

San Marcos Fire Coverage

A Spatial Analysis of Existing and Proposed Stations for the City of San Marcos Fire Department

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Abstract

The City of San Marcos, located in Hays County, is part of the Austin-San Marcos Metropolitan Statistical Area. The population of Hays County is expected to double by the year 2020 due to the growth of Texas State University and the increased suburbanization of northern Hays County and the southward expansion of Austin.

Developing and maintaining effective emergency management programs must be taken into account when planning for city growth. Our assessment of fire protection services in San Marcos allowed for the identification of several suitable sites for new fire stations within the city limits. An important goal of a fire department is to keep the citizens of a city protected from an accidental fire. It is important to make sure every station has complete access to every area of the city in case of an emergency. Having a fire protection program that focuses on public education is essential to fire prevention and control.

Scope

The extent of the study area for the project is the City of San Marcos and the extraterritorial jurisdiction which encompasses parts of Hays, Caldwell, Guadalupe, and Comal counties.

Data

All project data, excluding census data acquired from ESRI, were obtained from the GIS Services Manager of the City of San Marcos Department of Environment and Engineering.

Methodology

The centerlines were edited using topology tools and existing fire station locations were designated. The edited centerline file was used to create a Network Dataset. In Network Analyst, using this dataset, new 1.5 mile service areas were created for each existing fire station.

The service areas for River Ridge, the relocated central fire station, and the Airport fire stations were created using a 2.5 mile distance and 1.5 mile distance respectively. The locations of these stations were pre-designated by the City of San Marcos.

By examining the service areas mentioned above, we were able to determine potential sites for additional fire stations. Analysis factors included zoning, parcels, master plan, infrastructure, floodplains, railroads, slope, and thoroughfare plan. The thoroughfare plan was merged with the centerline file and edited to create a new Network Dataset for the proposed and future service areas. The 1.5 mile service areas for the proposed fire stations at River Rd. and Centerpoint were created using the same procedure in Network Analyst.

Looking further into the future, continued population growth and an expanding ETJ will require even better fire coverage. Potential future sites were determined using the same criteria as above and 1.5 mile service areas were created using Network Analyst.

The census population polygons were created using census data to symbolize the populations of each service area.

Conclusion

This project is an important step for the City of San Marcos. By utilizing this project, the city will be able to implement better emergency response services to both central and outlying areas. In the near future, the central fire station will be relocated to the River Ridge Business Park and a new fire station will be constructed at the municipal airport. After the completion of the two new stations described above, this project proposes the addition of a River Road station and a Staples Road station. As San Marcos continues to expand, future fire stations should be located on S. Hunter, Staples, and Ranch Road 12.

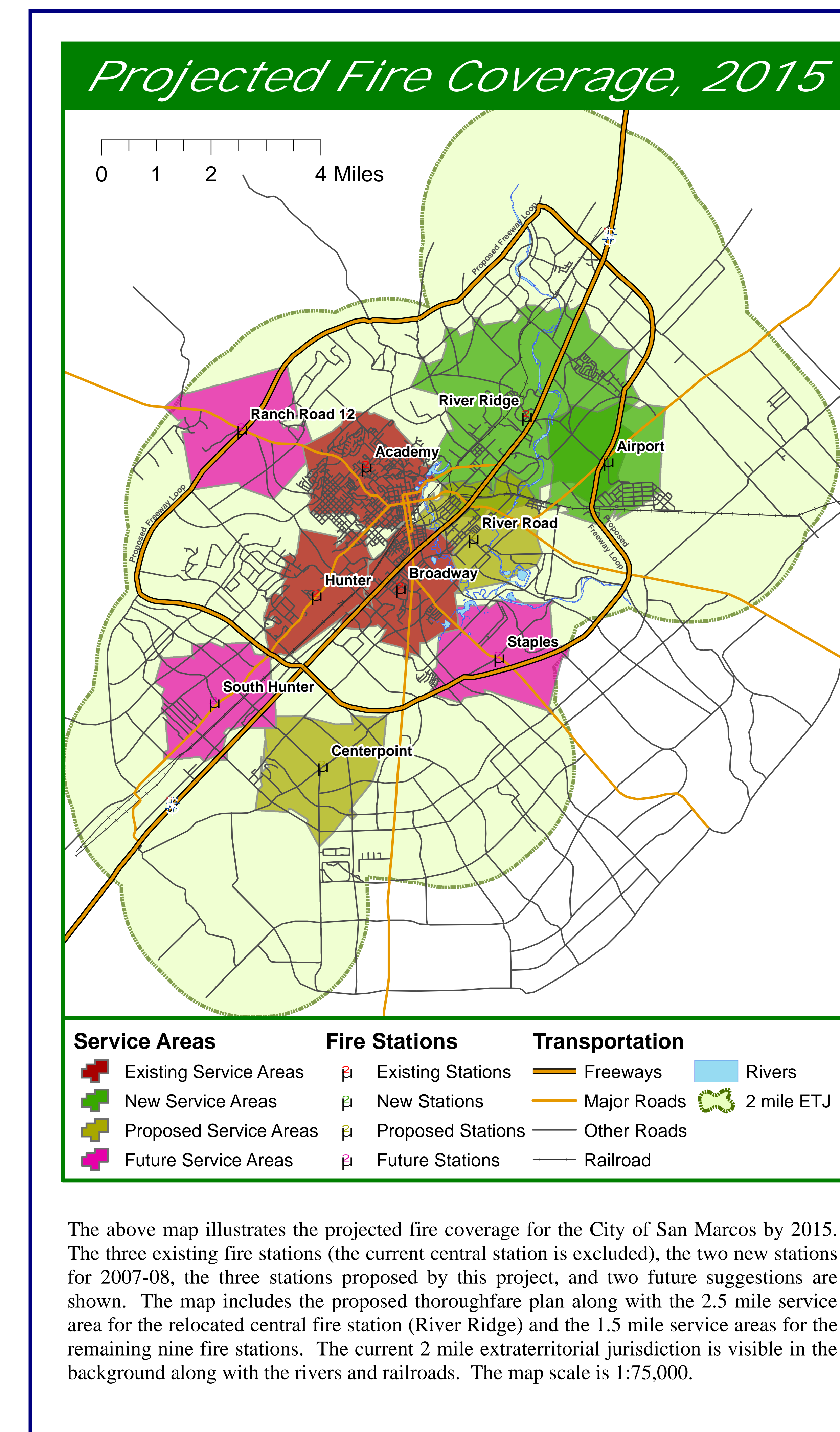
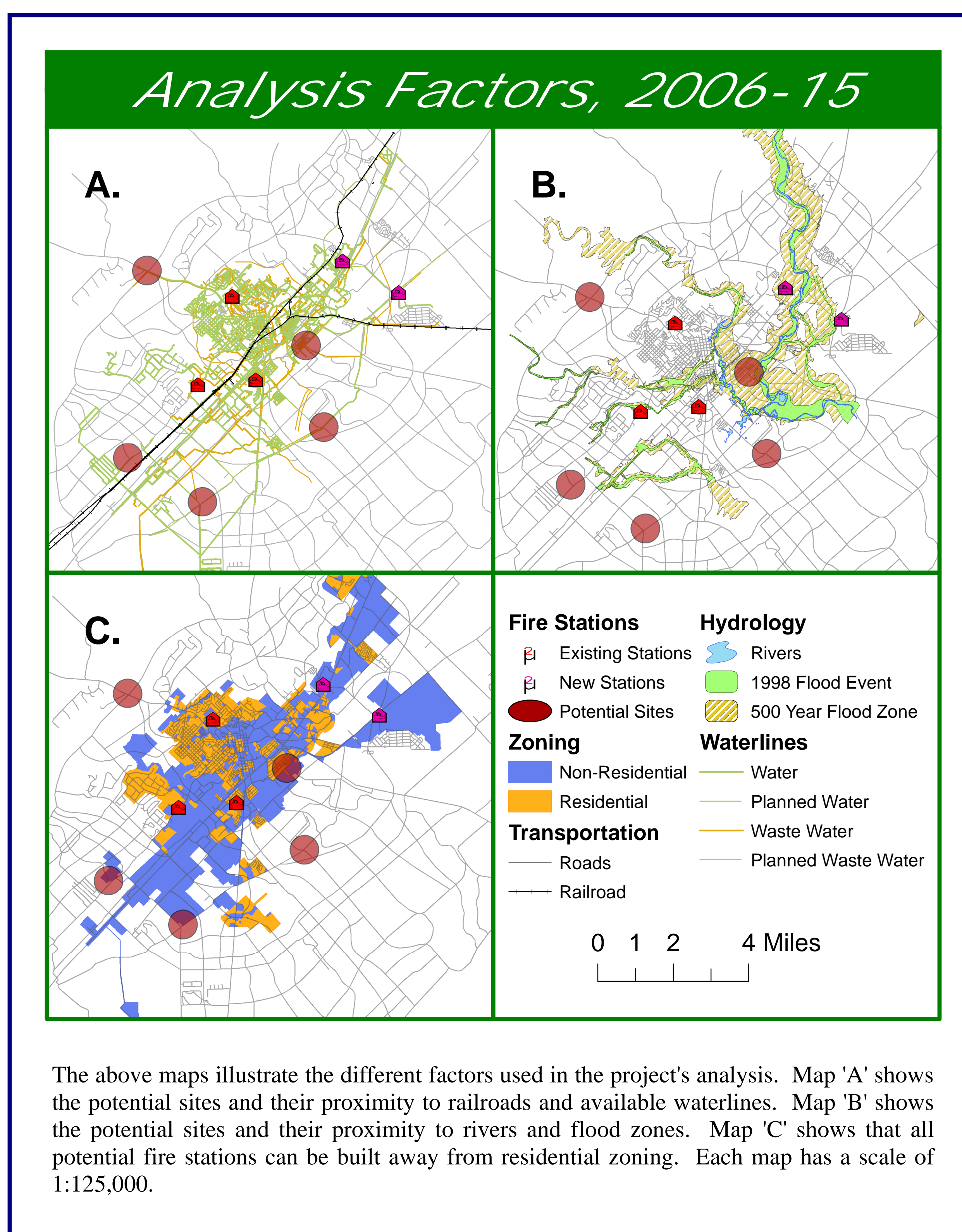
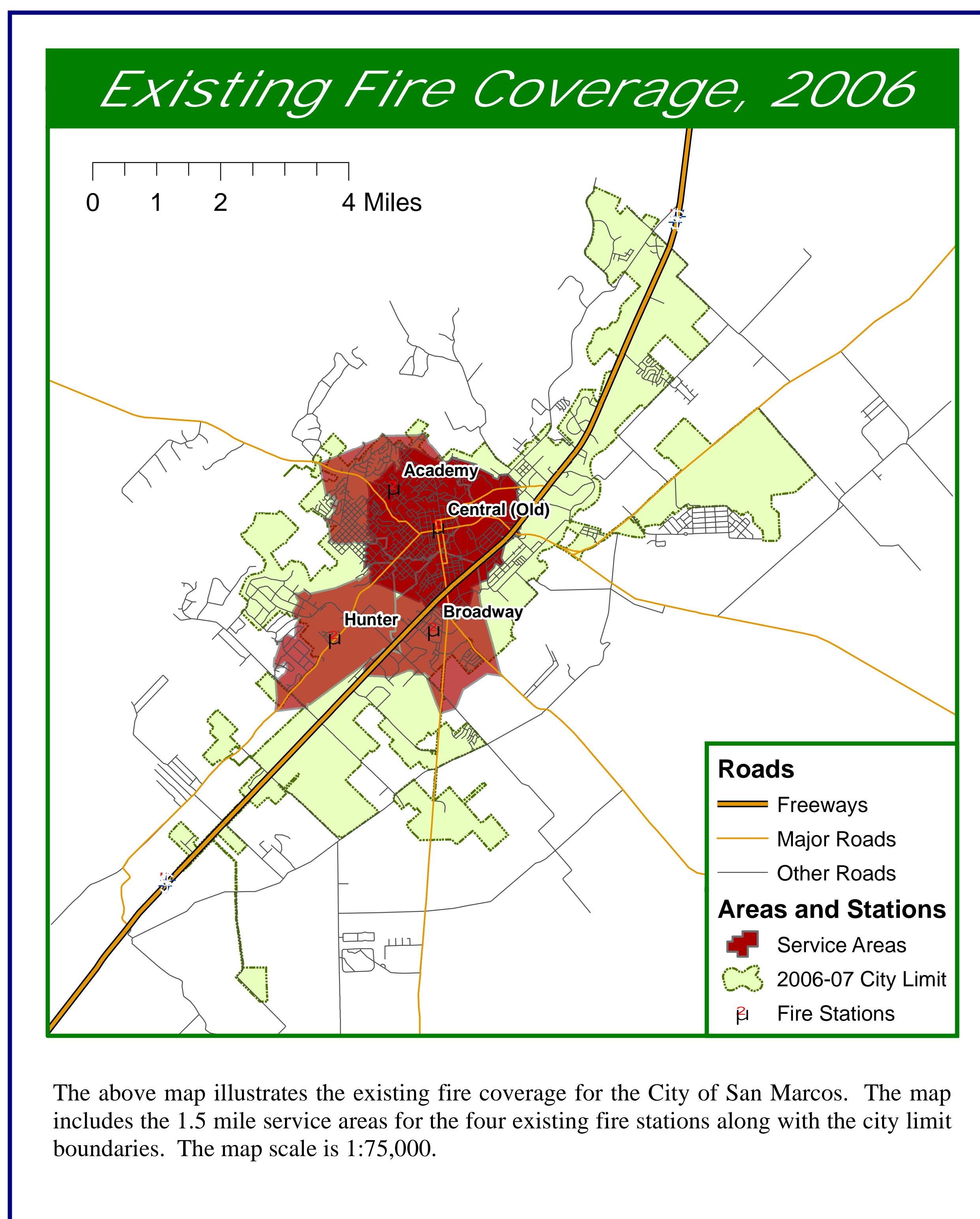
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Population by Service Area

Fire Station	Population
Central (Old)	14,669
Academy	13,504
Broadway	4,499
Hunter	1,808
Airport	226
River Ridge	8,844
Ranch Road 12	247
South Hunter	1,021
Staples	473
Centerpoint	40
River Road	5,026

Data obtained from the 2000 census.