

CHAPTER 1 • HUMAN ENVIRONMENT

A. HISTORY

Prior to the coming of European settlers and agricultural development of the area, approximately half of the Firebaugh area was under water for at least part of the year, during the cooler climatic intervals. A wide expanse of land on both sides of the present San Joaquin River and Fresno Slough was once a vast swamp, fed by winter rains and spring-summer runoff from the Sierra Nevada snowpack. In some places the tule growth alone was twenty miles in width.

The edges of the marshlands and the nearby grasslands were ideal hunting grounds for the Native Indian people who lived in the San Joaquin Valley approximately 8,000 years ago.

The marsh supported an extraordinary amount of wildlife including grizzly bears, herds of deer, antelope and tule elk, migratory ducks and geese, beavers, raccoons, jackrabbits, ground squirrels and quail. The waters teemed with fish, turtles and freshwater mussels.

The archaeological record indicates that there was a dry climatic interval between A.D. 1000 and 1500 followed by a more favorable climatic period in which the bow-and-arrow came into use and acorns became the staple of the diet. A large number of Late Prehistoric sites, identified with the Yokuts language family, indicate a population expansion after about A.D. 1500 in the southern and western portions of the San Joaquin Valley.

During the Gold Rush, Firebaugh's most famous local enterprise was a ferry boat which shuttled people across the San Joaquin River. The City of Firebaugh is named for Andrew Davidson Firebaugh, an area entrepreneur who built a toll road from Bell Station to Pacheco Pass. The toll road went along a route parallel to present-day California State Route 152.

In the 1880's, the area of Firebaugh was part of the massive holding of the Miller and Lux Company. The company had a large sheep operation covering what today is the area between Dos Palos and Mendota.



Andrew Firebaugh, founded a crossing of the San Joaquin River that would eventually become the City of Firebaugh

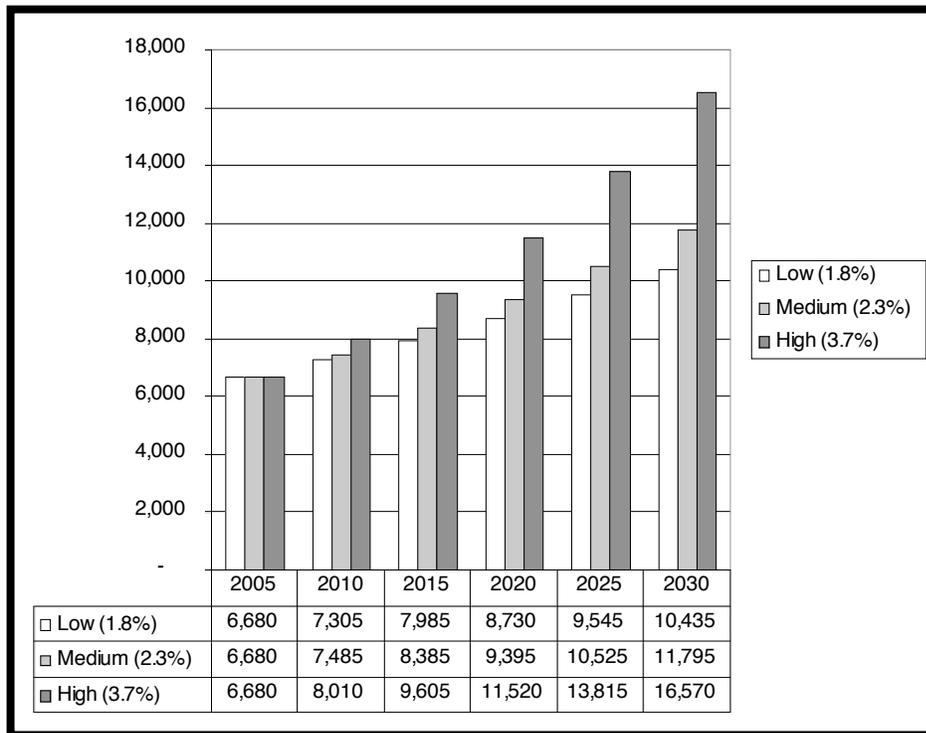
The City is located on Highway 33 in the northwestern part of Fresno County and is located approximately 29 miles west of the Fresno-Clovis Metropolitan Area and 18 miles east of Interstate 5, the main north-south highway in California and the Pacific coast states of California, Oregon and Washington.

Firebaugh was incorporated in 1914.

B. POPULATION

Firebaugh's population has shown a steady increase during the last 30 years. The population in 2006 stood at 6,741 compared to 5,743 persons in 2000, 4,429 persons in 1990, and 3,720 in 1980. Population growth is one of the central factors for establishing policies and determining new areas for development. For purposes of preparing the General Plan, population projections were developed representing low, medium and high estimates. In eight years (2015) the estimates forecast a low population of 7,985 and a high population of 9,605 persons. By the year 2030, the estimates forecast a low population estimate of 10,435 and a high population of 16,570 persons.

Chart 1-1
Population Estimates, 2006 - 2030



Source: U.S. Census Bureau, California Department of Finance, Collins & Schoettler, 2006.

C. SOCIOECONOMIC CONDITIONS

Income

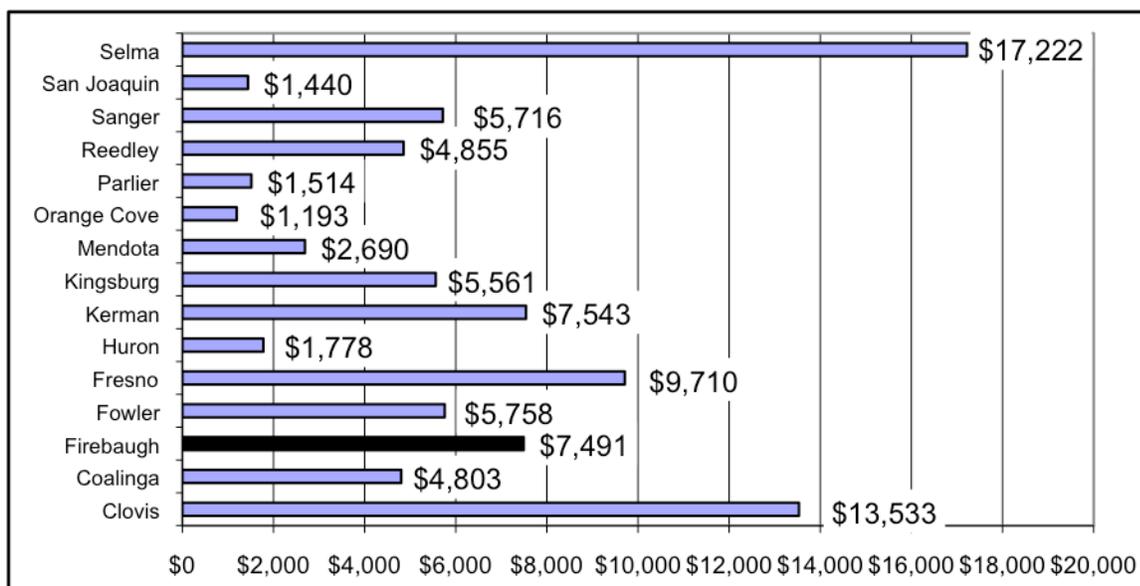
The median household income in Firebaugh in 2000 was \$31,533. For comparative purposes, Fresno County’s median household income was \$34,725 and the State of California’s was \$47,493.

Retail Sales

Taxable sales are an indicator of a city’s economic vitality. A common measure is the *per capita* taxable sales. This is the amount of taxable sales generated by a city divided by the city’s population. A city with a high per capita taxable sales figure generally reflects a community with numerous retail and/or durable goods commercial establishments or citizens with higher

purchasing power. Chart 1-2 shows per capita taxable sales for Firebaugh and other cities in Fresno County. The table also shows that Firebaugh’s per capita taxable sales figure ranks as the fifth highest out of Fresno County’s fifteen cities.

Chart 1-2
Per Capita Taxable Sales, 2000
Fresno County Cities



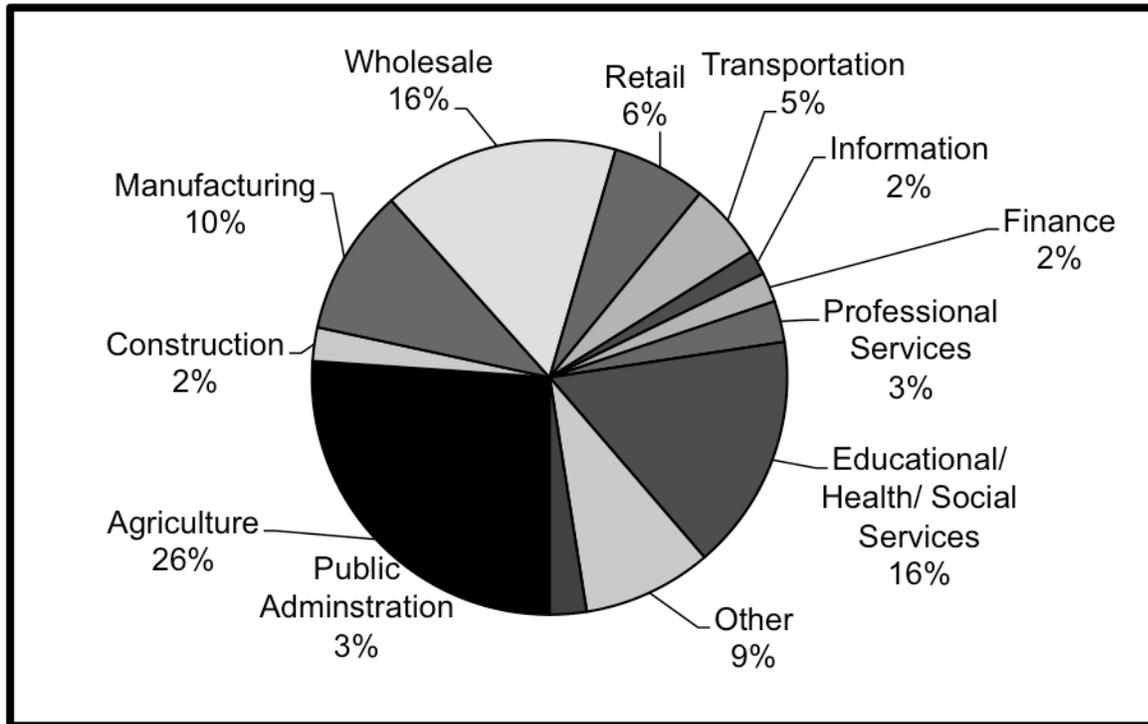
Source: California State Board of Equalization, 2000

Employment

The majority of employment within the area is related to agriculture, involving either farm labor or employment in industries processing agricultural products. Much of this type of work is seasonal. The city’s work force also has a relatively large number of employees working in education, trade, and manufacturing.

As of 2007, major employers in Firebaugh include Toma-Tek, Red Rooster, Firebaugh-Las Deltas School District, City of Firebaugh, Westside Ford, West Hills College and Sablan Medical Clinic.

Chart 1-3
Employment, 2000



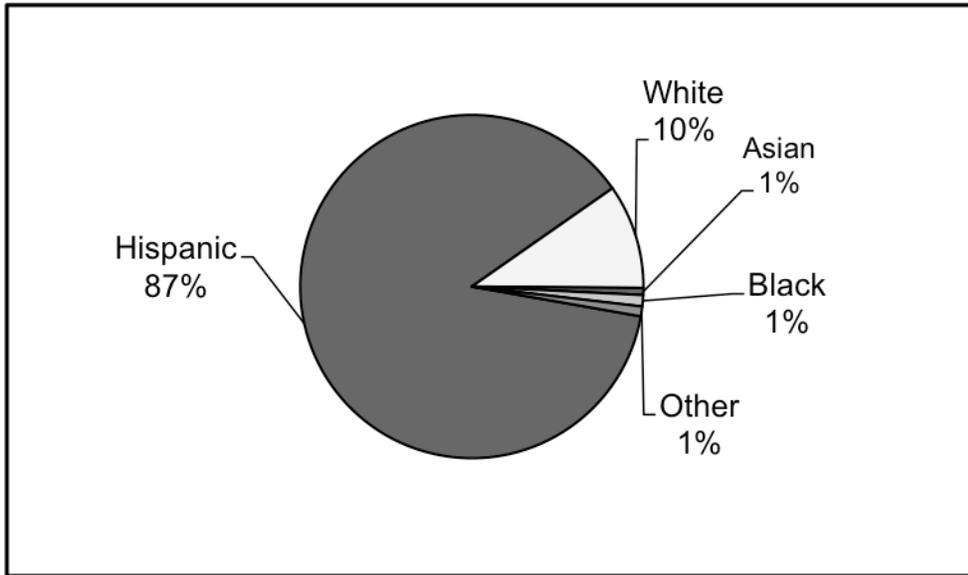
Source: U.S. Census Bureau, 2000

Ethnicity

Firebaugh's population is dominated by persons of Hispanic descent. Chart 1-4 shows the ethnic breakdown of the community's population.

The percentage of Firebaugh's Hispanic population has grown from about 81 percent in 1990 to nearly 88 percent in 2000. Correspondingly, the white population has dropped from about 17 percent in 1990 to about 10 percent in 2000.

Chart 1-4
Ethnicity



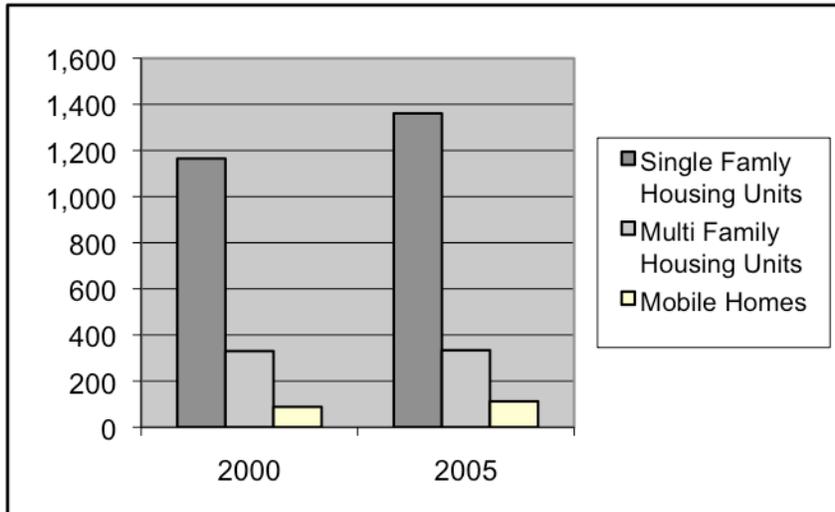
Source: U.S. Census Bureau, 2000

D. HOUSING

Type

The number of housing units in Firebaugh has increased by 224 units from 2000 to 2005. The ratio of single family dwellings has remained fairly consistent. In 2000, single family homes accounted for about 74 percent and multiple family dwellings about 21 percent of the total housing stock. In 2005, multiple family dwellings had decreased to about 18.5 percent of the total housing stock while single family units increased from 74 to 75 percent and mobile home units increased from 5 to 6 percent.

Chart 1-5
Dwelling Units by Type

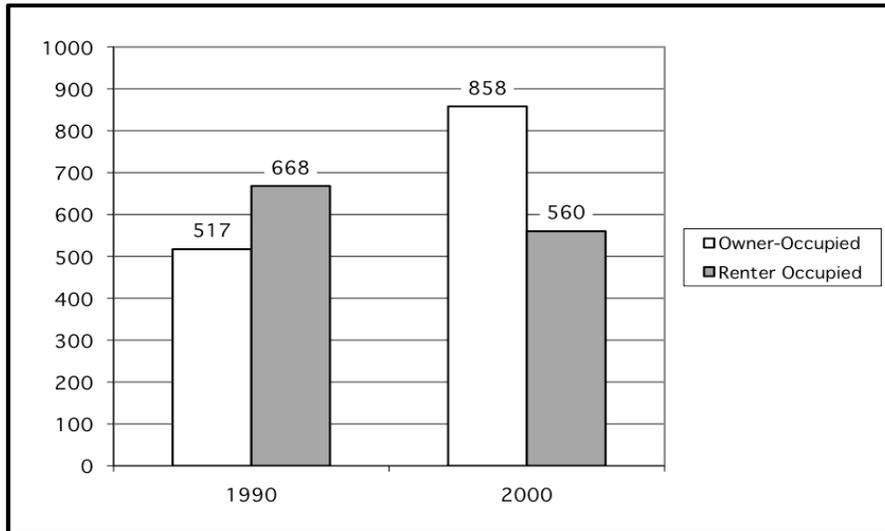


Source: California State Department of Finance, 2000-2006

Tenure

Tenure refers to whether a dwelling is occupied by its owner or is rented out to another party. Knowledge of housing tenure is important for planning purposes so that a community can appropriately plan for adequate areas for both owner and renter-occupied housing. In Firebaugh, the percentage of owner-occupied dwellings increased dramatically from 1990-2000, by 16 percent. This increase is reflected in the number of new subdivisions that have been developed in the community.

Chart 1-6
Housing Tenure



Source: U.S. Census, 1990 and 2000.

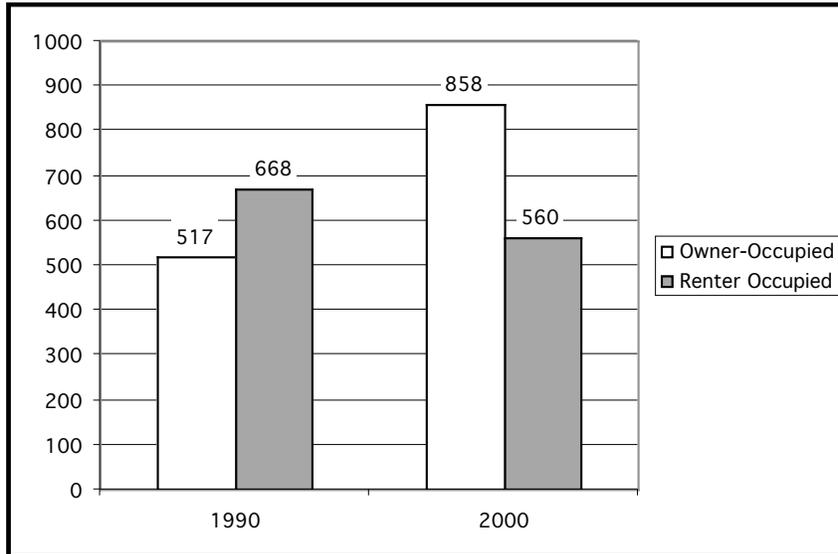
Vacancy

The 2000 Census (the most recent year for which data are available) showed that Firebaugh had a residential vacancy rate of 2.6 percent compared to 10.5 percent in 1990. The State of California has established target vacancy rates of two percent for owner-occupied households and five percent for renter-occupied households. Table 1-1 shows the vacancy rates by tenure for Firebaugh, Fresno County and the State of California.

Table 1-1
Vacancy Rates, 2000

Area	Owner-Occupied	Renter-Occupied
Firebaugh	0.80%	4.30%
Fresno County	1.60%	5.50%
State of California	1.40%	3.70%

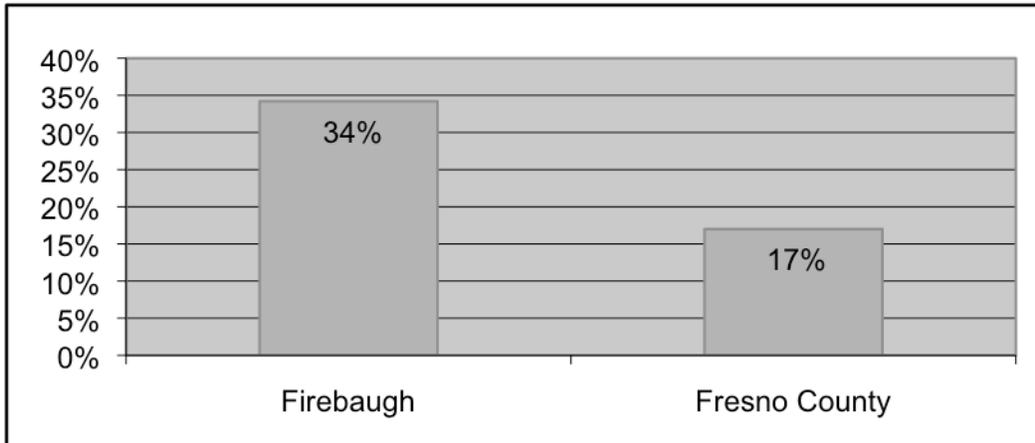
Chart 1-7
Occupancy Rates, 1990-2000



Overcrowding

An overcrowded unit is defined by the State of California as a unit with more than one person per room, excluding closets, bathrooms, hallways, etc. The 2000 Census shows that about 34 percent of Firebaugh's dwelling units are overcrowded. By comparison, about 17 percent of Fresno County's dwellings were overcrowded in 2000. Firebaugh's overcrowding ranks among the County's highest. Table 1-7 compares Firebaugh with Fresno County.

Chart 1-8
Percent of Dwellings Overcrowded, 2000



Source: U.S. Census Bureau, 2000

Housing Starts

Table 1-2 shows the number of housing units constructed from 1995 to 2005. Firebaugh has averaged about 52 residential units per year (41 single family units, 8 multi-family units and 3 mobile homes). 2006 was a landmark year in development in Firebaugh. Three residential projects were approved proposing nearly 900 single family residential lots.

Table 1-2
Housing Starts, 1995-2005

Year	Single Family	Multi-Family	Mobile Homes
1995	30	0	0
1996	32	0	0
1997	20	0	0
1998	17	0	0
1999	28	0	0
2000	48	0	5
2001	48	75	0
2002	37	0	0
2003	46	4	0
2004	72	0	26
2005	39	0	0
Total	417	79	31

Source: City of Firebaugh, 2006, California Department of Finance, 2006.

E. PUBLIC SERVICES

Fire Protection

Fire protection within the City's Sphere of Influence is provided by the Firebaugh Volunteer Fire Department, the Fresno County Fire Protection District (Fresno County unincorporated area), and the Madera County Fire Department (Madera County unincorporated area).

The Firebaugh Fire Department station is centrally located at 1575 11th Street (as part of the City Hall complex in downtown Firebaugh). The Department is staffed by 25-30 volunteer personnel and a part-time professional chief.

The station is equipped with three engines, one reserve engine, a mini-pumper, and a light rescue vehicle that carries full emergency equipment and supplies. It also serves as command vehicle for fire calls. One fire engine carries 1,000 gallons of water, two engines each carry 500 gallons, and the reserve engine carries 500 gallons. Two of the trucks can pump 1,000 gallons per minute (gpm), the third can pump 1,250 gpm and the reserve vehicle can pump 1,000 gpm. The mini-pumper also carries water and can pump 250 gpm. The city has also recently

purchased a new Type I engine which will be delivered in the fall 2007.

Ten of the fire department's volunteer personnel are Certified Emergency Medical Technicians (EMTs) and one is a Certified Paramedic. All other staff receive "first responder" and AED (Automated External Defibrillator) certification training by an in-house staff member who is a certified AED trainer. On an annual basis, members receive between 100-150 hours of training.

The average response time for emergency calls in the City limits is four to five minutes. The Department also provides "Initial Instant" response to a sixteen-square mile area in Madera County, adjacent to the City. The Department also maintains a mutual aid agreement with Fresno County Fire Protection District dating back to the 1950's.

Mutual aid, when needed, is provided by the California Department of Forestry (CDF), the United States Forestry Service (USFS), Fresno County, Madera County and nearby cities. The nearest stations are located in Mendota, 8 miles to the southeast, Tranquility, 23 miles to the southeast and Chowchilla, 40 miles to the northeast.

Whereas mutual aid agreements are all reciprocal, the City of Firebaugh has only requested aid from other jurisdictions five times in the past twenty-five years. Conversely, in 2006 alone, Fresno County and Madera County requested assistance from the City of Firebaugh fifty-three times.

All developed areas of the City are connected to the city's water system. Water pressure averages 52 pounds per square inch (psi). According to the city's Fire Chief, optimal pressure for fire suppression activities should be at least 50 psi, with a minimum of 28-30 psi for aggressive fire ground operations. The department has expressed concern about the minimum water pressure availability for fire flow from the distribution system in the Del Rio area. According to the Fire Chief, the Department prefers a flow of 1,000-1,200 g.p.m. for fire suppression, but recent flow testing in the Del Rio area has revealed an average flow rate of 850-875 g.p.m.

The Insurance Service Office (ISO) rating for Firebaugh is 9. It has not changed for the last twenty-five years. For the rural areas around Firebaugh, the ISO is 5.

The majority of the calls within the planning area come from the residential portions of the city. Outside the city, the San Joaquin Power Company (a co-generation plant located seven miles east of the City) in Madera County generates a higher than average number of calls.

In addition to fire protection, the fire department's services include medical first aid, hazardous materials response, nuisance abatement and public education.

Table 1-3
Fire Department Calls for Service, 2005

Call Type	No. of calls
Emergency Medical Aid	439
Fires	67
Hazardous Conditions	7
Public Service	21

Source: Firebaugh Fire Department, 2005.

Police Protection

Law enforcement within the City limits is provided by the Firebaugh Police Department, located at 1575 11th Street in City Hall.

As of March 2007, the police department employed nine sworn officers, four Level 1 reserve officers (full power when on assignment), four Dispatchers and one Community Service Officer. The Department also has a K-9 program which includes one sworn officer who serves as a School Resource Officer. The current ratio of sworn officers per 1,000 persons is 2.

The Department has eight police vehicles, one of which is a 4x4 Trail Blazer. The police department provides 24-hour general law enforcement services to the community as well as a range of other services, including the Police Activities League (PAL).

Law enforcement in the unincorporated areas is the responsibility of the Fresno County Sheriff's Department and the Madera County Sheriff's Department (east of the San Joaquin River). The respective Sheriff's Departments also provide Coroner services. The City has a general mutual aid agreement with both law enforcement agencies as well as the California Highway Patrol.

The California Highway Patrol patrols Highway 33 and other County roads in the Firebaugh vicinity.

Medical Facilities

The nearest hospitals to Firebaugh are in Fresno (about 35 miles to the east) and Madera, approximately 26 miles to the northeast. The Firebaugh Community Health Center, operated by Fresno County Public Health Department, is located on the southeast corner of P and 11th Streets. The Health Center provides primary health care services to the entire community, including well child exams, immunizations, physical exams for all ages, family planning, minor illness care and the monitoring of people with chronic illness. The center is generally not equipped to handle emergency health care. The Health Center is staffed by a doctor and nurses and is open five days a week, 8 a.m. to 5 p.m.

The City is also served by the Sablan Medical Center, a private medical facility staffed by an internist and a family physician.

Ambulance service, when required, is provided by American Ambulance, out of Mendota, approximately 8 miles southeast of Firebaugh.

There are no nursing homes in the City of Firebaugh.

Solid Waste

Firebaugh contracts with Firebaugh Disposal Service for solid waste collection. In addition, this private contractor also operates a curbside recycling program.

Firebaugh Disposal Service transports solid waste to the American Avenue landfill, located near Kerman, approximately 29 miles to the southeast. The American Avenue landfill is a 440-acre facility and has a 30-year "life expectancy" based on current rates of disposal.

In the unincorporated portions of the community, solid waste disposal is handled by the individual property owner. About 80 percent of these property owners contract with Firebaugh Disposal Service.

Schools

Firebaugh-Las Deltas School District operates five schools within the planning area:

- Bailey Primary School (K-3)
- Mills Intermediate School (4-5)
- Firebaugh Middle School (6-8)
- Firebaugh High School (9-12)
- El Puente Continuation High School (9-12)

Over the last three years, the District has experienced a declining enrollment by about 10%, attributed to the closing of a major employer in the region.

Bailey Primary School (K-3) is located on the east side of the community on the corner of Saipan and Q Streets. The 2006/07 enrollment was 651 students. The average class size is 20 students as the state mandates a ratio for K-2 elementary classes of 20 students to one teacher. The school is currently utilizing 32 of the 45 available classrooms on campus. The school has a playground area with playground equipment, softball fields and tennis courts.

Mills Intermediate School (4-5) is located in the central part of the community, on the corner of Avenue 7-1/2 and P Streets. The 2006/07 enrollment was 341 students. The school is currently utilizing 12 of the 20 available classrooms on campus, with an average class size of 27 students.

Firebaugh Middle School (6-8) is located across the street from Bailey Primary School. Enrollment at the middle school in 2006/07 was 509 students. The school has an average class size of 27 students. The school has two softball fields, a track and soccer/football field and several half-court basketball courts.

Firebaugh High School (9-12) is located in the southwest part of the community. Enrollment at the high school in 2006/07 was 769 students. The campus currently has an average class size of 27 students. While the High School

only has one to two additional classrooms available, there is a wider variety of classes provided at this level of education which require more classrooms, regardless of the size of their enrollment. The High School campus has a swimming pool, a football field, baseball and softball fields, tennis courts, hardball courts and basketball courts.

El Puente Continuation High School (9-12) is located at the District's Alternative Education campus on the corner of Saipan and Q Streets. Enrollment at the continuation school in 2006/07 was 16 students. The Adult School also meets at this location and has an enrollment of approximately 100 students.

Students within the District have a choice of attending one of two community colleges in the area. A branch of the West Hills Community College is located in downtown Firebaugh on O Street and would be the likely choice for most Firebaugh residents. The main campus is located in the City of Coalinga, 55 miles south of Firebaugh. Fresno City College in Fresno is approximately 47 miles east of Firebaugh.

Two four-year colleges are located in Fresno. California State University at Fresno provides students with a four-year degree, as well as many graduate programs. Fresno Pacific University is a private, four-year liberal arts university and provides both four-year degrees and graduate programs, also.

Table 1-4
*Enrollment for Firebaugh Schools in the
Firebaugh-Las Deltas School District*

SCHOOL	GRADES	NUMBER OF STUDENTS
Bailey Primary School	K - 3rd	651
Mills Intermediate School	4th - 5th	341
Firebaugh Middle School	6th - 8th	509
Firebaugh High School	9th - 12th	769
El Puente Continuation High School	9th - 12th	16
Adult School	18 yrs. & older	100
	Total:	2386

Source: Firebaugh-Las Deltas School District, 2006.

Fees

The School District currently charges impact fees of \$4.38 per square foot on residential construction. This is the maximum amount permitted by State Law, unless the District finds that new residential construction has an adverse impact on the school system. In this situation, the District may levee special mitigation fees.

Public Parks and Facilities

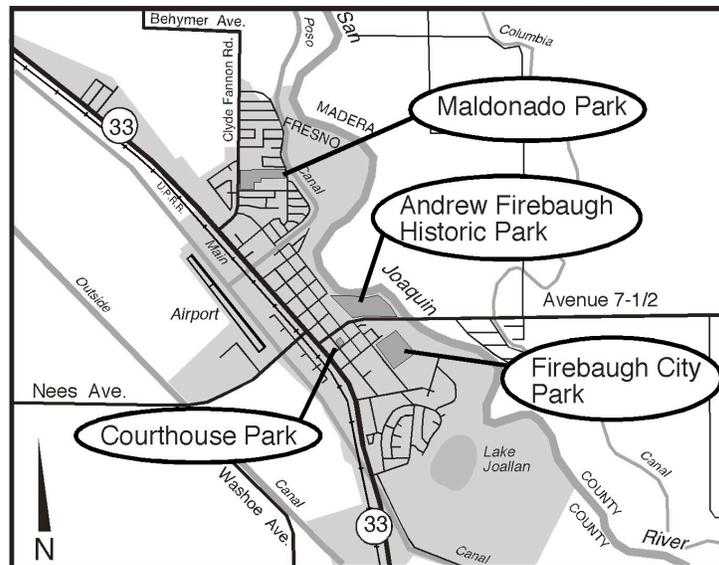
There are four existing parks in Firebaugh. Firebaugh City Park is a 13.6-acre facility located at the northeast corner of 15th and Q Streets. Courthouse Park, located at 13th & O Streets houses the courthouse and the library. Maldonado Park is a 6.7-acre park located on the southeast corner of Clyde Fannon Drive and Thomas Conboy Avenue. Andrew Firebaugh Park is 24-acre facility located on the north side of 13th Street between the Q Street alignment and the San Joaquin River.

Firebaugh City Park has a playground area, horse shoe pits, a basketball court, barbecues, picnic tables, portable bleachers, restrooms, drinking fountains, a permanent stage and lighted and covered group picnic areas. The Chamber of Commerce and the Boy Scouts Organization office occupy small buildings at the southwest corner of the park. Dunkle Field is also located on five acres of Firebaugh City Park. Dunkle Field is a lighted baseball/softball facility with bleachers and is used by Little League, Babe Ruth and community softball teams.

Maldonado Park has a lighted baseball/softball field, a basketball court and the Firebaugh Senior Citizen Building located on the Clyde Fannon frontage of the site.

Andrew Firebaugh Park is a historical park and the site of the former Firebaugh Ferry and the Firebaugh drawbridge—two significant factors in Firebaugh's history. The only remains related to these historical sites are cement posts on the bank of the river and one bridge support located in the river. This park site also houses the

Map 1-1
Existing Parks



10,000-square foot Firebaugh Community Center, where meetings are held for the City Council and Planning Commission. The surrounding park facilities also host bull riding, rodeos, box car derby, horse riding, destruction derby, sober graduation events, and community clean up events.

Although the City does not formally have a joint-use agreement with the Firebaugh-Las Deltas School District, there is a cooperative relationship which allows use of school facilities upon request. During the summer, the swimming pool at Firebaugh High School is used on a daily basis for community activities and swim lessons.

In addition to these parks, the City owns substantial undeveloped land along the San Joaquin River which is designated for open space. Though it is not developed as parkland, it is available for passive recreational purposes, such as walking and bird-watching.

Other public facilities include the Fresno County public library, located at O & 13th Streets adjacent to the Fresno County courthouse. The Senior Citizens Center is located on the corner of Clyde Fannon Drive and Thomas Conboy Avenue.

F. LAND USE

Land use acreage for the Firebaugh city limits and the Sphere of Influence is detailed in Table 1-5 and is displayed in Map 1-2.

Residential uses generally are bordered by the city's wastewater treatment plant to the south, the San Joaquin River to the east and the Highway 33 corridor to the west. Industrial uses are located primarily along the west side of Highway 33, while commercial uses are centered in the downtown area and the Highway 33 corridor.

Most recently, new development has occurred in the northern and southern parts of Firebaugh. 2006 was a landmark year in development in Firebaugh. Three residential projects were approved with nearly 900 single family residential lots.

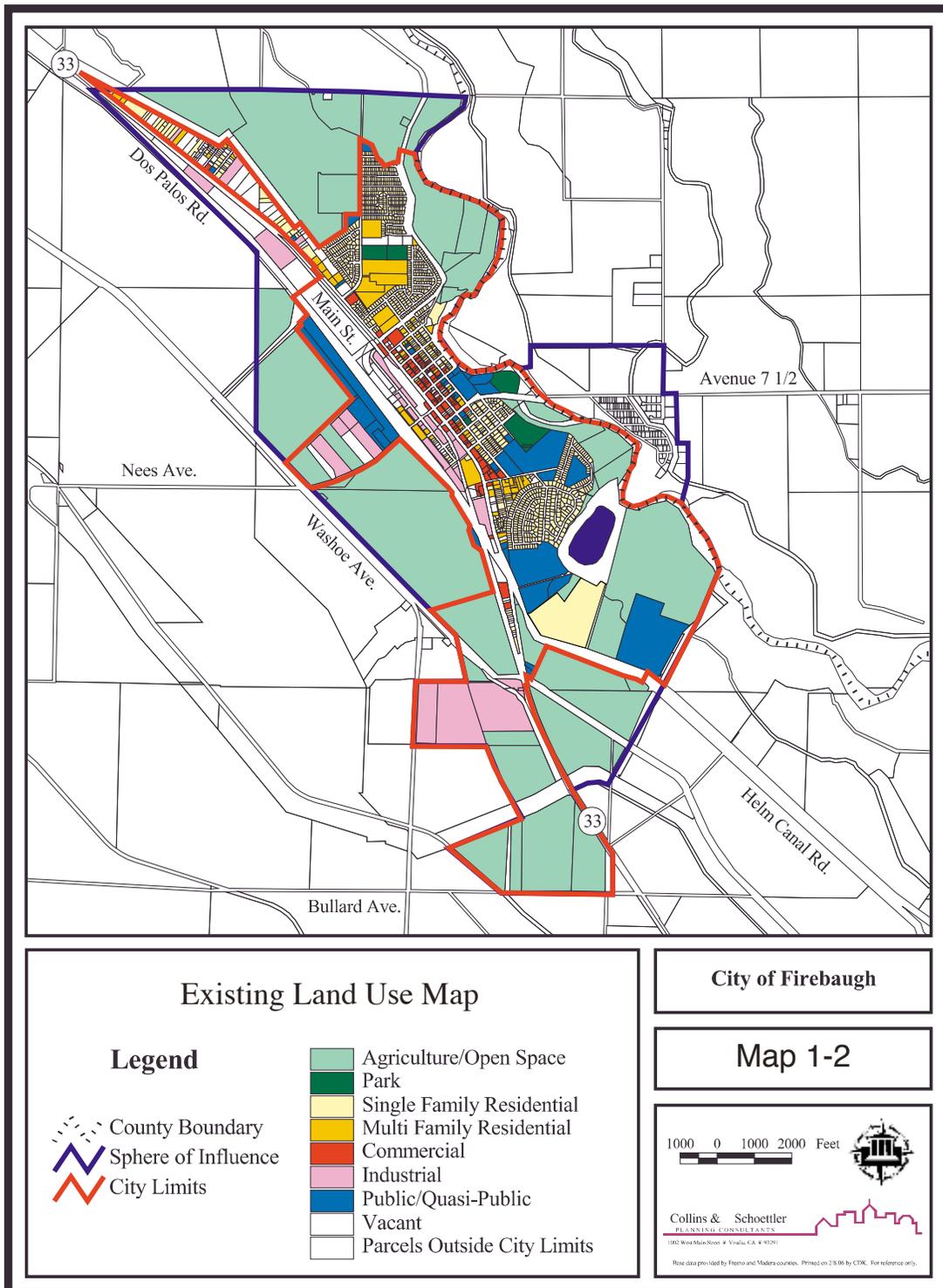


Table 1-5
*Existing Land Use Acreage
in City Limits and Planning Area*

Land Use	Acreage
Ag / Open Space	1,611
Single Family Residential	224
Multi-Family Residential	73
Commercial	36
Industrial	182
Public / Quasi-Public	222
Parks	33
Vacant	247
<i>Total</i>	2628 acres

Source: Collins & Schoettler, 2007.

Williamson Act Lands

The Williamson Act, passed by the state legislature in the early 1970's, was designed to prevent the premature urbanization of agricultural land. The Act authorizes owners of agricultural land to enter into a contract with the County, which results in a reduced property tax rate in exchange for the land being maintained in agriculture. Upon approval, the contract runs for a period of ten years and is renewed automatically unless a Notice of Non-Renewal is given.

The contract can generally be terminated in one of two ways. The owner of the property can file a Notice of Non-Renewal, (which means that the owner will not renew the contract at the end of the ten year period) or the owner can request cancellation of the contract and removal of the land immediately from the Williamson Act. However, if the removal is approved, the owner must pay taxes they were exempted from during the contract.

The location of Williamson Act Lands is important in land planning. Typically, new development is directed away from these lands, if practical. Currently in Firebaugh Sphere of Influence (SOI), there are approximately 805 acres of land in agricultural preserves entered into Williamson Act contracts. The SOI is

proposed to be expanded by about 57 acres, all of which is within agricultural preserves.

G. INFRASTRUCTURE

SANITARY SEWER

The City of Firebaugh provides wastewater collection and treatment for its residents and businesses.

Collection System

The sewer collection system consists of mains ranging in diameter from 6 to 15 inches along with three lift stations and a wastewater treatment plant that provides secondary treatment.

A 15-inch force main runs south from the intersection of 7th Street and Canal Road to the City's Wastewater Treatment Plant.

The treatment plant was originally designed to treat a maximum flow of 1.5 million gallons per day (gpd). Treated wastewater is percolated and evaporated in a 100-acre ponding and disposal area. However, according to the City's engineering consultant, the current average flow of 1.0 mgd seems to be impacting the system, which may require an expansion of the plant sooner than anticipated.

Wastewater Treatment

The current average flow rate for the City is approximately 100 gallons per person per day. Currently, the City does not have a sewer master plan; however it has a contract with an engineering firm (Kennedy-Jenks) to re-design the main lift station and the head works for the treatment plant, which should increase the capacity. New development is charged a fee to connect to the treatment plant, as well as monthly service fees.

WATER SYSTEM

Supply

Firebaugh receives its potable water supply from the underlying groundwater basin. The City's current water system includes seven operating wells, two filter tanks,

three storage tanks (with a total 3.6 million gallon capacity) and a network of distribution lines consisting of 4-inch, 6-inch, 8-inch, 10-inch, 12-inch and 14-inch diameter pipes. The City's primary water mains lie under 11th Street and Vasquez Street. Water from the City's wells is of good quality with the exception that iron and manganese have exceeded secondary standards set by the State Department of Health. When secondary standards are not met, the effects are not necessarily harmful to people, but may be harmful to the water system.

As of March 2007, the City had approximately 1,347 customers in its system, including 44 users in the Del Rio area. In 1991 the City adopted a new water conservation plan which requires all new residences to be metered. All commercial and industrial uses in the City are also metered. Recent average annual water usage in the City of Firebaugh is 793 million gallons. While daily water use averages 2.21 million gallons per day (mgd) or 1,526 gallons per minute (gpm), this number varies greatly between the 1.0 mgd in the winter months up to the peak demand of 4.5 mgd in the summer months.

The Water Treatment Plant has the capacity to treat 3,000 g.p.m. The treatment plant contains two storage tanks, with a capacity of 1.8 million gallons each. An additional water reservoir is located in the Las Deltas area that holds 576,000 gallons, bringing the city's total water storage capacity to 4.17 million gallons.

Distribution System

The City distribution system consists of a grid pattern of water lines ranging from 6 inches to 14 inches with 12-inch mains spanning the length of the City. Pressure for the system is provided by booster pumps at the water treatment plant, which are currently being re-designed to provide a combined capacity of 3,000 gpm at peak capacity. These improvements will nearly double the peak operating capacity of the treatment plant. A third main pump serves as the back-up for the electrical motors, and can be utilized during peak demand periods to increase the treatment capacity of the plant to 4,000 gpm.

The City does not have a water master plan for the new growth areas. However, new development is charged a fee to connect to the water system, as well as monthly user charges.

Demand

The average annual flow of 793 MG equates to an average demand of 1,526 gpm. According to the City's public works department, the maximum day flow is 4.45 mgd or 3.09 g.p.m. According to the city's Fire Department, the 4.17 MG storage system and booster pumps are adequate to meet the fire flow demand of 1,000-1,200 gpm. The Department, however, has concerns about the ability of the distribution system in the Del Rio area to provide the needed fire flow as it averaged 850-875 gpm. when recently tested.

According to the City's Public Works Department, the average water use per connection is 698 gallons per day. At an average household size of 4.01 persons (US Census, 2000), this figure translates into an average daily water use per person of approximately 175 gallons per day.

STORM DRAINAGE

The City's storm drainage system is composed of pipelines that direct about half of the runoff into detention basins while the other half flows by gravity into the San Joaquin River. Historically, the city's drainage was allowed to flow to the river; however the city has been making efforts to divert the runoff to detention basins since it developed its storm drainage master plan in 1992.

Collection System

The city collects storm water in a series of 12- to 36-inch storm drain pipelines and discharges into three drainage ponds, located at the corner of Clyde Fannon Drive and Sablan St., Clyde Fannon Drive and Diaz Street and one in the Del Rio area. A fourth ponding basin is currently planned north of Helm Canal Road in conjunction with a subdivision that has been approved for that area. The remainder of the city's storm water drains to the San Joaquin River. Impact fees are currently charged to new development.

H. CIRCULATION SYSTEM

Regional and Local Setting

Street and highway facilities within the Firebaugh area are shown in Map 1-3. The public transit system within Firebaugh includes the public transit services, and within the County it includes common bus carriers, AMTRAK (inter-regional rail service), and other local agency transit and paratransit services. In addition, the County-wide transportation system includes aviation facilities, air passenger facilities, freight rail service, bicycle facilities, and other services for non-motorized forms of transportation (pedestrian and equestrian trails).

Relationship to Other Technical and Planning Documents

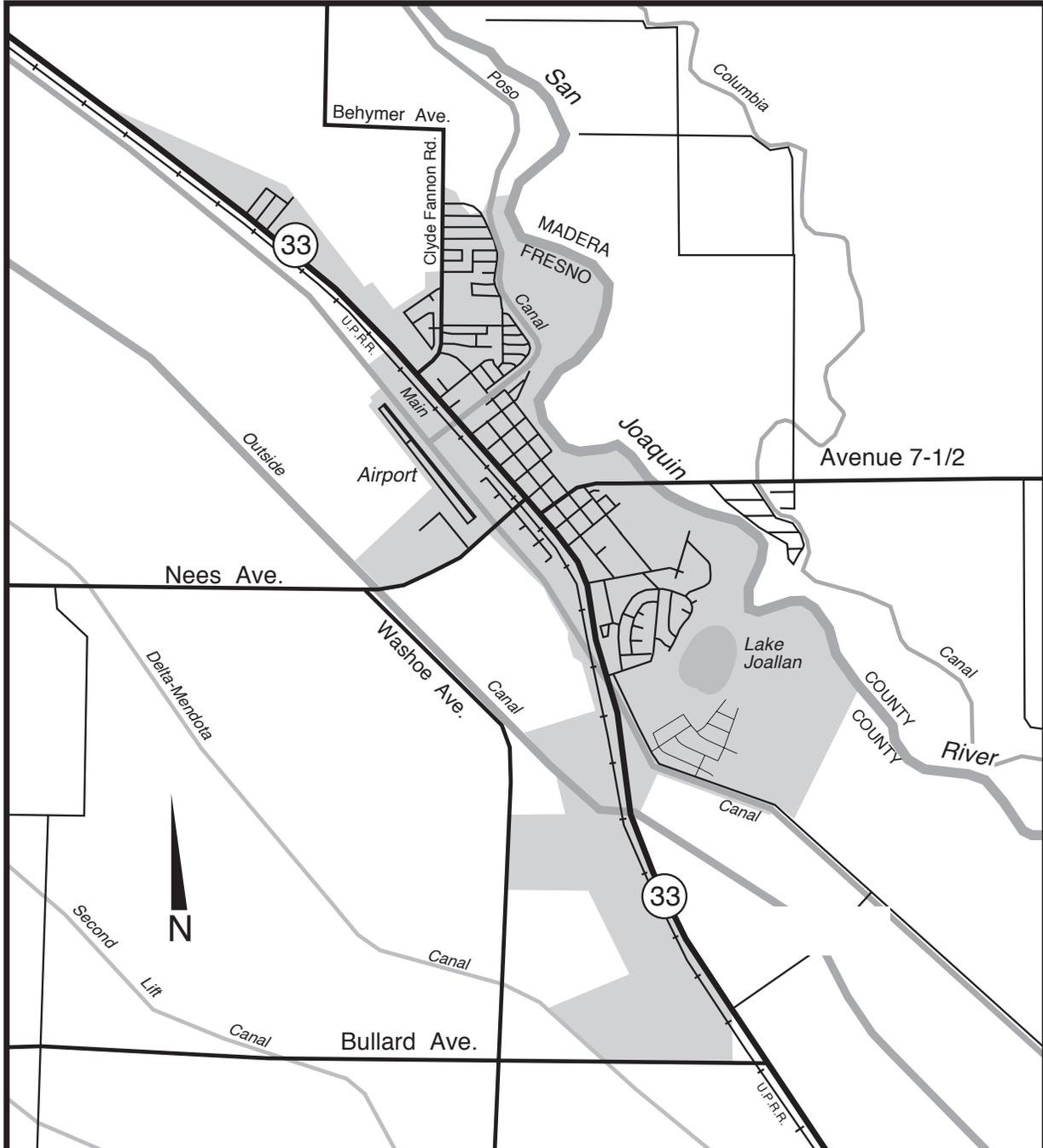
The City of Firebaugh is directly impacted by urban development and growth in the area surrounding the community. In addition to the General Plan, the City supports several transportation plans and programs that are necessary to manage current traffic demands in addition to planning for the community's future transportation needs.

Regional Transportation Planning

Fresno County Regional Transportation Plan

The Regional Transportation Plan (RTP) is a multi-modal, long-range planning document prepared by the Council of Fresno County Governments (COFCG), in coordination with federal, state, and other regional, subregional, and local agencies in Fresno County. The RTP includes programs and policies for congestion management, transit, bicycles and pedestrians, roadways, freight, and finances for Fresno County. The RTP is prepared every three years and reflects the current future horizon based on a 25-year projection of needs.

Map 1-3: Existing Street System



The RTP's primary use is as a regional long-range plan for federally funded transportation projects. It also serves as a comprehensive, coordinated transportation plan for all governmental jurisdictions within the region. Each agency responsible for transportation, such as local cities, the County, and Caltrans, has different transportation implementation responsibilities under the RTP. The RTP relies on the plans and policies governing circulation and transportation in each County to identify the region's future multi-modal transportation system. The RTP contains a listing of projects that are believed to be financially feasible within the planning time frame. Federally funded projects must be consistent with the RTP.

Copies of the RTP may be obtained from COFCG and can be downloaded from their WEB site at www.fresnocog.org.

3. Existing Transportation Conditions

This section describes the existing transportation system within the City's Sphere of Influence. A number of transportation systems are described including:

- ◆ Streets and highways
- ◆ Public transportation
- ◆ Passenger rail service
- ◆ Non-motorized systems
- ◆ Aviation
- ◆ Goods movement
- ◆ Transportation systems management
- ◆ Intelligent transportation systems

Street and Highway System

Referencing Map 1-3, the only major routes within Firebaugh are SR 33, which runs through the City, Avenue 7-1/2 and Nees Avenue, which provide east-west movement within the City and access from other areas of the County to SR 99.

Functional Roadway Classification System

Functional classification is the process by which streets and highways are grouped into classes, or systems, according to the type of service they are intended to provide. Fundamental to this process is the recognition that individual streets and highways do not serve travel independently in any major way. Rather, most travel involves movement through a network of roads.

Streets and highways are described and classified according to their primary function. This current hierarchal system of roadways consists of four basic classifications described in Table 1-6.

TABLE 1-6
Rural Functional Classification System-Definitions

Classification	Primary Function	Direct Land Access*	Speed Limit**	Parking***
<i>Fwy/Exprwy</i>	<i>Traffic Movement</i>	<i>Safety Controls</i>	<i>55</i>	<i>Prohibited</i>
<i>Major & Minor Arterial</i>	<i>Traffic Movement/ Land Access</i>	<i>Safety Controls</i>	<i>40 - 45</i>	<i>Permitted</i>
<i>Major & Minor Collector</i>	<i>Distribute Traffic Between Local Streets & Arterials</i>	<i>Safety Controls</i>	<i>30</i>	<i>Permitted</i>
<i>Local</i>	<i>Land Access</i>	<i>Safety Controls</i>	<i>25</i>	<i>Permitted</i>

* Access to arterials is generally limited or restricted if it provides access to a land subdivision or an industrial, commercial or multi-family use. Access is granted on a controlled basis to parcels fronting on expressways where there is not a frontage road or access to another road; ** All County roads have a 55 mph operating speed unless otherwise indicated; *** Parking is permitted on all County roads unless otherwise indicated.

Level of Service Analysis

The General Plan's Circulation Element has been developed in the recognition of the need to relieve existing congestion and to provide a circulation system that can accommodate future anticipated growth. Levels of Service (LOS) standards are used to assess the performance of a street or highway system and the capacity of a roadway. An important goal when planning the transportation system is to maintain acceptable levels of service along the federal and state highways and the local roadway network. To accomplish this, the California Department of Transportation (Caltrans), the County of Fresno, and other local agencies adopt minimum levels of service to determine future infrastructure needs.

According to Caltrans policy, Caltrans-maintained roadways (SR 33 in the Community of Firebaugh) must maintain a minimum LOS of "C". The County of Fresno currently has an adopted minimum LOS of "C" along its local roads. The process of evaluating roadways can be accomplished by applying this minimum LOS method to both segments and intersections.

For purposes of this existing conditions LOS analysis, the current County General Plan LOS standard has been applied (LOS "C") to identify deficient street and highway segments and intersections.

◆ Segment Analysis

Segment LOS is important in order to understand whether the capacity of the entire roadway can accommodate future traffic volumes. Table 1-7 provides a definition of segment LOS. The performance criteria used for evaluating volumes and capacities on the City street system for this Element were estimated using the Modified HCM-Based LOS Tables (Appendix A). The Tables consider the capacity of individual street and highway segments based on numerous roadway variables (design speed, signalized intersections per mile, number of lanes, saturation flow, etc.). These variables were identified and applied to reflect existing traffic LOS conditions in the City of Firebaugh.

Traffic volumes used to develop these LOS calculations were obtained through COFCG, the Madera County Transportation Commission (MCTC), and from various relevant studies conducted by the City of Firebaugh within the past couple of years. Map 1-4 and Table 1-9 document the existing Peak Hour Traffic for segments within the Community and the corresponding LOS, based on defaults provided in Appendix A.

TABLE 1-7
Segment Level of Service Definitions
(2000 Highway Capacity Manual)

<i>Level of Service</i>	<i>Definition</i>
A	<i>Represents free flow. Individual vehicles are virtually unaffected by the presence of others in the traffic stream.</i>
B	<i>Is in the range of stable flow, but the presence of other vehicles in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.</i>
C	<i>Is in the range of stable flow, but marks the beginning of the range of flow in which the operation of individual vehicles becomes significantly affected by interactions with other vehicles in the traffic stream.</i>
D	<i>Is a crowded segment of roadway with a large number of vehicles restricting mobility and a stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a poor level of comfort and convenience.</i>
E	<i>Represents operating conditions at or near the level capacity. All speeds are reduced to a low, but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.</i>
F	<i>Is used to define forced or breakdown flow (stop-and-go gridlock). This condition exists when the amount of traffic approaches a point where the amount of traffic exceeds the amount that can travel to a destination. Operations within the queues are characterized by stop and go waves, and they are extremely unstable.</i>

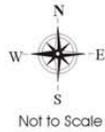
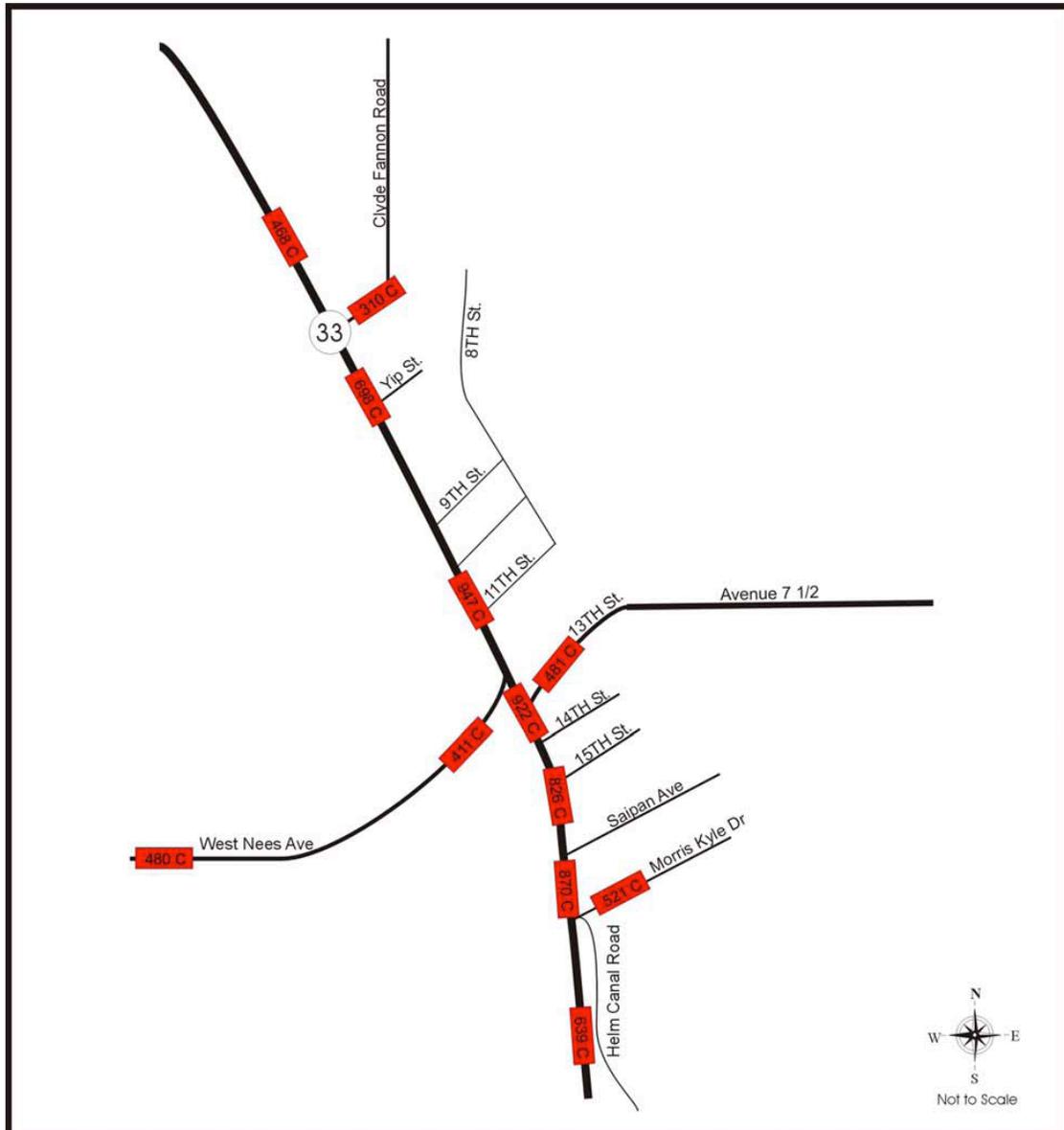
Table 1-8
Street Segment Operation

STREET SEGMENT	SEGMENT DESCRIPTION	EXISTING	
		VOLUME	LOS
SR 33			
Douglas Avenue to Clyde Fannon Road	2-lanes/undivided	468	C
Clyde Fannon Road to 8th Street	3-lanes/undivided	698	C
8th Street to Nees Avenue/12th Street	4-lanes/divided	947	C
Nees Avenue/12th Street to 14th Street	4-lanes/divided	922	C
14th Street to Saipan Avenue	4-lanes/divided	826*	C
Saipan Avenue to Morris Kyle Drive	3-lanes/undivided	870	C
Morris Kyle Drive to Sierra Avenue	2-lanes/undivided	639	C
Clyde Fannon Road			
SR 33 to Behymer Avenue	2-lanes/undivided	310	C
Nees Avenue			
SR 33 to Washoe Avenue	3-lanes/undivided	411	C
Washoe Avenue to Douglas Avenue	2-lanes/undivided	480*	C
13th Street/Avenue 7 1/2			
SR 33 to Road 6	2-lanes/undivided	481*	C
Morris Kyle Drive			
SR 33 to Landucci Drive	2-lanes/undivided	521	C

LOS = Level of Service

Volume = Highest of AM and PM Peak Hour

* From County Models



Street Segment Volumes & Levels of Service (LOS)

Map 1-4

Legend	
	State Route
	Minor Arterial
	Major Collector
	Minor Collector
	Local Road
	Volume LOS



Referencing Map 1-4, results of the segment analysis indicates that street and State Route segments within the City of Firebaugh are currently operating at LOS C. All roadways meet minimum LOS standards for the existing conditions.

◆ Intersection Analysis

The circulation system of the City of Firebaugh is primarily composed of a system of unsignalized arterial and collector facilities. The vast majority of system vehicle delay occurs at the two-way stop controlled intersections because vehicles are required to stop on one street to provide time to service the vehicles on the crossing street. In addition to evaluating the LOS of segments using Peak Hour volumes, the major intersections within the Community of Firebaugh were evaluated to determine current LOS. The unsignalized and signalized levels of service standards were applied to calculate intersection LOS in accordance with the current edition of the Highway Capacity Manual (HCM). HCM worksheets are provided in Appendix B.

Tables 1-7 and 1-10 indicate the ranges in the amounts of average stop time delay for a vehicle at signalized and unsignalized intersections for the various levels of service ranging from “A” through “B”. Intersection turning movements counts and roadway geometrics used to develop LOS calculations were obtained from existing traffic counts. Table 1-8 and Map 1-4 show the existing intersection volumes at the three intersections studied in the City of Firebaugh and the corresponding LOS based on the intersection delay method described above.

TABLE 1-9
Unsignalized Intersections
Level of Service Definitions
(Highway Capacity Manual)

Level of Service	Definition	Average Total Delay (sec/veh)
A	<i>Describes operations with very low delay. This level of service occurs when there is no conflicting traffic for minor street.</i>	≤ 10.0
B	<i>Describes operations with moderately low delay. This level occurs with a small amount of conflicting traffic causing higher levels of average delay.</i>	> 10-15
C	<i>Describes operations with average delays. These higher delays may result from a moderate amount of minor street traffic. Queues begin to get longer.</i>	> 15-25
D	<i>Describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. Longer delays may result from shorter gaps on the mainline and an increase of minor street traffic. The queues of vehicles are increasing.</i>	> 25-35
E	<i>Describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay. These high delay values indicate poor gaps for the minor street to cross and large queues.</i>	> 35-50
F	<i>Describes operations that are at the failure point. This level, considered to be unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection. Insufficient gaps of suitable size exist therefore not allowing minor traffic to cross safely.</i>	> 50

TABLE 1-10
Signalized Intersections
Level of Service Definitions

Level of Service	Definition	Average Total Delay (sec/veh)
A	<i>Describes operations with very low delay.</i>	– <10.0
B	<i>Describes operations with moderately low delay. This level occurs with good progression, short cycle lengths, or both.</i>	– > 10.0 and <20.0
C	<i>Describes operations with average delays. These higher delays may result from fair progression, longer cycle lengths, or both.</i>	– > 20.0 and <35.0
D	<i>Describes a crowded operation, with below average delays. At level D, the influence of congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines.</i>	– > 35.0 and <50.0
E	<i>Describes operations at or near capacity. This level is considered by many agencies to be the limit of acceptable delay.</i>	– > 55.0 and <80.0
F	<i>Describes operations that are at the failure point. This level, considered unacceptable to most drivers, often occurs with over saturation, that is, when arrival flow rates exceed the capacity of the intersection.</i>	– > 80.0

Table 1-11
Intersection Operations

INTERSECTION	PEAK HOUR	EXISTING	
		DELAY	LOS
Nees Ave / SR 33 ⁽¹⁾	AM	28.3	C
	PM	31.0	C
Clyde Fannon Rd / SR 33 ⁽²⁾	AM	N/A	C
	PM	N/A	C
Morris Kyle Dr / SR 33 ⁽²⁾	AM	N/A	C
	PM	N/A	B

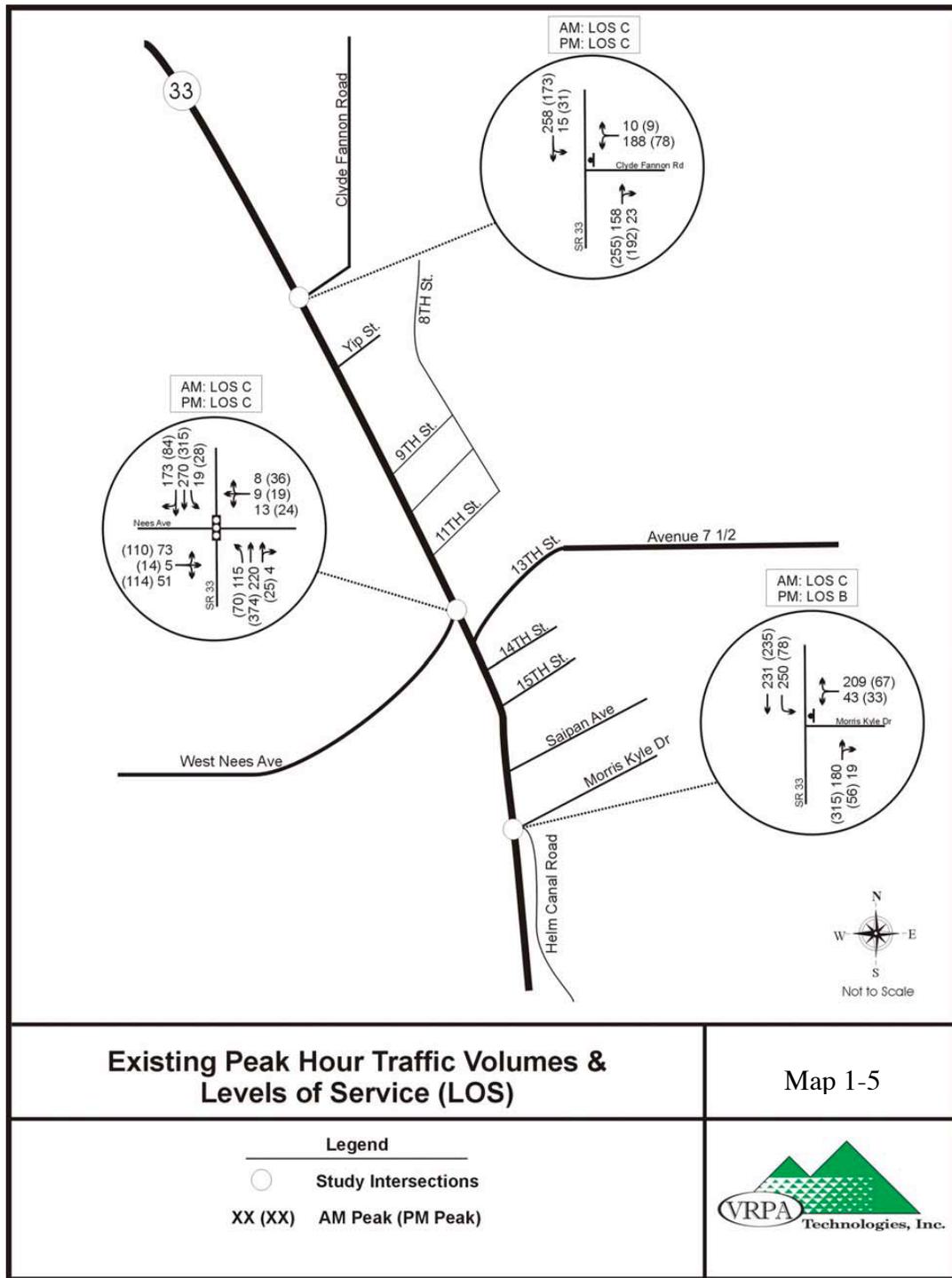
DELAY is measured in seconds.

LOS = Level of Service

(1) Signalized Intersection

(2) One-Way Stop Controlled Intersection

N/A = LOS is shown for worst movement



Referencing Table 1-12 and Map 1-5, all of the intersections studied currently operate at an acceptable LOS “C” or better.

Public/Mass Transportation System

The City understands the need to promote development of a safe, efficient, and economical community, intercommunity and countywide public transportation system. Due to the interrelationship of urban and rural activities (employment, housing and services), and the low average density of existing land uses, the private automobile is the dominant mode of travel within Firebaugh. As the population grows, roads will become increasingly congested by the automobile. As a result, it is important to encourage increased ridership on public transit systems and increased use of alternative modes of transportation, including bicycles and walking. Public transit system alternatives for Firebaugh include Greyhound bus carriers (Los Banos) and Demand Responsive services provided by Firebaugh Transit.

Rail Service

Freight Service

The Union Pacific (UP), the Burlington Northern Santa Fe (BNSF), and the San Joaquin Valley Railroad (SJVRR) provide freight service in Fresno County, connecting the County with major markets within California and other destinations north and south. Freight terminals and service to specific industries are located throughout the County.

Though the railroads are reluctant to provide information on the amount of freight originating in the County, it is likely that the predominant mode for freight movements in the County will continue to be by truck in the foreseeable future. This is certainly the trend expected for raw agricultural commodities moving to packing and processing facilities such as those produced in Firebaugh.

AMTRAK Passenger Service

The nearest AMTRAK station is located in the City of Fresno. This station provides connecting AMTRAK service to points north including San Francisco and Sacramento and to points south including Bakersfield and Los Angeles. The nearest AMTRAK bus depot station is located in the City of Los Banos.

High Speed Rail

The High-Speed Rail Authority (HSRA) has determined that high-speed rail is technically, environmentally and economically feasible once constructed, and would be operationally self-sufficient. The Authority's purpose is to fund and construct the high-speed rail system throughout California.

Non-Motorized Transportation

The City supports safe and convenient facilities for non-motorized modes of transportation that enhance the future livability and character of the City. The community's non-motorized transportation systems connect community centers, residential neighborhoods, recreational amenities, employment centers, shopping areas, and other activity areas.

Bikeways

California Vehicle Code (Section 21200[a]) states that every person riding a bicycle upon a highway has all the rights and is subject to all the provisions applicable to the driver of a vehicle. While bicycles are permitted on all roads in Firebaugh, many people will not consider a bicycle as a means of transportation unless some accommodation has been made for their safety and convenience. In order to entice these prospective bicycle riders, a variety of bicycle facility types are necessary.

Investment in bikeways provides an inexpensive environment-friendly transportation opportunity. Bicycle usage will continue to offer important relief to roadways, provide air quality benefits, and reduce energy consumption. Bicycling is considered an effective alternative mode of transportation that can help to improve air quality and reduce the number of vehicles traveling along existing highways, especially within the cities and unincorporated communities. However, the

numbers of cyclists is small in comparison to the amount of auto traffic.

A number of barriers currently impede the increased usage of bicycles as an alternative non-motorized mode of travel. These barriers include negative perceptions about non-motorized commuting; unsafe, insufficient, and inconvenient bikeways; and crime, including personal and bicycle safety and security. Given the favorable climate for cycling most of the year, overcoming these institutional barriers would help increase the ridership of bicyclists throughout Firebaugh.

Pedestrian Facilities

Pedestrian facilities include sidewalks, walkways, bridges, crosswalks, signals, illumination, and benches, among other items. These facilities are an important part of Firebaugh's non-motorized transportation network. Pedestrian facilities provide a vital link between many other modes of travel and can make up a considerable portion of short-range trips made in the community. Where such facilities exist, people will be much more likely to make shorter trips by walking rather than by vehicle. Pedestrian facilities also provide a vital link for commuters who use other transportation facilities such as public transit. Without adequate pedestrian facilities, many commuters may be forced to utilize an automobile because of difficult or unsafe conditions that exist at their origin or destination.

Pedestrian facilities within the immediate vicinity of schools and recreational facilities are important components of the non-motorized transportation system. Such facilities, typically in the form of sidewalks, are provided where they are appropriate and enhance the safety of those who choose to walk to and from their destination.

Aviation

There is one major commercial airport in Fresno County used for passenger service by residents of Firebaugh, which is the Fresno-Yosemite International Airport (FYI). FYI is the region's primary passenger airport facility and the largest and busiest airport in the San Joaquin Valley. Firebaugh Airport is open to the public and houses approximately 19 single engine airplanes and 1 multi-

engine airplane. There are approximately 28 aircraft operations per day at the present time.

Transportation Management

Systems Management

Transportation systems management (TSM) strategies can enhance traffic flow and reduce travel delay along the community's roadway system. A more efficient use of the road network can be implemented by the utilization of TSM strategies, such as computerized traffic signals and one-way streets. Priority could be given to TSM strategies that improve level of service, especially in areas that are currently fully developed, before more costs and capacity increasing strategies are used.

Transportation Demand Management

Transportation demand management (TDM) strategies reduce dependence on the single-occupant vehicle, increase the ability of the existing transportation system to carry more people, and enhance mobility along congested corridors. A reduction in peak hour trips, overall roadway congestion, and a decrease in non-attainment pollutants can be achieved through the implementation of TDM strategies. Examples of these strategies include telecommuting, flexible work hours, and electronic commerce that enable people to work and shop from home. According to COFCG, vanpools will become more prevalent for short-to-medium range commute trips, and will supplement the traditional long-distance usage. Park-n-ride facilities and carpooling will also continue to be a significant link between highway and transit modes.

In the last decade, the region's number of trips and amount of travel has grown at a much faster rate than the population growth. TDM strategies are designed to counter this trend. The region cannot build its way out of congestion; it has neither the financial resources nor the willingness to bear the environmental impacts of such a strategy. TDM is one of the many approaches that will be used to maintain mobility and access as the region continues to grow and prosper.

Agencies in Fresno County have participated extensively in TDM efforts over the years. The County is a supporter of the Central Valley Ridesharing program. To ensure

efficient use of the transportation system, Central Valley Ridesharing helps commuters find better ways to get to work. The free commuter assistance programs include ride matching, carpooling, and vanpool services.

Goods Movement

The efficient movement of goods in and through Firebaugh is vital to the community and Fresno County's economy and improves traveler safety. The ability of the City and the County to compete domestically and internationally on an economic basis requires an efficient and cost-effective method for distributing and receiving products. The City of Firebaugh provides a key link in this system with its proximity to SR 33.

Truck Routes

Primary generators of truck traffic in the Firebaugh are agricultural, commercial, and industrial uses. Since agriculture is a relatively mature industry throughout the County, overall truck traffic volume generated by agricultural uses should remain stable in the future. However, relocation and replacement of individual agricultural processing plants and other new industries can significantly alter both regional and localized patterns and concentrations of truck traffic in the City. As healthy industrial growth is expected within the City, the scale of industrial-related truck traffic will continue to increase.

Airport and highway capacity will be under severe constraint in the region due to the lack of capacity enhancing project capital investment. Currently, trucks comprise at least 15 percent of the daily traffic volume on some of the primary goods movement corridors in Fresno County.

Because of the operational characteristics of trucks, their net effect on traffic flow is two to three times the number of passenger cars on level terrain, and could be considerably more on long upgrades. Traffic engineers relate the effect of trucks to passenger car equivalents or PCEs. Thus, a roadway with 15 percent of the traffic as trucks could be regarded as having 30 to 40 percent of its capacity consumed by trucks in terms of PCEs. In most cases, the truck percentage in the peak commuting periods is lower (usually no more than 4 to 6 percent), as the

passenger car volume is higher and some trucks tend to avoid those hours because of the slow speeds.

For the State of California, approximately 76 percent of all in-and outbound freight is shipped by truck. In addition, trucks transport 98 percent of all finished goods to the final retail and wholesale destinations, according to the California Trucking Association (CTA).

In accordance with both local and State law, truck movements for the purpose of making deliveries within a City can use the most direct route to the particular delivery location.

Air Cargo

Air cargo is the fastest growing method of transporting goods in and out of the Central Valley and is expected to continue to increase at a faster rate than passenger air service. The Fresno Yosemite International Airport is the major cargo-handling airport in the Central Valley. This airport handles 96 percent of all air cargo movement in the Valley.

Intelligent Transportation Systems (ITS)

Intelligent Transportation Systems (ITS) are utilized to improve the safety and performance of the surface transportation system using new technology in detection, communication, computing, and traffic control. These systems increase the efficiency and safety of the regional transportation system and can be applied to arterials, freeways, transit, trucks, and private vehicles. Further, traveler information is critical in order to lessen the impacts of accidents and other special events in the region, which ultimately may reduce delay and congestion.