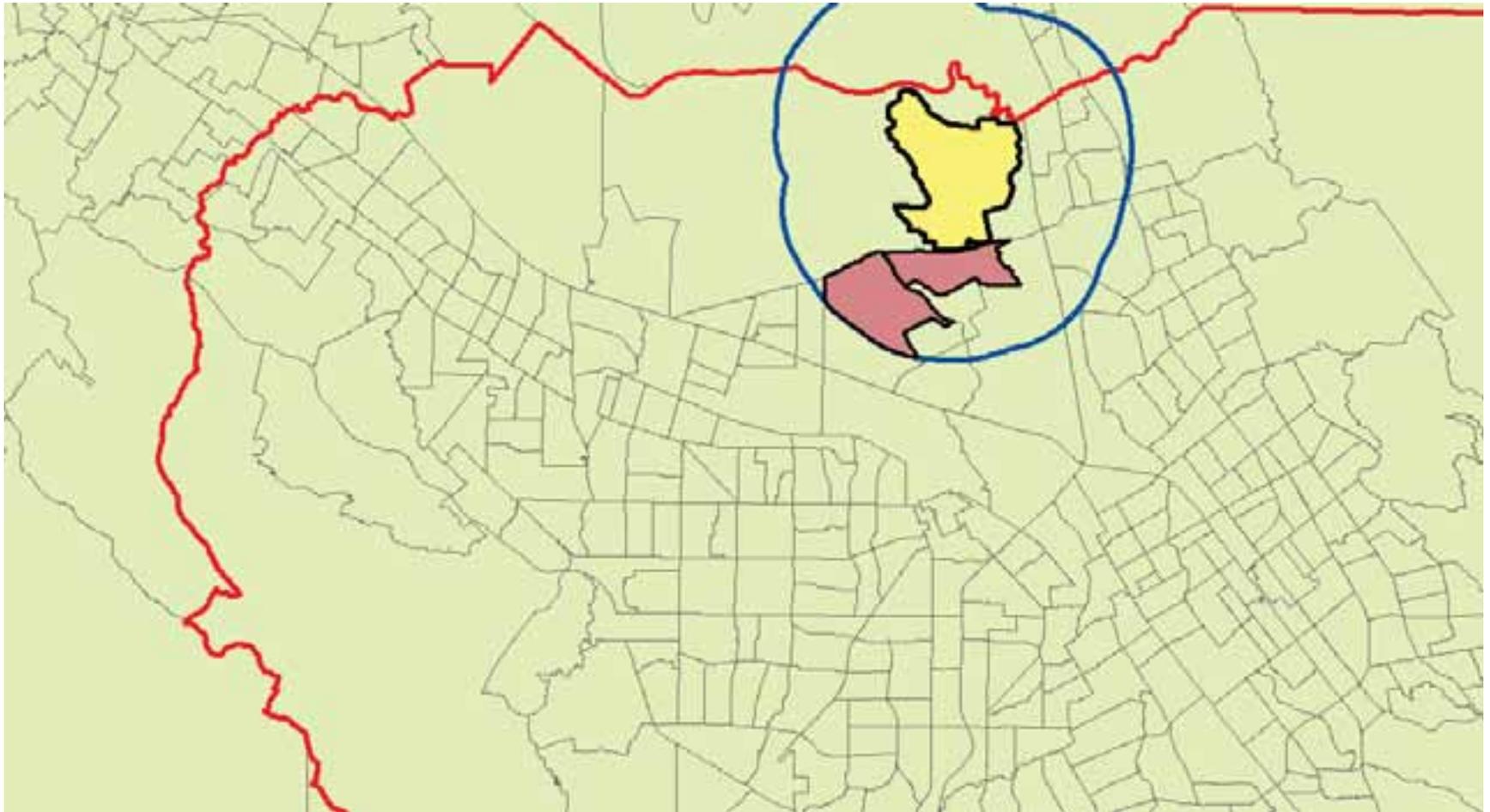
# Analysis of Food Security

- Within 2 miles of the plant boundary:
  - There are parts of 19 census tracts with a total population of 102,072
  - 5 of the 19 census tracts are deemed “low income and low access” at the one-mile range in the USDA’s Food Access database
  - However, not all these census tracts have significant populations
  - Some census tracts which are not deemed “low income and low access” have substantial numbers of people, especially children, who have low access to food based on distance or distance and vehicle availability

# Analysis of Food Security

Parts of two of these census tracts contain more than 2 standard deviations more than the mean number of people in Santa Clara County with low access to food within half a mile, and more than 1 standard deviations more than the mean number of children with low access to food within half a mile

# Parts of Two Census Tracts with Low Access to Food



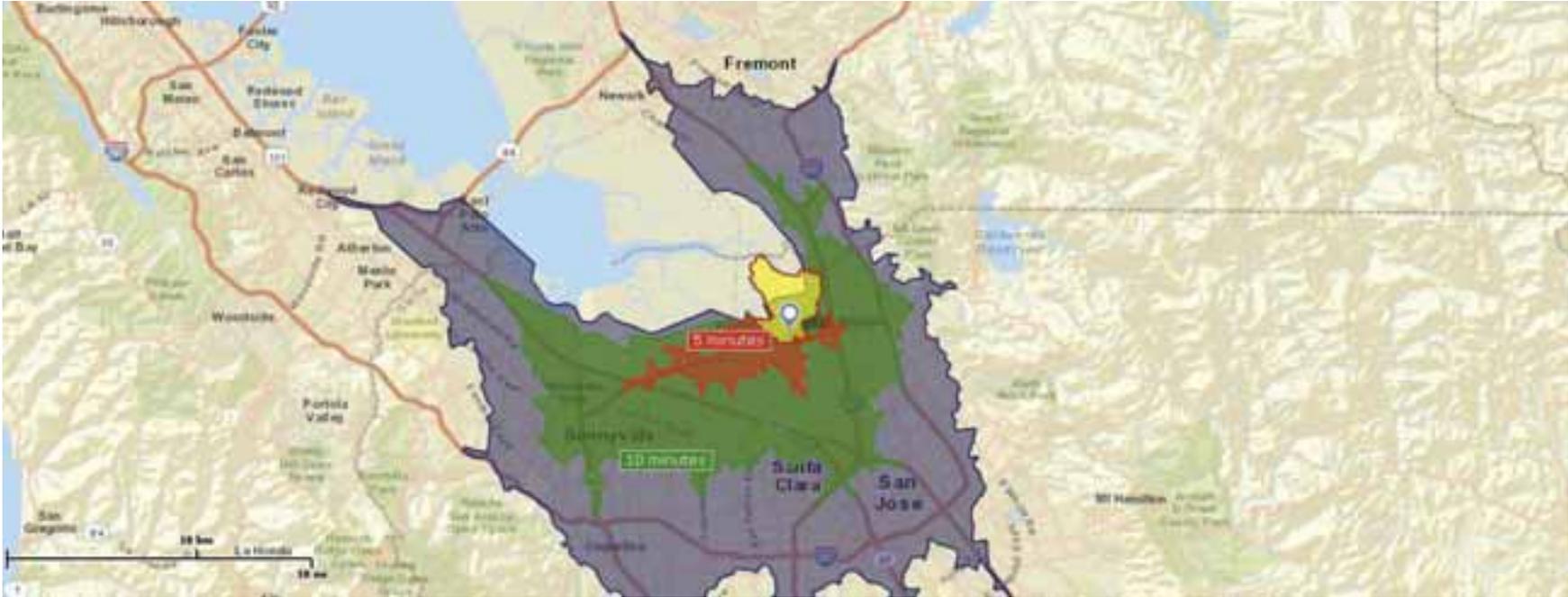
# Why Use Business Analyst Online (BAO)?

- Readily available data
- Analytic tools
  - Drive times
  - “As the crow flies”
- Non-standard areas
- Can upload and analyze oddly shaped areas – like parts of census tracts and developable areas consisting of former buffer lands

# BAO Sitemap



# Drivetime Areas from BAO



# Walking Distances (Approximation)



# BAO Reports by Drivetime Areas



# BAO Reports by Drivetime Areas



## 1990-2000 Comparison Profile

Wastewater Treatment Plant Development Area  
San Jose, CA, 95134

Latitude: 37.42158

Drive Time: 5 minutes

Longitude: -121.94355

	1990		Census 2000		1990-2000
	Number	Percent	Number	Percent	Annual Rate
Total Population	7,508	-	11,183	-	4.07%
Total Households	2,879	100.0%	4,176	100.0%	3.79%
Average Household Size	2.57	-	2.67	-	0.38%
Total Families	1,838	63.9%	2,621	62.8%	3.61%
Average Family Size	3.23	-	3.30	-	0.21%
Per Capita Income	\$16,266	-	\$29,027	-	5.96%
Total Housing Units	2,983	-	4,365	-	3.88%



## 1990-2000 Comparison Profile

Wastewater Treatment Plant Development Area  
San Jose, CA, 95134

Latitude: 37.42158

Drive Time: 10 minutes

Longitude: -121.94355

	1990		Census 2000		1990-2000
	Number	Percent	Number	Percent	Annual Rate
Total Population	206,464	-	240,748	-	1.55%
Total Households	77,678	100.0%	88,931	100.0%	1.36%
Average Household Size	2.57	-	2.64	-	0.27%
Total Families	47,558	61.2%	55,286	62.2%	1.52%
Average Family Size	3.20	-	3.26	-	0.19%
Per Capita Income	\$19,805	-	\$32,998	-	5.24%
Total Housing Units	81,827	-	92,818	-	1.27%

# BAO Reports by Walking Distances

		<b>1990-2000 Comparison Profile</b>			
		Wastewater Treatment Plant Development Area			
		San Jose, CA, 95134		Latitude: 37.42158	
		Ring: 0.25 mile radius		Longitude: -121.94355	

	1990		Census 2000		1990 - 2000
	Number	Percent	Number	Percent	Annual Rate
Total Population	0	-	0	-	0.00%
Total Households	0	100.0%	0	100.0%	0.00%
Average Household Size	0.00	-	0.00	-	0.00%
Total Families	0	0.0%	0	0.0%	0.00%
Average Family Size	0.00	-	0.00	-	0.00%
Per Capita Income	\$0	-	\$0	-	0.00%
Total Housing Units	0	-	0	-	0.00%

		<b>1990-2000 Comparison Profile</b>			
		Wastewater Treatment Plant Development Area			
		San Jose, CA, 95134		Latitude: 37.42158	
		Ring: 0.5 mile radius		Longitude: -121.94355	

	1990		Census 2000		1990 - 2000
	Number	Percent	Number	Percent	Annual Rate
Total Population	1,593	-	1,721	-	0.77%
Total Households	651	100.0%	609	100.0%	-0.66%
Average Household Size	2.45	-	2.83	-	1.45%
Total Families	426	65.4%	418	68.6%	-0.19%
Average Family Size	3.01	-	3.28	-	0.86%
Per Capita Income	\$18,956	-	\$23,751	-	2.28%
Total Housing Units	670	-	623	-	-0.72%

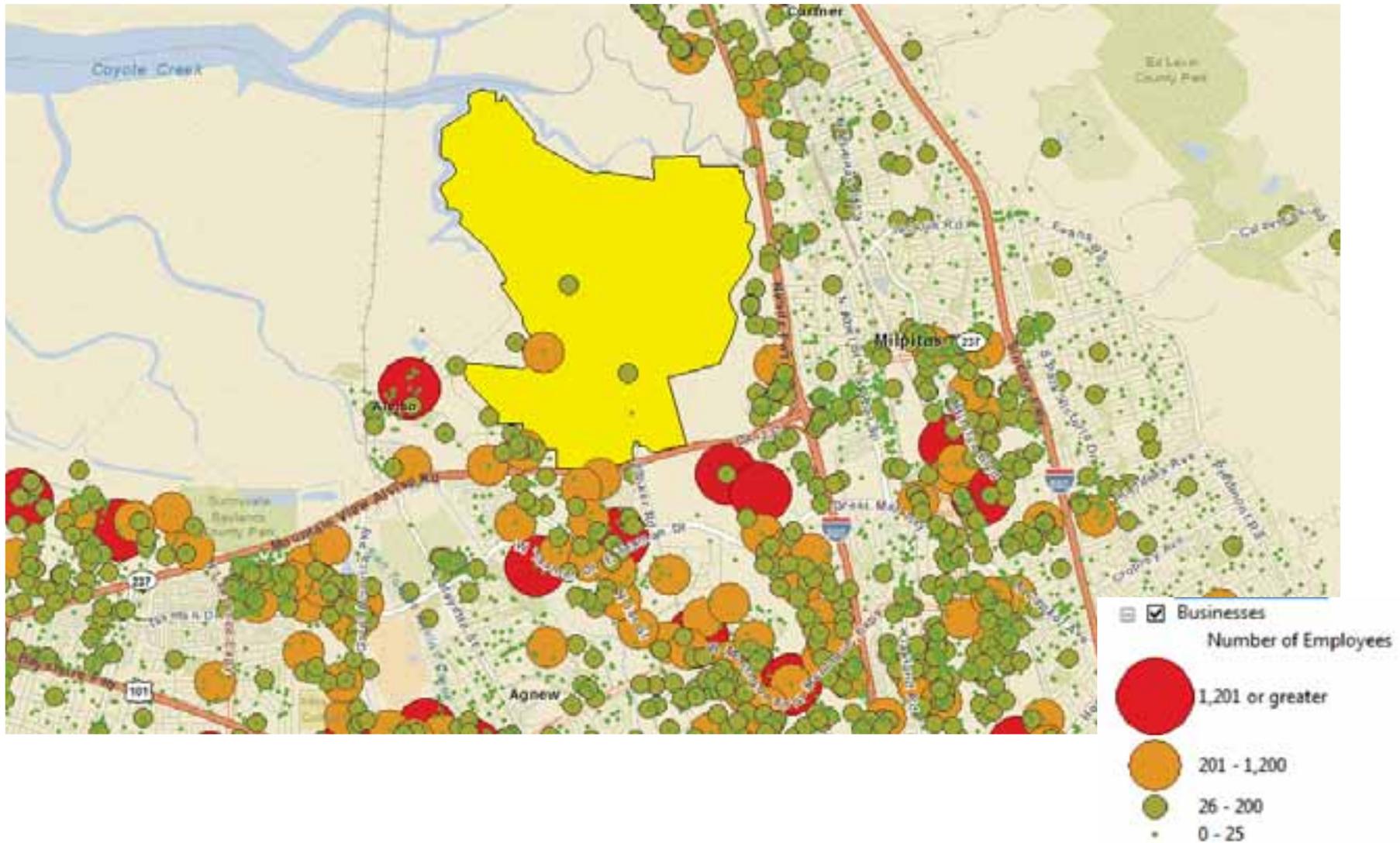
# Business Analyst Desktop

- Richer business data set
- Larger set of analytic tools
- Important for applying more sophisticated economic theory – e.g., “spatial extent of clustering” \*

\*Based on Drucker, J. 2012. *The Spatial Extent of Agglomeration Economies: Evidence from Three U.S. Manufacturing Industries*. US Census Bureau Center for Economic Studies Paper No. CES-WP- 12-01. Available at: <http://dx.doi.org/10.2139/ssrn.1995507> (accessed May 14, 2013).

# Business Analyst 2012

## All Businesses by Number of Employees



# Hot Spot Analysis of Bay Area R&D Employment

