

CHAPTER 4 • CONSERVATION, OPEN SPACE, PARKS AND RECREATION AND AIR QUALITY ELEMENT

Introduction

Open space, parks, and recreation facilities enhance the quality of life in a community. The creation and preservation of these types of resources is an important part of providing for the needs and welfare of a community. Conservation of open space takes planning for the future. If these areas are not planned for at the present time and set aside for the future, a city runs the risk of losing them to development.

Open space lands are undeveloped areas that provide a low density perception in an urban area, define the edge of a community, and provide the sight lines that allow long distance vistas to the mountains of the Coast Range, agriculture fields, or other local view-points. Most people think of open space as park areas, but a large portion of a city's open space is provided by residential yard areas and right-of-way along streets. The legal definition of open space land is found in California Government Code Section 65560 (b).

A *park* is an open area that provides an assortment of recreation and leisure opportunities for a community. A park can include community recreation parks, community centers, and other publicly-owned outdoor recreation areas. Parks can supply active as well as passive recreation opportunities. Activities can range from family picnics to organized sporting events.

One of the primary purposes of parks is to contribute to Firebaugh's quality of life. The City accomplishes this through the provision of convenient, well-equipped and maintained sites and facilities, conservation of natural resources, and a comprehensive and quality program of recreational activities and services for all citizens of the community.

*California Government Code
Section 65302 lists the
requirements for Conservation
and Open Space Elements.*

The Element

The open space portion of this Element identifies lands that are appropriate for open space and parks acquisition as well as the development of recreation programs on these lands. The Element establishes goals, policies, action programs and standards for the conservation and treatment of open space.

California Government Code Section 65560 defines open space as land that can be used for any of the following uses:

- Conservation of natural resources.
- Managed production of resources.
- Outdoor recreation.
- Preservation of lands for the purpose of protecting the public's health and safety.

Specific requirements of the conservation portion of the Element are identified in Government Code Section 65302 (d). This portion of the element includes "the conservation, development and utilization of natural resources, including water and its hydraulic force, forests, soils, rivers and other waters, wildlife, and other natural resources." Items that are addressed in this category include the conservation of:

- View opportunities
- Soils
- Water
- Agricultural lands
- Mineral resources
- Air quality
- Wildlife habitat

State law (AB 170) requires cities to amend their General Plans to include an air quality element. Firebaugh has opted to include the air quality element as a part of this conservation element.

The Parks and Recreation Element is an optional component of the General Plan. This Element identifies existing and potential recreational opportunities within the community. Since it is closely related to the City's open space system, integration of the three portions (open space, conservation and parks/recreation) into one element makes good planning sense.



Existing Conditions

The City of Firebaugh is located on the floor of the San Joaquin Valley, on the east side of the channel of the San Joaquin River. The terrain is very level (except for the banks of the river, which drop about ten feet in some locations). Within the urban area, the land drops very slightly from south to north and from the west to the east along the river. The mountains of the Coast Range rise to heights of 2,000 to 4,000 feet about twenty miles west and southwest of Firebaugh.

The City is entirely surrounded by agricultural land mixed with farmhouses and small ranches. The surrounding agricultural land lends the effect of a greenbelt around Firebaugh.

Discussed below are specific issues relating to the Conservation, Open Space, Parks and Recreation and Air Quality Element. A more detailed description of these issues can also be found in Part 2 (Community Profile) of the General Plan.

Park and Recreation Resources

Firebaugh presently has four developed park sites (see Map 4-1).

Firebaugh City Park covers about 14 acres and is located on the east side of Q Street, south of 15th Street. Primary facilities in this park include:

- Playground
- Dunkle Field (softball field)
- Horeshoe pits
- Basketball court
- Barbecues
- Picnic tables
- Stage/bleachers
- Drinking fountains
- Restrooms

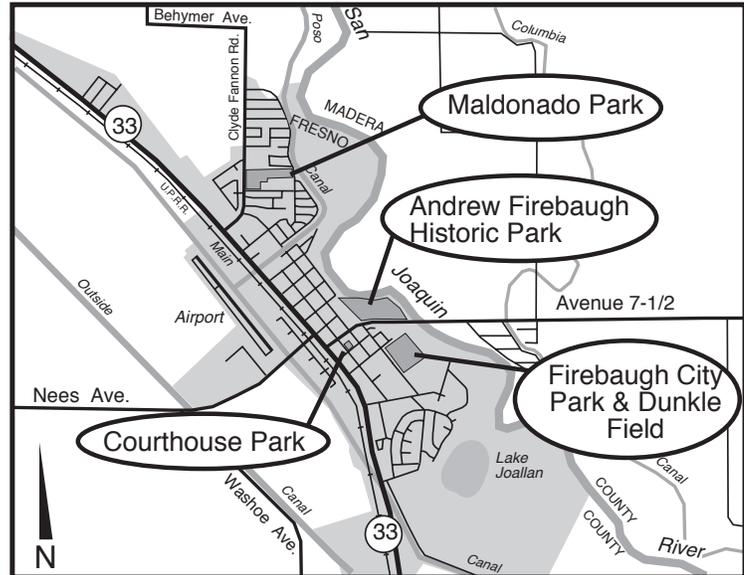
The Chamber of Commerce office and a Boy Scouts office occupy small buildings on the southwest corner of the park

Maldonado Park is located on the east side of Clyde Fannon Road, north of Thomas Conboy Avenue and covers almost seven acres. Features of this park include:

- Lighted baseball/softball field
- 3/4 basketball court
- Grassy play areas
- Senior citizens center

Andrew Firebaugh Historic Park is situated adjacent to the San Joaquin River on the north side of 13th Street. The western ends of the Firebaugh Ferry and the Firebaugh drawbridge were located in this area. Features of this park include:

- Community center
- Rodeo Grounds
- Walking trail
- Trailer parking
- Parking lot



Courthouse Park is located on the east side of O Street, north of 14th Street. This small park occupies a little over one-half acre and features grassy play areas, shade trees and benches.

In addition to these parks, the City owns substantial undeveloped land along the San Joaquin River which is designated for open space. The City has also begun to develop a pedestrian trail along the San Joaquin River. Currently this path runs nearly 3/4 mile from Firebaugh City Park in the south to 9th Street in the north. The City has voiced its strong desire that this trail be expanded further along the river.

Residents of Firebaugh also have available athletic fields and facilities on the campuses of schools operated by Firebaugh Las Deltas Unified School District.

Sports Programs

The City has a limited sports program. Swimming lessons are available in the summer. Little League, Babe Ruth, and men's baseball teams are active in the spring and summer.

Regional Parks Facilities

There are several regional parks that are within driving distance of Firebaugh. Generally speaking, at a maximum, most people are willing to travel thirty minutes to get to a regional park facility, and possibly one hour if there was some type of event scheduled there, such as a church gathering, family reunion, or school function.

The following regional park facilities are located near Firebaugh (see Map 4-2):

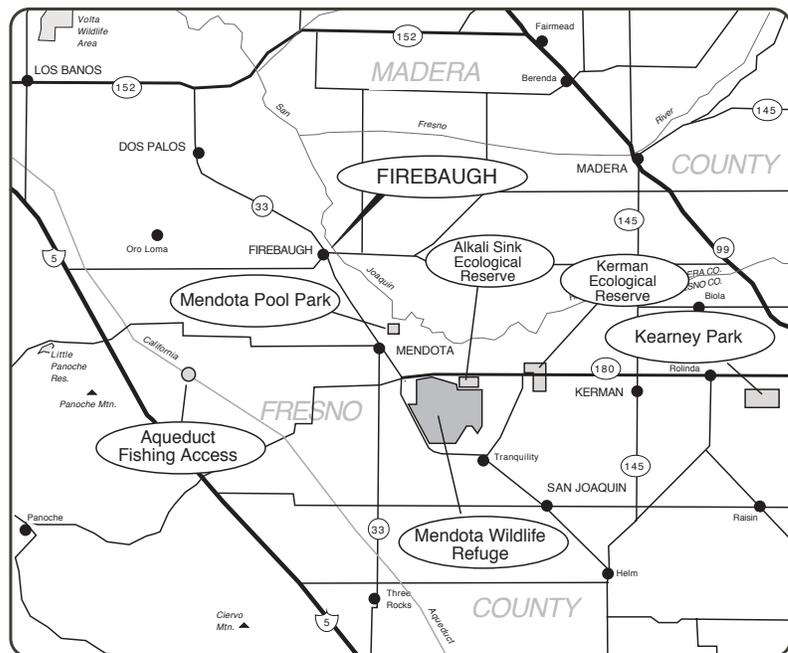
Mendota Pool Park is located about eight miles southeast of Firebaugh on the northeast side of the City of Mendota, next to the San Joaquin River. Operated by Fresno County, this park covers about 85 acres and features grassy play areas with picnic tables. The park also features a launching ramp to enable boaters access onto the San Joaquin River.

Kearney Park is located about thirty miles east of Firebaugh between Kerman and Fresno. This 225-acre park is planted with a variety of large, mature trees and was once the estate of M. Theo Kearney, a pioneer of Fresno County agriculture. Kearney Mansion was Kearney's home and is preserved as a historic dwelling, open for tours and other functions. Other facilities at this park include:

- picnic grounds
- soccer fields
- softball fields
- horeshoe pits
- grassy play areas

Mendota Wildlife Area is located southeast of Mendota (about ten miles southeast of Firebaugh) and is a wildlife area maintained by the California Department of Fish and Game. Covering over 12,000 acres (almost 20 square miles) this facility offers bird watching, hiking and seasonal hunting and fishing opportunities.

Map 4-2
Regional Park and Recreation
Facilities



California Aqueduct Fishing Access is located on the bank of the Delta-Mendota Canal about five miles south of Firebaugh and provides several miles of fishing access along the canal. This facility is administered by the State Department of Water Resources.

Recreational opportunities are also available east of Firebaugh in the Sierra Nevada Mountains. Kings Canyon and Sequoia National Parks are located east of the City on State Highway 180. Camping, hiking, fishing and sightseeing are the main activities in these parks. Outside the parks are public lands administered by Sequoia National Forest. Recreational opportunities include hiking, camping, and hunting.

To the west of Firebaugh, the Bureau of Land Management administers thousands of acres of publicly accessible wilderness lands in the Coast Range mountains, including Panoche and Tumey Hills, Griswold Hills and Clear Creek Management area. Closer to Firebaugh, two ecological reserves are located on Highway 180, between Mendota and Kerman. These are the Alkali Sink Preserve and Kerman Ecological Preserve. While public access is not permitted, these areas preserve several hundred acres of native valley lands.

Future Needs

A primary objective of this Element is the establishment of criteria that will guide the acquisition and development of future open space areas for Firebaugh. These standards should be realistic and represent the actual amount of area and facilities necessary to meet the needs and desires of the community. These open spaces can be provided in a variety of ways, and do not necessarily need to be under the control of the City to meet Firebaugh's needs.

State Government Code Section 66477 (b) authorizes cities to require developers subdividing land to dedicate land for park and recreation uses, at a rate of 3-1/2 acres per 1,000 residents.

Each jurisdiction can require that a maximum of five acres of open space be set aside per one thousand residents if the current land use exceeds the three acres per thousand standard. There has been interest expressed by residents in increasing the ratio of park land to five acres per 1,000 residents.

Park acquisition must strike a balance between use and the maintenance available to sustain the park. A city may have 10 acres of open space per 1,000 persons; however, if this acreage is not maintained properly, its value as usable open space may be greatly diminished. As Firebaugh acquires more parkland, it must also dedicate the resources to adequately maintain that land.

Americans today are spending more of their time in recreation leisure activities than ever before. This emphasis has created a much higher demand than ever for quality open space, parks and recreation facilities. In response to this, cities must designate areas for such uses, before development occurs.

Park Land

In order to determine the type, location and amount of parkland that will be required by Firebaugh within the 23-year planning period, population projections are utilized. Table 4-1 shows projections for 3-1/2 and 5-1/2 acres per 1,000 residents.

The table shows that as population increases, so does the need for facilities and programs. Table 4-1 also shows the required number of acres of parkland for each of the projections listed. Using the 3.5 acre per 1,000 projection, Firebaugh will need to acquire almost 11 acres of new park land by the year 2030. Using the 5.5 acre per 1,000 ratio, Firebaugh will need to add slightly over 21 acres through the year 2030.

Table 4-1
Park Land Demand Projections

	3.5 acres per 1,000	5 acres per 1,000
5,115 "future" residents	5.115 x 3.5 = 18 acres	5.115 x 5 = 25.6 acres
Increase by 40% "flexibility" factor	18 x 40% = 25.2 acres	25.6 x 40% = 35.8 acres
Subtract 14.7 acres of parks in approved subdivisions	25.2 - 14.7 = 10.5 acres	35.8 - 14.7 = 21.2 acres
	10.5 acres needed by 2030	21.2 acres needed by 2030

Location and Distribution

Another important factor in the planning of future parks is to ensure that parks are accessible to all citizens of the community. For instance, although a city may currently meet the standards regarding the amount of parkland required, the existing park sites may not be easily accessible from all areas of the community.

Map 4-3 shows the location of existing City-owned park and recreation facilities, and their service areas. Service area dimensions are those established by the National Parks and Recreation Association. Generally, a community park will have a one-half mile service area, and a neighborhood park has a one-quarter mile service area. Map 4-3 indicates that there is a lack of park facilities in the northwest quadrant of the City. Some of Firebaugh's future growth will be occurring in this quadrant. In order to accommodate these areas with open space and park facilities, the City must begin to evaluate future sites for these uses.

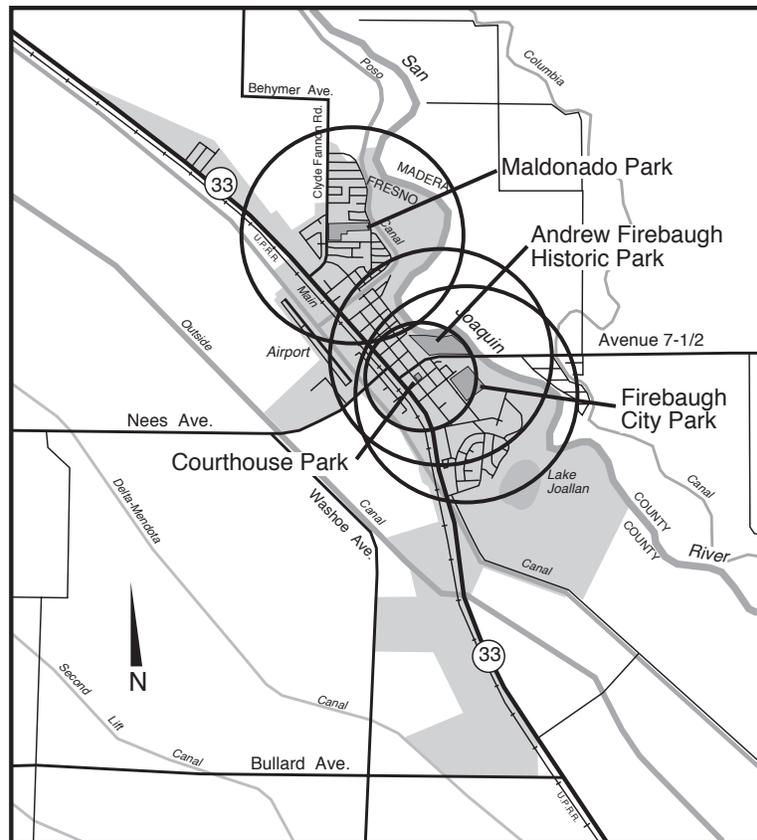
NATURAL RESOURCES

Water Resources

Firebaugh currently obtains its water supply from a series of wells situated along the San Joaquin River. The river and its ground water system provides a relatively stable source of ground water for the City. Water quality has generally been good though manganese and iron have exceeded public health requirements in the past. Water from the wells is treated to reduce contaminants.

In terms of surface water, the San Joaquin River conveys water from snowfields in the Sierra Nevada range about 80 miles to the east. Because of Friant Dam located northeast of Fresno, much of the natural flow of the river has been reduced. However, the Delta-Mendota Canal delivers water from the Sacramento/San Joaquin Delta

Map 4-3
Park Service Areas



northwest of Firebaugh to the Mendota Pool about eight miles southeast of the City. This supply provides water flow in the river past Firebaugh throughout the year. Without this flow the river would be dry during most months.

There are also numerous surface irrigation canals in the vicinity of Firebaugh, primarily operated by Central California Irrigation District. Canals in and near the City include Poso, Main, Helm, Outside and Firebaugh Wasteway. While these canals provide critical irrigation supplies they can make urban development difficult. Most of them are too large to pipe, they are expensive to bridge and they can also present safety hazards. At the same time, waterways in Firebaugh may present an opportunity for the creation open space corridors.

Agricultural Resources

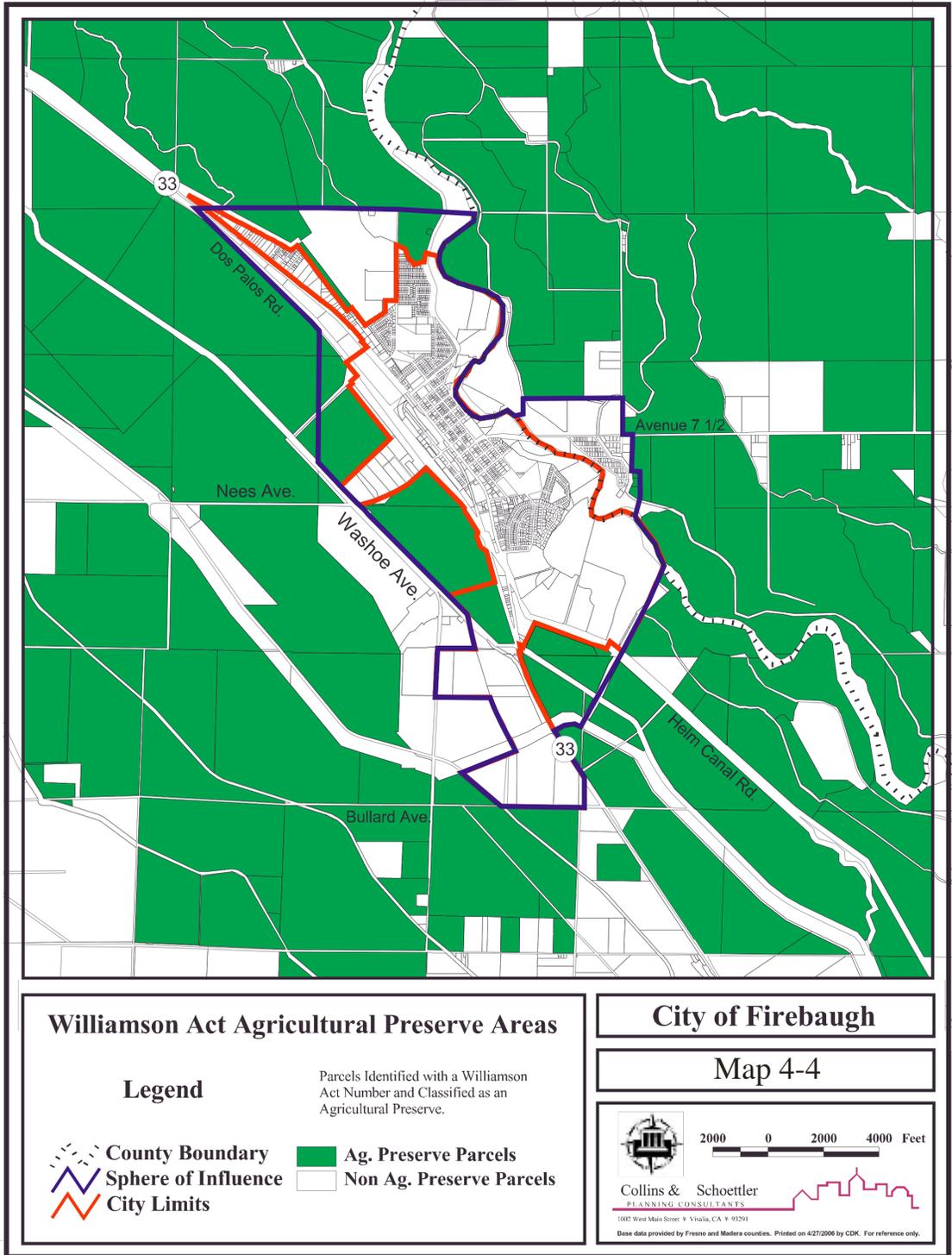
Firebaugh is surrounded by thousands of acres of producing cropland. Agricultural lands have provided a strong economic base for the community as well as a rural landscape and open space "system" that surrounds the City. As Firebaugh continues to grow, the surrounding agricultural lands are taken out of production to accommodate residential, commercial, and industrial growth.

In 1965, California adopted the Williamson Act to address the loss of agricultural lands due to urbanization. The Williamson Act provides property owners with a reduction in their property tax if they agree to maintain their land in agriculture for a ten-year period. This ensures, at least for the near-future, that agricultural lands will remain undeveloped, thereby continuing agricultural production as well as enhancing the sense of open space around Firebaugh. Map 4-4 shows properties within the Firebaugh Planning Area that have a Williamson Act contract.

Super Williamson Act (Farmland Security Zones)

In 2000, the California adopted the Farmland Security Zone program (also known as the "Super" Williamson Act). This program is also aimed at preserving farmland

The leading crops grown in the Firebaugh area are cantaloupes, tomatoes, alfalfa and cotton.



by offering additional tax incentives to landowners. Land can be entered into a farmland security zone for a minimum period of 20 years. Contracts are extremely difficult to terminate once enacted. Presently there are no farmland security zones in the Firebaugh vicinity.

Mineral Resources

There are no significant known mineral resources within the planning area. Portions of the river bottom along the San Joaquin River have been mined for sand and gravel in the past. Water now fills some of these old sand and gravel pits, lending them the appearance of lakes. Lake Joallan is located on the south side of the community and Twin Lakes are small ponds located northeast of the urban area. These water bodies can function as important wildlife areas.

Soil Resources

The soils in the Firebaugh area are described by the *Soil Survey of Western Fresno County*, prepared by the Soil Conservation Service, Department of Agriculture. Soils are discussed in more detail in Part 2 (Community Profile) of the General Plan. The Soil Survey identifies twelve specific soil groups in the planning area, listed to the right in Table 4-2.

None of the soils west of the San Joaquin River (in the Firebaugh vicinity) are considered “prime soils” for agricultural production. Most of these soils are classified as “Important” soils for agricultural purposes.

Some of the soils have moderate limitations for urban development - such as expansive or corrosive properties. These limitations can be overcome by reinforcing building foundations or road bases, or by importing fill soil or using corrosive-resistant coatings on building materials.

Natural Plant and Animal Communities

The Conservation Element is required to discuss the presence of native plants and animals and in particular, native species regarded as rare, threatened, or endangered.

**Table 4-2
Firebaugh Area Soils**

Armona loam, partially drained
Tachi clay, 0-1 percent slopes
Tachi clay, fine, 0-1 percent slopes
Lillis clay, fine, 0-1 percent slopes
Bisgani loamy sand, partially drained
Elnido sandy loam, partially drained
Wekoda clay, partially drained 0-1 percent slopes
Fluvaquents and Xenofluvents, channeled
Riverwash
Temple clay loam, 0-1 percent slopes
Columbia fine sandy loam, 0-1 percent slopes
Foster loam, 0-1 percent slopes
Tujunganga loamy sand, 0-3 percent slopes

Source: Western Fresno County Soil Survey, US Department of Agriculture, Soil Conservation Service

In addition to inventorying these species, the element must plan for their preservation. Additional information on biotic resources may be found in Part 2 (Community Profile) of the General Plan.

A biotic survey prepared for the General Plan update indicated that the overwhelming bulk of the planning area has been severely disturbed from its natural state by urbanization and intensive agricultural activities.

The primary exception are lands along the San Joaquin River. The river and its banks support a relatively intact riparian forest that provides cover and a transportation corridor primarily for birds.

Air Quality

Assembly Bill 170 (Reyes) requires local agencies to include an air quality element component within their General Plans. This requirement recognizes that the San Joaquin Valley and its communities suffer some of the worst air quality conditions in the United States. It is critically important for each community to undertake actions to help reduce this problem. Air quality can be affected by the growth and development of cities. Since the General Plan establishes policies on how and where growth will occur, it is a logical place to establish carefully selected policies regarding air quality.

The City of Firebaugh has elected to incorporate the information required for an air quality element into the Conservation, Open Space, Parks and Recreation Element. Because the “conservation” portion of this element addresses the protection of natural resources (including air quality) Firebaugh considered this an appropriate “home” for the air quality element – within the General Plan. Other Elements also have policies addressing air quality – or, where appropriate, the other elements direct the reader to this element.

Local Air Quality Conditions

Air pollutant emissions in the San Joaquin Valley overall are fairly constant throughout the year, yet the concentrations of pollutants in the air vary from day to day and even hour to hour. This variability is due to complex interactions of weather, climate, and topography. These factors affect the ability of the atmosphere to



Figure 4-1. The San Joaquin River and lands adjacent function as a wildlife habitat corridor.

Air Quality Element Contents

The Air Quality Element is required to contain the following components:

1. a report describing local air quality conditions, attainment status, and state and federal air quality and transportation plans;
2. a summary of local, district, state, and federal policies, programs, and regulations to improve air quality;
3. a comprehensive set of goals, policies, and objectives to improve air quality; and
4. feasible implementation measures designed to achieve these goals.

disperse pollutants. Conditions that move and mix the atmosphere help disperse pollutants, while conditions that cause the atmosphere to stagnate allow pollutants to concentrate. Local climatological effects, including topography, wind speed and direction, temperature, inversion layers, precipitation, and fog can exacerbate the air quality problem in the Valley.

During the summer, wind speed and direction data indicate winds usually originate at the north end of the Valley and flow in a south-southeasterly direction through the Valley, over the Tehachapi pass, into the Southeast Desert Air Basin. In addition, the Altamont Pass also serves as a funnel for pollutant transport from the San Francisco Bay Area Air Basin into the region.

During the winter, wind speed and direction data indicate that wind occasionally originates from the south end of the Valley and flows in a north-northwesterly direction. Also during the winter months, the Valley generally experiences light, variable winds (less than 10 mph). Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high carbon monoxide (CO) and particulate matter (PM10 and PM 2.5) concentrations.

The Valley has an “Inland Mediterranean” climate averaging over 260 sunny days per year. The valley floor is characterized by warm, dry summers and cooler winters. For the entire Valley, high daily temperature readings in summer average 95°F. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s, but highs in the 30s and 40s can occur on days with persistent fog and low cloudiness. The average daily low temperature is 45°F.

The vertical dispersion of air pollutants in the Valley is limited by the presence of persistent temperature inversions. Solar energy heats up the Earth’s surface, which in turn radiates heat and warms the lower atmosphere. Therefore, as altitude increases, the air temperature usually decreases due to increasing distance from the source of heat. A reversal of this atmospheric state, where the air temperature increases with height, is termed an inversion. Inversions can exist at the surface or at any height above the ground, and tend to act as a lid on the Valley, holding in the pollutants that are generated here.

SAN JOAQUIN VALLEY AIR BASIN

The San Joaquin Valley Air Basin (SJVAB) is approximately 250 miles long and averages 35 miles wide, and is the second largest air basin in the state. The SJVAB is defined by the Sierra Nevada in the east (8,000 to 14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi mountains in the south (6,000 to 8,000 feet in elevation). The valley is basically flat with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. The San Joaquin Valley (Valley), thus, could be considered a “bowl” open only to the north.

CRITERIA POLLUTANTS AND GREENHOUSE GASES

The California Air Resources Board (ARB) and the federal Environmental Protection Agency (EPA) have established criteria air pollution standards in an effort to protect human health and welfare. Geographic areas are deemed "attainment" if these standards are met or "nonattainment" if they are not met. Nonattainment status is classified by the severity of the nonattainment problem, with *marginal*, *moderate*, *serious*, *severe*, and *extreme* nonattainment classifications for ozone. Nonattainment classifications for PM range from marginal to serious.

Current federal and state air quality standards are shown in Table 4-3 on the following page

At the federal level the District is currently designated as "serious nonattainment" for the 8-hour ozone standard, "attainment" for PM10 and CO, and "nonattainment" for PM2.5. A new finding of "extreme" nonattainment with the 8-hour ozone standard is currently pending, and is expected to be approved by the federal EPA in 2009. At the state level the District is designated as "nonattainment" for the 8-hour ozone, PM10, and PM2.5 standards.

The following section summarizes the pollutants of greatest importance in the San Joaquin Valley. It provides a description of the pollutants' physical properties, health and other effects, sources, and the extent of the problems.

In general, primary pollutants are directly emitted into the atmosphere, and secondary pollutants are formed by chemical reactions in the atmosphere. Air pollution in the Valley results from emissions generated in the Valley as well as from emissions and secondary pollutants transported into the Valley. It is thought that the bulk of the Valley's summer and winter air pollution is caused by

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Table 4-3:
State and Federal Ambient Air Quality Standards

Ambient Air Quality Standards						
Pollutant	Averaging Time	California Standards ¹		Federal Standards ²		
		Concentration ³	Method ⁴	Primary ^{3,5}	Secondary ^{3,6}	Method ⁷
Ozone (O ₃)	1 Hour	0.09 ppm (180 µg/m ³)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m ³)		0.075 ppm (147 µg/m ³)		
Respirable Particulate Matter (PM ₁₀)	24 Hour	50 µg/m ³	Gravimetric or Beta Attenuation	150 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m ³		—		
Fine Particulate Matter (PM _{2.5})	24 Hour	No Separate State Standard		35 µg/m ³	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m ³	Gravimetric or Beta Attenuation	15.0 µg/m ³		
Carbon Monoxide (CO)	8 Hour	9.0 ppm (10mg/m ³)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m ³)	None	Non-Dispersive Infrared Photometry (NDIR)
	1 Hour	20 ppm (23 mg/m ³)		35 ppm (40 mg/m ³)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m ³)		—		
Nitrogen Dioxide (NO ₂)	Annual Arithmetic Mean	0.030 ppm (57 µg/m ³)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m ³)	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m ³)		—		
Sulfur Dioxide (SO ₂)	Annual Arithmetic Mean	—	Ultraviolet Fluorescence	0.030 ppm (80 µg/m ³)	—	Spectrophotometry (Pararosaniline Method)
	24 Hour	0.04 ppm (105 µg/m ³)		0.14 ppm (365 µg/m ³)	—	
	3 Hour	—		—	0.5 ppm (1300 µg/m ³)	
	1 Hour	0.25 ppm (655 µg/m ³)		—	—	
Lead ⁸	30 Day Average	1.5 µg/m ³	Atomic Absorption	—	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m ³		
	Rolling 3-Month Average ⁹	—		0.15 µg/m ³		
Visibility Reducing Particles	8 Hour	Extinction coefficient of 0.23 per kilometer — visibility of ten miles or more (0.07 — 30 miles or more for Lake Tahoe) due to particles when relative humidity is less than 70 percent. Method: Beta Attenuation and Transmittance through Filter Tape.		No Federal Standards		
Sulfates	24 Hour	25 µg/m ³	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m ³)	Ultraviolet Fluorescence			
Vinyl Chloride ⁸	24 Hour	0.01 ppm (26 µg/m ³)	Gas Chromatography			

See footnotes on next page ...

locally generated emissions. Due to the Valley's meteorology, topography, and the chemical composition of the air pollutants, oxides of nitrogen (NO_x) is the primary culprit in the formation of both ozone and PM_{2.5}.

Ozone – Ozone (O₃) and particulate matter are the two pollutants that are responsible for the bulk of the Valley's air quality problems. Ozone is the major component of the Valley's summertime "smog," and it affects human health and vegetation. Ozone is not emitted directly into the air, but is created by a series of chemical reactions between reactive organic gases (ROG) and oxides of nitrogen (NO_x) that take place in the presence of sunlight. ROG and NO_x are emitted from fuel combustion, agricultural processes, and industrial processes that are widespread throughout the Valley as well as from natural sources. Studies have also linked urban areas with both higher regional temperatures and higher ozone levels (a phenomenon known as the "urban heat island effect").

High concentrations of ground level ozone can adversely affect the human respiratory system and aggravate cardiovascular disease and many respiratory ailments. Ozone also damages natural ecosystems such as forests and foothill communities, agricultural crops, and some man-made materials, such as rubber, paint, and plastics.

Reactive Organic Gases – Reactive organic gases (ROG), also known as volatile organic compounds (VOC), are photochemically reactive hydrocarbons that are important for ozone formation. The primary sources of ROG are petroleum transfer and storage, oil and gas production, mobile sources, organic solvent use, farming operations, and miscellaneous processes. No separate health standards exist for ROG as a group. Because some compounds that make up ROG are also toxic, like the carcinogen benzene, they are often evaluated as part of a toxic risk assessment.

Notes for Table 4-3:

1. California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, suspended particulate matter—PM₁₀, PM_{2.5}, and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM₁₀, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m³ is equal to or less than one. For PM_{2.5}, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact U.S. EPA for further clarification and current federal policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
9. National lead standard, rolling 3-month average: final rule signed October 15, 2008.

Source: CARB, 2008

Oxides of Nitrogen – Oxides of Nitrogen (NO_x) are a family of gaseous nitrogen compounds and are precursors to the formation of ozone and particulate matter. The major component of NO_x, nitrogen dioxide (NO₂), is a reddish-brown gas that is toxic at high concentrations. NO_x results primarily from the combustion of fossil fuels under high temperature and pressure. On-road and off-road motor vehicles and fuel combustion are the major sources of this air pollutant.

Particulate Matter – Particulate matter (PM) is any material except pure water that exists in the solid or liquid state in the atmosphere. Suspended particulate matter (airborne dust) consists of particles small enough to remain suspended in the air for long periods. Respirable particulate matter consists of particles small enough to be inhaled, pass through the respiratory system, and lodge in the lungs with resultant health effects. Respirable particulate matter includes “inhalable coarse particles,” with diameters larger than 2.5 micrometers and smaller than 10 micrometers (PM₁₀), and “fine particles,” with diameters that are 2.5 micrometers and smaller (PM_{2.5}).

PM₁₀ and PM_{2.5} are primary pollutants (emitted directly to the atmosphere) and secondary pollutants (formed in the atmosphere by chemical reactions among precursors). Generally speaking, PM_{2.5} sources tend to be combustion sources like vehicles, power generation, industrial processes, and wood burning, while PM₁₀ sources include these same sources plus roads and farming activities. “Fugitive” windblown dust and other area sources also represent a source of airborne dust in the Valley.

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children.

Carbon Monoxide – Carbon monoxide (CO) is an odorless, colorless gas that is highly toxic. It is formed by the incomplete combustion of fuels and is emitted directly into the air (unlike ozone). The main source of CO in the San Joaquin Valley is on-road

GREENHOUSE GASES

The topic of “Climate Change” and “Global Warming” have been much in the news in recent years. Climate change is attributed to “Greenhouse Gases” (GHGs) - these are gases that absorb and emit radiation within the thermal infrared range, trapping heat in the earth’s atmosphere.

There are no “attainment” concentration standards established by the federal or state government for greenhouse gases. In fact, GHGs are not generally thought of as traditional air pollutants because greenhouse gases, and their impacts, are global in nature, while air pollutants affect the health of people and other living things at ground level, in the general region of their release to the atmosphere.

Common GHGs include water vapor, carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone (O₃), and chlorofluorocarbons (CFCs). Some greenhouse gases occur naturally and are emitted to the atmosphere through both natural processes and human activities. Other GHGs are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are CO₂, CH₄, N₂O, and fluorinated carbons.

motor vehicles. Other CO sources in the Valley include other mobile sources, miscellaneous processes, and fuel combustion from stationary sources.

Because of the local nature of CO problems, the ARB and EPA designate urban areas as CO nonattainment areas instead of the entire basin (as with ozone and PM10). Motor vehicles are by far the largest source of CO emissions. Emissions from motor vehicles have been declining since 1985, despite increases in vehicle miles traveled (VMT), with the introduction of new automotive emission controls and fleet turnover.

Sulfur Dioxide – Sulfur Dioxide (SO₂) is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. The SJVAB is in attainment of both the federal and California standards. However, like airborne NOx, suspended SOx particles contribute to the poor visibility that sometimes occurs in the Valley. These SOx particles are also a component of PM10. The prevalence of low-sulfur fuel use in Valley has minimized problems from this pollutant.

Lead – Lead (Pb) is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. The health effects of lead poisoning include loss of appetite, weakness, apathy, and miscarriage; it can also cause lesions of the neuromuscular system, circulatory system, brain, and gastrointestinal tract.

Gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels. The use of leaded fuel has been mostly phased out, with the result that ambient concentrations of Pb have dropped dramatically. Lead concentrations were last systematically measured in the SJVAB in 1989, when the average concentrations were approximately five percent of the state lead standard. Though monitoring was discontinued in 1990, lead levels are probably well below applicable standards, and the SJVAB is designated in attainment for lead.

What is "Fugitive Dust"?

Fugitive dust is a relatively new term for an old problem. Simply put, fugitive dust is a type of nonpoint source air pollution - small airborne particles that do not originate from a specific point such as a gravel quarry or grain mill. Fugitive dust originates in small quantities over large areas. Significant sources include unpaved roads, agricultural cropland and construction sites.

Source: University of Missouri Extension, 2009

AIR QUALITY MONITORING DATA

The District, the ARB, the U.S. National Park Service, and the Santa Rosa Rancheria in Lemoore operate an extensive air monitoring network to measure progress toward attainment of air quality standards. There are seven monitoring stations in Fresno County and one in Madera County. Conditions in Firebaugh are best-represented by stations in Madera and Fresno. The Madera Pump Yard monitors ozone, while the First Street station in Fresno monitors PM-10 and PM-2.5. Table 4-4 summarizes air quality data from these locations since the year 2000. The table shows that the Madera Pump Yard station has experienced violations of the State ozone standard every year except for 2000. The year 2002 saw the most days with violations (21 days). The First Street station in Fresno monitors particulate matter and has also experienced exceedences of the State PM-10 standard, ranging from 16 days in 2001 to 5 days in 2004. According to California Air Resources Board and the federal Environmental Protection Agency, there have been no exceedences of air quality standards at area stations that are representative of Firebaugh (Fresno and Madera) for other criteria pollutants (CO, NOx, SO or lead).

Table 4-4
Local Air Quality Data – Ozone and Particulate Matter

Year	Madera Pump Yard		Fresno 1st Street	
	State Ozone	National Ozone	State PM 10	National PM-2.5
2008	9	0	15	0
2007	0	0	9	0
2006	4	0	13	0
2005	1	0	10	0
2004	3	0	5	0
2003	15	0	13	0
2002	21	2	15	0
2001	15	0	16	1
2000	8	0	12	0

Source: California Air Resources Board, 2009

EMISSION INVENTORIES

An emission inventory is an itemized list of pollutants in a given area for a specified time period. Present and future year inventories are important parts of air quality planning and modeling. Air pollution comes from many sources such as large industrial facilities, as well as things we use in our daily lives such as cars and trucks, paints, and aerosol spray products. For convenience, sources of air pollution have been grouped into the categories listed below to reflect the source of emissions or the purpose of the estimate.

Area Source – Area source emissions are from sources that are not regulated by the District, or are individually so small that they may not be included in the District’s survey system. These small sources may not individually emit significant amounts of pollutants, but when aggregated can make an appreciable contribution to the emission inventory. Examples of these area sources are residential water heating and use of paints, varnishes, and consumer products. Emissions from these sources are grouped into categories and calculated based on surrogate variables.

Of the more than 500 area-wide source categories established by the ARB, the District is responsible for estimating emissions from approximately 100. Emissions for the remaining categories are estimated by either ARB or the Department of Pesticide Regulation (DPR).

Point Source – Facilities that have valid District permits are called point sources. Refineries, gas stations, dry cleaners and industrial plants are examples of point sources in the District. The District’s Technical Services Division collects and maintains a database with detailed information on each point source that submits data. Almost all facilities emitting greater than 2.5 tons/year of any air pollutant are included. The District’s database contains information for more than 4,000 facilities.

Data on the activity, seasonal variations, and hours of operation are collected from each facility each year through a survey process. Emissions are calculated

Table 4-5
Emissions Inventories

The Air Quality Impact Assessment Prepared for the 2030 Firebaugh General Plan includes the following estimates for key pollutants for mobile source emissions and area source emissions, for the year 2030.

	Pollutant Type		
	ROG	Nox	PM10
Operational (Vehicle) Emissions			
Estimated Emissions	22.36 tons/year	21.17 tons/year	75.72 tons/year
SJVAPCD Level of Significance	10	10	N/A
Is Standard Exceeded?	Yes	Yes	---
Area Source Emissions (1)			
Estimated Emissions	53.81 tons/year	7.31 tons/year	0.04 tons/year
SJVAPCD Level of Significance	10	10	NA
Is Standard Exceeded?	Yes	No	---
Total Estimated Emissions	76.17 tons/year	28.48 tons/year	75.76 tons/year
SJVAPCD Level of Significance	10	10	N/A
Is Standard Exceeded?	Yes	Yes	---
(1) Residential developments typically result in area source emissions from natural gas, electricity and consumer product use.			

Source: Air Quality Impact Assessment for the 2030 Firebaugh General Plan, by VRPA Technologies, 2009

using detailed data for each of the facilities by various processes. Each year the District provides point source emissions inventory data to ARB to be included in their CEIDARS database.

Mobile Source – Mobile sources consist of motor vehicles among other mobile sources. Mobile sources are classified as being on-road or off-road. On-road motor vehicles consist of passenger cars, trucks, buses and motorcycles. Emissions from on-road motor vehicles are a major portion of the emission inventory, and are estimated by ARB using computer models. Off-road mobile sources generally consist of vehicles in which the primary function is not transportation. Examples of off-road vehicles include construction and farm equipment.

Other mobile sources include boats and ships, trains, and aircraft. The District estimates emissions for ships and aircraft in the area source inventory. The remaining sources are estimated by ARB as part of their off-road inventory.

Natural Source – In addition to man-made air pollution, there are significant quantities of pollutants from natural source. Natural sources include biological and geological sources, wildfires, windblown dust, and biogenic emissions from plants and trees. Emissions from natural sources are estimated by ARB.

SIGNIFICANT SOURCE CATEGORIES

The District has projected the top 10 sources for NOx, VOC, and PM2.5 emissions for 2010. A detailed discussion on these projections can be found in the District's *2008 PM2.5 Plan* which can be found online at: http://www.valleyair.org/Air_Quality_Plans/AQ_Final_Adopted_PM25_2008.htm

The District's *Annual Report to the Community, October 2008* provides a brief discussion of sources of air pollution and identifies the top sources of emissions in the SJVAB. These sources are identified in the table to the right.

Top Ten Sources – Criteria Pollutant Emissions

Nitrous Oxides (NOx)

Heavy Heavy-Duty Diesel Trucks
Off-Road Equipment
Farm Equipment
Trains
Medium Heavy Duty Diesel Trucks
Light Duty Passenger Vehicles
Light Duty Trucks – LDT2
Food and Agricultural Processing
Oil and Gas Production
Medium Duty Trucks

Volatile Organic Chemicals (VOC's)

Farming Operations
Oil and Gas Production
Consumer Products
Pesticides/Fertilizers
Light Duty Passenger Vehicles
Heavy Heavy-Duty Diesel Trucks
Off-Road Equipment
Recreational Boats
Light Duty Trucks – LDT2
Food and Agriculture

PM-2.5

Managed Burning and Disposal
Residential Fuel Combustion
Farming Operations
Heavy Heavy-Duty Diesel Trucks
Fugitive Windblown Dust
Paved Road Dust
Unpaved Road Dust
Cooking
Off-Road Equipment
Chemical Industrial Processes

Additional information on these sources can be found in the Air District's *Annual Report to the Community* can be found on the District's website at: http://www.valleyair.org/General_info/pubdocs/2008AnnualReportfinal-web.pdf

LOCAL, DISTRICT, STATE, AND FEDERAL POLICIES, PROGRAMS, AND REGULATIONS

All levels of government have some responsibility for protecting air quality. This section outlines the responsibilities of federal, state, regional, and local government agencies in air quality matters and explains how they interact.

FEDERAL

At the federal level, the Environmental Protection Agency (EPA) has been charged with implementing national air quality programs. The EPA's air quality mandates are drawn primarily from the federal Clean Air Act (CAA). The federal CAA was first signed into law in 1963. Congress substantially amended the federal CAA in 1970, 1977, and 1990.

The EPA deals with global, international, national, and interstate air pollution issues. Their primary role at the state level is one of oversight of state air quality programs. The EPA sets federal standards for vehicle and stationary sources and provides research and guidance in air pollution programs.

The federal CAA required the EPA to set National Ambient Air Quality Standards (NAAQS) for several problem air pollutants on the basis of human health and welfare criteria. Two types of NAAQS have been established: *primary standards*, which protect public health, and *secondary standards*, which protect public welfare (e.g., crops, forests, materials, visibility, etc.). Primary NAAQS have been established for the following criteria air pollutants:

- Carbon monoxide (CO)
- Ozone (O₃)
- Respirable particulate matter (PM₁₀)
- Fine particulate matter (PM_{2.5})
- Nitrogen dioxide (NO₂)
- Sulfur dioxide (SO₂)
- Lead (Pb)

All of the above, except CO, also have some form of secondary standard. The primary NAAQS standards are

EPA Air Quality Regulations

In addition to setting health-based standards for air pollutants, the EPA also oversees state and local actions to improve air quality. The following list provides a brief explanation of important regulations set forth by EPA:

Federal Clean Air Act (CAA)

- *Requires air quality plans to include measures necessary to achieve NAAQS.*
- *Requires all plans, programs, and projects that require federal approval, including transportation plans, to conform to air quality plans.*
- *Requires sanctions if all feasible measures are not expeditiously adopted.*

Intermodal Surface Transportation Efficiency Act (ISTEA)

- *Requires transportation projects to not impact the ability to attain air quality standards.*
- *Requires demonstration of expeditious implementation of Transportation Control Measures (TCMs).*

Federal Transportation Funding Reauthorization

- *Provides funding for transportation projects that enhance air quality (e.g. Congestion Mitigation Air Quality (CMAQ), Transportation Enhancement, and Bicycle and Pedestrian Funding).*
- *Provides funding source for expeditious implementation of TCMs included in air quality plans.*

intended to protect, within an adequate margin of safety, those persons most susceptible to respiratory distress, such as people suffering from asthma or other illness, the elderly, very young children, or others engaged in strenuous work or exercise.

The EPA designates areas with air quality not meeting federal standards as “nonattainment.” The federal CAA further classifies nonattainment areas based on the severity of the nonattainment problem, with marginal, moderate, serious, severe, and extreme nonattainment classifications for ozone. Nonattainment classifications for PM range from marginal to serious.

The federal CAA requires areas with air quality violating the NAAQS to prepare an air quality control plan referred to as the State Implementation Plan (SIP). The SIP contains the strategies and control measures that states such as California will use to attain the NAAQS. The federal CAA amendments of 1990 require states containing areas that violate the NAAQS to revise their SIP to incorporate additional control measures to reduce air pollution.

The SIP is a living document that is periodically modified to reflect the latest emissions inventories, planning documents, rules, and regulations of Air Basins as reported by the agencies with jurisdiction over them. The EPA reviews SIPs to determine if they conform to the mandates of the federal CAA amendments and will achieve air quality goals when implemented. If the EPA determines a SIP to be inadequate, it may prepare a Federal Implementation Plan (FIP) for the nonattainment area and impose additional control measures.

STATE

States are required to develop and implement air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. States may also establish their own standards, provided the state standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to Health and Safety Code Section 39606(b) and its predecessor statutes.

AQA's “Air Quality Acronyms”

The number of acronyms for any area of government policy can be overwhelming. This page summarizes key acronyms used in air quality policies.

APCD	Air Pollution Control District
AQAP	Air Quality Attainment Plan
AQMD	Air Quality Management District
ARB	Air Resources Board
CAA	Clean Air Act (federal)
CAAQS	California Ambient Air Quality Standards
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CMAQ	Congestion Mitigation Air Quality
CMP	Congestion Management Plan
CO	Carbon Monoxide
COG	Fresno County Council of Governments
EIR	Environmental Impact Report
EPA	Environmental Protection Agency
FIP	Federal Implementation Plan
GHG	Greenhouse Gas
ISTEA	Intermodal Surface Transportation Efficiency Act
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO2	Nitrogen Dioxide
Pb	Lead
PM-2.5	Particulate Matter (2.5 microns or smaller)
PM 10	Particulate Matter (10 microns or smaller)
RTP	Regional Transportation Plan
RTIP	Regional Transportation Improvement Plan
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVUAPCD	San Joaquin Valley Unified Air Pollution Control District
SO2	Sulfur Dioxide
TCM	Transportation Control Measures
VMT	Vehicle Miles Traveled

The California Legislature established the Air Resources Board (ARB) in 1967. The ARB is the agency responsible for coordination and oversight of state and local air pollution control programs in California and for implementing the California Clean Air Act (CCAA) of 1988. The CCAA provides a planning framework for attainment of the CAAQS for ozone, CO, SO₂, and NO₂.

The CCAA classifies ozone nonattainment areas as moderate, serious, severe, and extreme based on severity of violation of state ambient air quality standards. For each class, the CCAA specifies air quality management strategies that must be adopted. For all nonattainment categories, attainment plans are required to demonstrate a five-percent-per-year reduction in nonattainment air pollutants or their precursors, averaged every consecutive three-year period, unless an approved alternative measure of progress is developed. Air districts responsible for air basins with air quality that is in violation of CAAQS for ozone, CO, SO₂, and NO₂ are required to prepare an air quality attainment plan (AQAP) that lays out a program to attain the CCAA mandates.

Other ARB duties include monitoring air quality in conjunction with air monitoring networks maintained by air pollution control districts (APCDs) and air quality management districts (AQMDs), establishing CAAQS (which are more stringent than the NAAQS in many cases), setting emissions standards for new motor vehicles, and reviewing district input for the SIP required by the federal CAA amendments. The SIP consists of the emissions standards for vehicular sources set by the ARB as well as attainment plans adopted by the APCD or AQMD and approved by the ARB.

The list to the right provides a brief explanation of important regulations set forth by the State of California.

REGIONAL

Air pollution does not respect political boundaries. Therefore, many air quality problems are best managed on a regional basis. In 1991 the State Legislature determined that management of an air basin by a single agency would be more effective than management through each county within that basin. Air basins are geographic areas sharing a common "air-shed." Most

Key State Air Quality Regulations

California Clean Air Act (CCAA)

- Requires all feasible control measures, including transportation control measures, to reduce emissions.
- Provides for indirect source programs in attainment plans.
- Contains targets for emission reductions, vehicle miles traveled, and average vehicle ridership.

AB (Assembly Bill) 170

- In adding Section 65302.1 to the Government Code, requires cities and counties in the Valley to incorporate strategies to improve air quality in their general planning efforts. The "Conservation, Open Space, Parks, Recreation and Air Quality Element" is Firebaugh's response to this requirement.

SB (Senate Bill) 709:

- Adds Chapter 5.7 to Part 3 of Division 26 of the Health and Safety Code, giving the District more responsibility in terms of permitting, fee implementation, and agricultural assistance, but also gives the District the authority to require the use of best available control technology for existing sources, promote cleaner-burning alternative fuels, and encourage and facilitate ridesharing.
- Adds Section 9250.16 to the Vehicle Code to allow the District to adopt a surcharge on motor vehicle registration fees in counties within the District.

California Government Code Section 65089:

- Requires trip reduction and travel demand management in Congestion Management Programs.

major metropolitan areas in California now fall under the authority of multi-county APCDs or AQMDs.

Air districts have the primary responsibility for control of air pollution from all sources other than direct motor vehicle emissions, which are the responsibility of the ARB and EPA. Air districts adopt and enforce rules and regulations to achieve state and federal ambient air quality standards and enforce applicable state and federal law.

The San Joaquin Valley Unified Air Pollution Control District (the "District") has jurisdiction over air quality matters in the SJVAB. Additional information on the District is provided to the right.

Until the passage of the CCAA, the primary role of county APCDs was controlling stationary sources of pollution, such as industrial processes and equipment. With the passage of the CCAA and federal CAA amendments, air districts were required to implement transportation control measures and were encouraged to adopt indirect source control programs to reduce mobile source emissions. These mandates created the necessity for air districts to work closely with cities, counties, and regional transportation planning agencies to develop new programs.

The District entered into a memorandum of understanding with the transportation planning agencies of the eight counties in the SJVAB in 1992. This memorandum of understanding ensures a coordinated approach in the development and implementation of transportation plans throughout the Valley. This action has helped the Regional Transportation Planning Agencies comply with pertinent provisions of the federal and state Clean Air Acts as well as related transportation legislation (such as the Intermodal Surface Transportation Efficiency Act).

The District develops plans and implements control measures in an effort to advance Valley attainment of CAAQS and NAAQS. The District has developed plans to attain state and federal standards for ozone and particulate matter. The District's air quality plans include emissions inventories to measure the sources of air pollutants, to evaluate how well different control methods have worked, and to show how air pollution will be reduced. The plans also use computer modeling to estimate future levels of pollution and make sure that the

San Joaquin Valley Air Pollution Control District

The San Joaquin Valley Unified Air Pollution Control District (the "District") has jurisdiction over air quality matters in the San Joaquin Valley Air Basin. The District was formed in 1991. Its headquarters are located in Fresno with regional offices located in Bakersfield in the Southern Region and Modesto in the Northern Region.

The District has jurisdiction over the eight counties within the air basin and includes the counties of Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare. Note that the eastern portion of Kern County falls outside the SJVAB and lies within the Mojave Desert Air Basin.

Valley will meet air quality goals on time. To help meet air quality standards, the District Governing Board approved three major plans in 2007-2008 listed to the right.

LOCAL

Local government's responsibility for air quality increased significantly with the passage of the CCAA and the federal CAA amendments. Both of these pieces of legislation place new emphasis on reducing motor vehicle trips and vehicle miles traveled at the local level. Although the District is required to address state air quality standards by way of TCMs and indirect source programs in its air quality attainment plans, cities and counties, through their Councils of Government, are responsible for most implementation.

Local government responsibilities for air quality are found in four areas:

1. land use planning;
2. reviewing and mitigating the environmental impacts of development projects;
3. developing and maintaining the transportation infrastructure in the community, including transit systems;
4. implementing local air quality programs such as commute-based trip reduction and rideshare.

Land Use – State law places responsibility for land use planning in the hands of city and county governments. With this responsibility comes the authority to approve development projects. As part of their duties, cities and counties are required to prepare a "general plan." The general plan is a comprehensive document that sets a community's goals and policies for development over a long period (often 20 years) and designates in general terms where certain land uses will be allowed. The general plan has seven mandatory elements, but any issues can be addressed as the city or county sees fit. Air quality can be addressed within one or more of the mandatory elements, usually the Land Use, Conservation, or Circulation Elements. Section 65302.1 of California Government Code, added by AB 170 in 2003, requires cities and counties in the San Joaquin Valley to amend appropriate elements of general plans to include data,

Air District Air Quality Plans

Valley 2007 Ozone Plan

- The District approved the *2007 Ozone Plan* on April 30, 2007. This plan included an in-depth analysis of all possible control measures and projected that the Valley will achieve the 8-hour ozone standard (as set by EPA in 1997) for all areas of the SJVAB no later than 2023.
- This plan went above and beyond minimum legal requirements by including a "Fast Track" control strategy. Through Fast Track, new strategies produce real reductions (even though they can not be legally counted in the plan at this time) and will clean the air before the deadline.
- The ARB approved the *2007 Ozone Plan* on June 14, 2007.

2007 PM 10 Plan

- The District has compiled a series of PM10 Plans, with the first one in 1991. Based on PM10 measurements from 2003-2006, EPA found that the SJVAB had reached the federal PM10 standard.
- The District's *2007 PM10 Maintenance Plan and Request for Redesignation*, approved on September 21, 2007, assures that the Valley will continue to meet the PM10 standard and requests that EPA formally redesignate, or label, the Valley to attainment status. On April 5, 2008, EPA stated their intent to approve the PM10 Maintenance Plan.

2008 PM 2.5 Plan

- The District approved the *2008 PM2.5 Plan* on April 30, 2008. Building upon the strategy used in the *2007 Ozone Plan*, the District agreed to additional control measures to reduce directly produced PM2.5. The *2008 PM2.5 Plan* estimates that the SJVAB will reach the PM2.5 standard (as set by EPA in 1997) in 2014. The ARB approved the Plan on May 22, 2008, and the plan has been submitted to EPA.

analysis, comprehensive goals, policies, and feasible implementation strategies to improve air quality.

Environmental Review – The California Environmental Quality Act (CEQA) was enacted by the state legislature in 1970 and has been amended on numerous occasions. It applies to government initiated plans, projects, and regulations as well as to private projects requiring discretionary approval from a state or local agency. Under CEQA, a local planning agency is designated as the lead agency for most private development projects.

CEQA requires the lead agency to conduct an “initial study” to determine if a project may have a significant adverse impact on the environment. Lead agencies are required to consult with and request comments from responsible agencies, agencies that exercise authority over resources, which may be affected by the project. The lead agency may choose to require or not require the measures suggested by the responsible agency. Projects with significant adverse impacts require the lead agency to prepare a report referred to as an Environmental Impact Report (EIR). Projects that will not have a significant effect, or projects that are modified to avoid significant effects, require the lead agency to prepare a Negative Declaration.

CEQA allows lead agencies to disapprove a project if necessary to avoid one or more significant effects on the environment. The planning agencies’ authority to disapprove projects compels developers to include measures in the project to reduce significant environmental impacts.

Goals, Objectives and Action Plans

This section of the Element lists goals, objectives and action plans related to parks, open space, recreation and conservation.

ISSUE ONE: Parks and Open Space

There are currently four parks in Firebaugh:

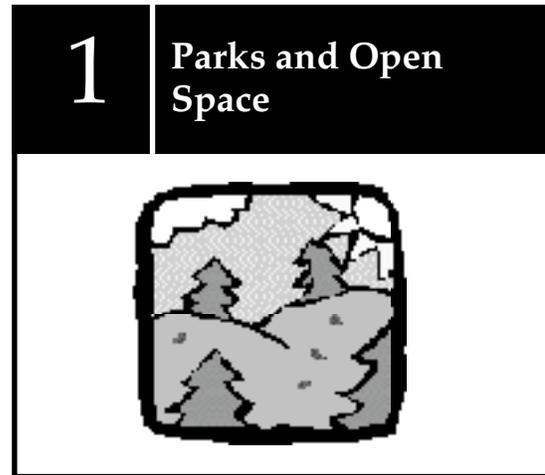
- Firebaugh City Park located at Q and 15th Streets (13.6 acres);
- Maldonado Park located at Clyde Fannon Road and Thomas Conboy Avenue (6.6 acres);
- Andrew Firebaugh Historic Park, located on the north side of 13th Street east of P Street (17.3 acres).
- Courthouse Park located on the east side of O Street north of 14th Street (0.6 acres)

Using the current population figure for Firebaugh of 6,680 residents, the city has a parkland to population ratio of 3.9 acres of parkland per 1,000 people – comfortably above the current standard of 3.5 acres per 1,000 residents.

By the year 2030, using “medium” population projections detailed in the Land Use Element of the General Plan, Firebaugh’s population is projected to be 11,795 persons. Using the standard of 3-1/2 acres of parkland per 1,000 people, Firebaugh should attempt to set aside 10.5 acres of open space by the year 2030. Using the standard of five acres per 1,000 residents, Firebaugh should set aside about 21 acres by the year 2030.

As discussed in the Land Use Element (page 2-13), there are three recently-approved subdivisions that will be adding nearly 15 acres of public parks when fully developed. As such, Firebaugh is well on its way to meeting its future park land demands.

Given Firebaugh’s increasing population and demand for recreation and leisure activities, the following goals, objectives and action plans are set forth.



In 2007, Firebaugh had approximately 38 acres of developed park land.

This works out to a ratio of 3.9 acres of park land per 1,000 residents

*Goals, Objectives, Action Plans***I. Develop a high quality public park and recreation system that is convenient, accessible and affordable to all segments of the City. Based on a ratio of 5 acres per 1,000 residents, the City should add approximately 21 acres of developed park land by the year 2030.**

1. The City should designate within its planning area lands for open space, parks, recreation facilities and other amenities that link the uses together, like pedestrian and bike paths.
 - a. Map 4-5 designates the location and size of Firebaugh's existing and future open space, park and recreation facilities.
 - b. The Circulation Element delineates the alignment and design of future pedestrian and bike pathways within the planning area.
2. Require developers to dedicate new parks within new subdivisions at a ratio of 5 acres per 1,000 residents. The actual amount of acreage could be less if the developer agrees to install landscape and play equipment improvements equal to the value of the difference in acreage.
 - a. The Subdivision Ordinance shall be amended to incorporate the 5:1,000 park land dedication standard. Until the ordinance is amended, this policy shall be considered to be in force.

Time Frame: Within three months
Responsibility: City Planner

3. Parks should be centrally located within the subdivision they serve. Further, the subdivision should be designed so that homes face onto the park – thereby providing added security by ensuring there are “eyes on the park” at all times.

*Park Land Dedication
Requirement*

Five acres of land shall be dedicated by developers for each 1,000 residents housed in new residential projects.

Based on the 2000 Census, there are approximately 3.45 persons per dwelling in Firebaugh.

Therefore, approximately 290 homes would house 1,000 residents. A 290-home development would be responsible to dedicate five acres of land for park and recreation facilities.

The dedication of approximately 0.017 acre, ($5 \div 290$) or about 751 square feet of park land will be required for each new dwelling.

- a. The City shall prepare Design Guidelines that illustrate preferred locations of future parks within new subdivisions.

Time Frame: Within three years
 Responsibility: City Planner

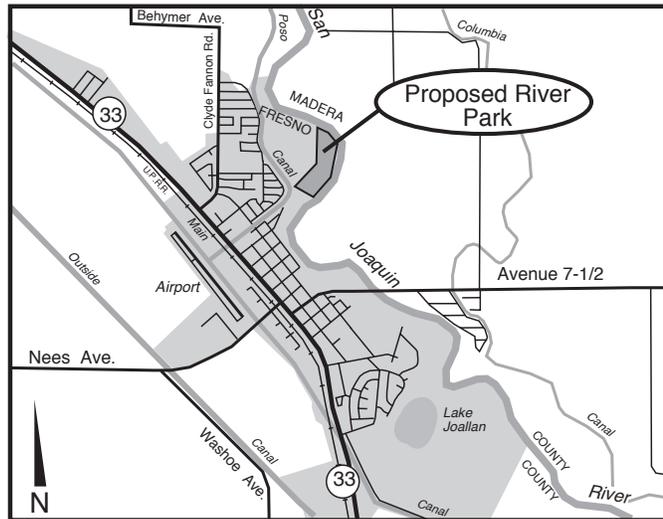
- 4. Establish a new community park on City-owned land east of the east end of 7th Avenue, adjacent to the San Joaquin River. Called “River Park” the City has already begun preparing plans for development of a park at this site. Covering about 31 acres, potential improvements will include soccer and baseball fields, picnic areas, wildlife viewing areas along the river and an extension of the San Joaquin River trail.

- a. The City Manager will continue to secure funding sources for the planning, design and construction of this park.

Time Frame: Secure funding within two years; begin establishing park within five years of adoption of General Plan.

Responsibility: City Manager

Map 4-6
 Proposed River Park Location



II. Ensure that parks and recreation programs are adequately funded and maintained.

- 1. The City should review and maintain its development impact fee schedule to ensure that its park fee is adequate to purchase and construct parkland to achieve the park and open space facilities delineated in the Land Use Element.
 - a. The City Engineer shall periodically review the development impact fee schedule and initiate action by the City as necessary to maintain

appropriate park fees consistent with the State Mitigation Fee Act and the State Subdivision Map Act.

Time Frame: Ongoing
Responsibility: City Engineer

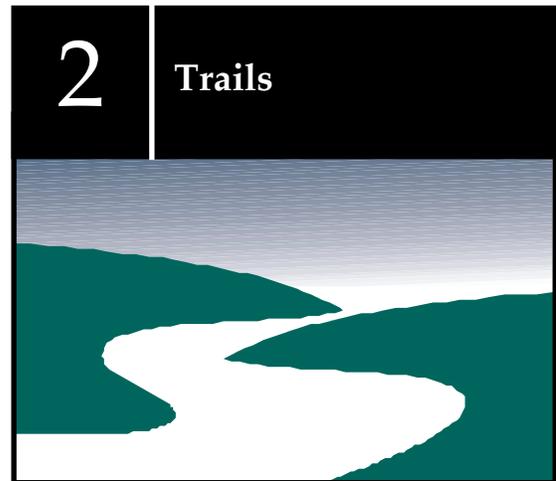
2. The City should seek state and federal grants for the purchase and development of open space and park facilities.

- a. The City Manager shall dedicate resources to identifying and securing funding for park and recreational resources.

Time Frame: Ongoing
Responsibility: City Manager

ISSUE TWO: Trails

Firebaugh has already made a good start in establishing an effective trail system that can be used by pedestrians, cyclists and equestrians. The City has already established nearly a 3/4 mile section of trail along the San Joaquin River on both sides of the Avenue 7-1/2 bridge. Residents have expressed strong desire that this trail be extended further in both directions along the river and that additional trail connections be established to other portions of the community. The General Plan must establish policies now so that a comprehensive trail system becomes a reality in the future.



I. Establish a comprehensive, linked system of trails in existing and future development areas of Firebaugh.

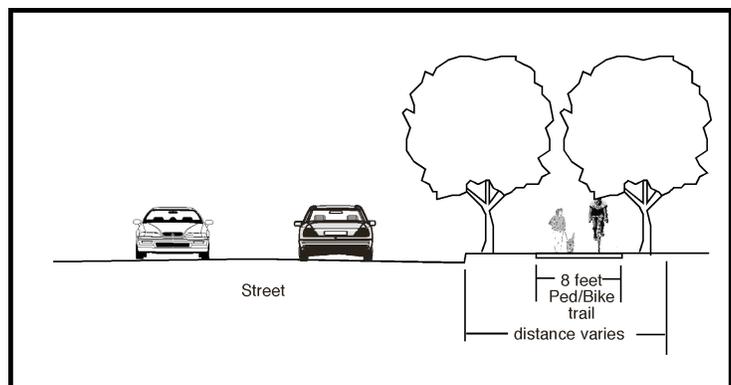
1. Map 4-5 shows the proposed trail system.
2. To the extent permitted by law, require developers to install portions of the trail system that traverse or abut their properties, as development occurs.
 - a. The Subdivision Ordinance shall be amended to include a requirement for dedications for trails. In addition, a standard trail design drawing (similar to that shown in Figure 4-2, shall be included in the City's Standard Specifications Manual. Until that is completed, this policy shall be considered to be in force.

Time Frame: Subdivision Ordinance shall be amended within six months.

Responsibility: City Planner

3. Ensure that trails installed in new developments are maintained by the landscape and lighting district for that development.

Figure 4-2
 Standard Trail Design



To the extent practical, trails should be routed in locations that are highly visible, such as along streets, through parks, etc.

- a. The City Engineer shall initiate and pursue all actions by the City so that trails and associated improvements such as landscaping and irrigation systems are maintained by City landscape and lighting maintenance districts, where possible.

Time Frame: Ongoing as projects are proposed

Responsibility: City Engineer

- 4. Identify funding sources for the acquisition of land and construction of trails in portions of the community that are already developed, in open space areas, or where dedication is not required.

- a. The City Manager should identify and secure funding sources for the construction of trail systems.

Time Frame: Ongoing

Responsibility: City Manager

ISSUE THREE: Recreation

Recreation programs for youth and adults are a quality-of-life feature that many cities place great emphasis on. If youth are involved in a local recreation program or activity, they are less likely to get into trouble. Improved physical fitness is also an important purpose of municipal recreation programs – particularly with skyrocketing obesity rates being witnessed in recent years.

Further, programs that involve sport teams help youth and their families to form relationships with other members of the community, further strengthening the community through relationship connections.

Recreation can also involve the senior citizen population. Firebaugh has a senior citizen center located in Maldonado Park. Additional programs could be developed for this segment of the population, including bingo, health classes, physical education, etc.

Goals, Objectives, Action Plans**I. Develop a recreation program that involves all segments of the Firebaugh population.**

1. The City should endeavor to provide programs for youth, adults and senior citizens.
 - a. The City should work with other public and private entities in coordinating activities for youth, adults and seniors. Other entities could include the school district, the County of Fresno, and local social agencies such as the Boys and Girls Club, AYSO Soccer, and YMCA. The ultimate result should be a program of regularly scheduled “league-type” activities, such as soccer, baseball and basketball games.

Time Frame: Ongoing
Responsibility: City Manager



II. Develop a recreation program that pays for itself through the collection of user fees.

1. The City should fund a recreation program that is supported through the collection of program fees.

- a. The City should consider establish a recreation program that would be supported by general fund monies and program fees.

Time Frame: Within three years
Responsibility: City Manager

- c. The City should seek outside funding in the form of state and federal grants and local contributions.

Time Frame: Ongoing
Responsibility: City Manager

ISSUE FOUR: Scenic Qualities

Firebaugh is blessed with scenic surroundings – agricultural fields, the San Joaquin River, and views of the distant Coast Range mountains. However, Firebaugh could significantly enhance its image by promoting scenic enhancements that will attract public and private investment.

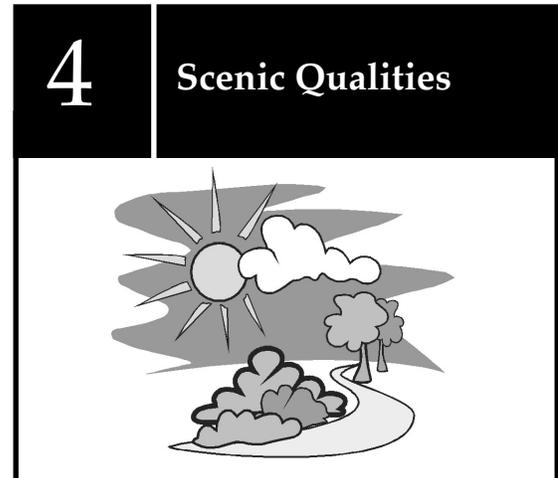
Goals, Objectives, Action Plans

I. Preserve and enhance the scenic qualities of the community by adopting standards regulating entryways, view preservation, building and site design and landscaping.

1. The City should enhance its image by developing improvements within the City that improve the visual appearance of the community.
 - a. Undertake a beautification program along Highway 33. This is the major route through Firebaugh and many portions give the City a less-than-desirable image. In addition to landscaping improvements within the right-of-way (which are already funded) work with individual property owners to make improvements to their sites, including landscaping, façade improvements such as new paint, window awnings, and new signs.

Time Frame: Within five years
Responsibility: City Manager

- b. The City should design and construct a new streetscape in downtown Firebaugh along O Street. Improvements should include street trees, hardscape, pedestrian lighting, benches, and public signage. Circulation improvements such as bulb-outs and brick cross walks should also be considered.



Time Frame: Within ten years
Responsibility: City Manager

- c. The City should identify streets that could benefit from the installation of street trees and medians. Potential streets that have the necessary right-of-way width for a median include O Street, Clyde Fannon, Nees and Morris Kyle Drive, among others. A report on this matter should be given to the City Council with recommendations for action.

Time Frame: Within five years
Responsibility: City Manager

- d. Prepare Design Guidelines that identify preferred building and site plan design strategies for residential, commercial, industrial and public facilities.

Time Frame: Within three years
Responsibility: City Planner

ISSUE FIVE: Conservation

The conservation element overlaps with the open space, land use and safety elements. It differs from these elements in that it focuses on the conservation of natural resources. Given that natural resources can be finite, and given the increasing population growth occurring in the San Joaquin Valley, it is imperative that local governments properly manage their natural resources. This section also establishes goals and action plans to meet the requirements for an air quality element.

Goals, Objectives, Action Plans

I. Protect the San Joaquin River and other water courses, natural and man-made, that traverse Firebaugh.

1. The City should utilize its water courses, (both natural and man-made) as landscaped open space corridors that would be improved with bikepaths, trees, lighting, benches and other appropriate improvements.
 - a. The City should prepare a Waterway master plan for these open space corridors after seeking public input on the issue. The plan should provide that waterway corridors be improved with trails and landscaping. Coordination with Central California Irrigation District is critical on this issue.

Time Frame: Within four years
 Responsibility: City Planner

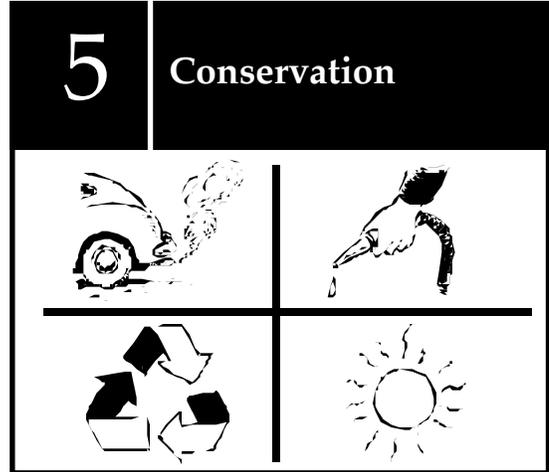
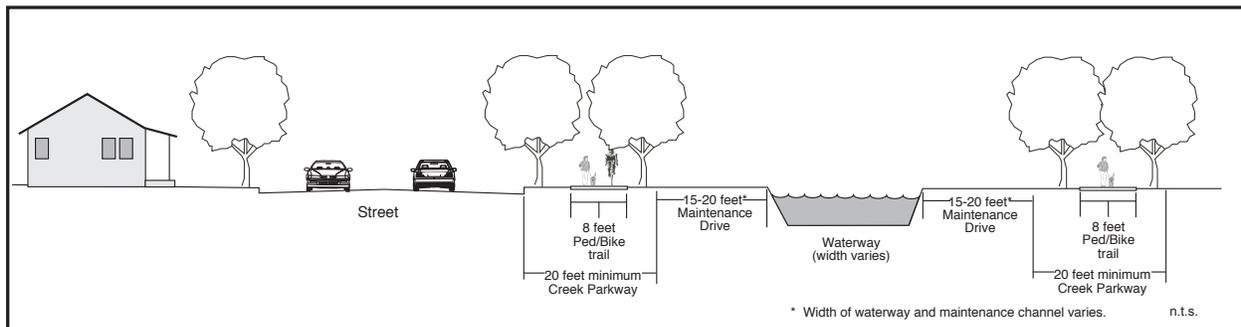


Figure 4-3
 Waterway Corridor
 Improvement Scheme



- b. To the extent allowed by law, the City should require developers to install (where appropriate) trails and landscape improvements along waterways in Firebaugh. Further, the City should seek state and federal grants for the development of these open space corridors.

Time Frame: Ongoing
 Responsibility: City Manager

- c. The City should consider using a portion of its park development impact fees in the improvement of these open space corridors.

Time Frame: Ongoing – as development occurs
 Responsibility: City Manager



II. Protect endangered plant and animal species and their habitat.

- 1. The San Joaquin River and adjacent lands are recognized as wildlife habitat. The Land Use map designates lands along the San Joaquin River to remain primarily undeveloped, in open space.
 - a. The Land Use Map designates land along the San Joaquin River as “Open Space”.
 - b. Development shall be prevented within 100 feet of the ordinary high water mark of the river. Privately owned land within this corridor may be required as a dedication for open space preservation consistent with park and open space dedication requirements of this Element, or they may be maintained in open space through the creation of an open space easement or similar method.

Two Ways to Treat Waterways: the top image shows a canal fenced in, barren and unattractive. The lower image shows a canal incorporated into the community as an attractive open space feature, with walking trail and landscaping.

Time Frame: Ongoing, during project review

Responsibility: City Planner

2. Prevent new development from impacting endangered plant and animal species.

- a. The City will refer projects that may have an impact on endangered plant and animal species to appropriate State and Federal agencies, as required by law, such as the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. Projects that may impact wetlands or “waters of the United States” will be referred to the U.S. Army Corps of Engineers. The San Joaquin River channel is legally considered to be “Waters of the United States”.

Time Frame: Ongoing, during project review

Responsibility: City Planner

III. Protect the aquifer underlying Firebaugh from uses that would potentially adversely impact this resource.

1. The City should discourage the development of industrial and heavy commercial uses that could potentially leach chemicals into the aquifer that underlies Firebaugh.

- a. Through the City’s site plan review process, the City Engineer will require design, improvements and conditions so that proposed industrial uses will not pollute the aquifer.

Time Frame: Ongoing

Responsibility: City Engineer

- b. Any proposed use that generates effluent will be required to be pretreated prior to on-site storage or disposal into the City’s sewer system.

Time Frame: Ongoing, project by project basis
Responsibility: City Engineer

IV. Protect prime agricultural soils from premature urbanization.

2. Residential land shall not be annexed into the City until 80 percent of the residentially-zoned land within the City is developed. Further, annexations of land for residential development more than 1/8 mile from existing or approved development within City limits shall not be approved, except where an exception may be granted by the Planning Commission and City Council. In granting an exception, a finding shall be made that extraordinary circumstances are present, such as a lack of available land to be developed and/or the presence of property owner(s) immediately adjacent to existing urban development who are unwilling to sell/develop.
 - a. The City Planner shall conduct an analysis of proposed annexations to determine consistency with this policy.

Time Frame: Ongoing
Responsibility: City Planner

3. Encourage Fresno County to maintain land outside the City limits, in large-lot agricultural use (20-acre minimum lot size)
 - a. Communicate with the County to ensure that lands outside the city (within the Sphere of Influence) are not parcellized for ranchettes and other similar uses.

Time Frame: Ongoing
Responsibility: City Manager

V. Conserve water through various conservation practices.

1. The City's landscaping standards should be amended to promote the use of drought-tolerant plants.
 - a. The City shall amend its Zoning Ordinance to include a chapter that pertains to landscaping standards. This chapter would include a list of plants that are drought-tolerant.

Time Frame: Within four years
Responsibility: City Planner

2. The City should regulate landscape irrigation practices within the City limits by restricting irrigation to evening and early morning hours. The City should amend its Municipal Code to include an ordinance that includes these restrictions and other conservation measures pertaining to irrigation within the City limits.
 - d. The Public Works Director should work with the Planning Commission to develop an irrigation ordinance.

Time Frame: Within two years
Responsibility: Public Works Director

VI. Ensure that the maximum amount of recyclable solid waste is recycled or composted.

1. Examine Firebaugh's existing recycling program and take actions to improve the effectiveness of the system.
 - a. Work with the State Integrated Waste Management Board, Fresno County and the City's solid waste franchisee to implement improvements to the waste recycling and composting programs.

Time Frame: Ongoing
Responsibility: Public Works Director

- b. Consider installing recycling waste containers in the downtown area and other appropriate locations.

Time Frame: Within three years
Responsibility: Public Works Director

- c. Green waste from City parks, and other public landscape areas should be composted.

Time Frame: Ongoing
Responsibility: Public Works Director

- b. Work with Firebaugh-Las Deltas Unified School District to establish an education component on recycling, in the local schools.

Time Frame: Ongoing
Responsibility: City Manager

VII. Air Quality.

This portion of the Conservation, Open Space, Parks and Recreation Element establishes goals, objectives and action plans to address air quality issues. These action plans are established as part of Firebaugh’s effort to meet the Air Quality Element requirements of AB 170.

A. COMMUNICATION, COOPERATION, AND COORDINATION

- 1. Determine and mitigate local and regional air quality impacts of projects proposed in Firebaugh.
 - a. The City shall determine project air quality impacts using analysis methods and significance thresholds recommended by the Air District.
 - b. The City shall reduce the air quality impacts of development projects that may be

Air Quality Policy Topics

- Communication, Cooperation and Coordination
- Integrated Planning
- Education
- Public Facilities/Operations
- Congestion Management and Transportation Control Measures
- Toxic and Hazardous Emissions
- Fugitive Dust/PM-10
- Energy
- Land Use Strategies
- Circulation Strategies

insignificant by themselves, but are cumulatively significant.

- c. The City shall encourage innovative mitigation measures to reduce air quality impacts by coordinating with the Air District, project applicants, and other interested parties.
2. Coordinate local air quality programs with regional programs and those of neighboring jurisdictions.
- a. The City shall consult with neighboring jurisdictions, affected agencies, and the Air District to address cross-jurisdictional and regional transportation and air quality issues.
 - b. The City shall coordinate with other jurisdictions and other regional agencies in the San Joaquin Valley to establish parallel air quality programs and implementation measures (trip reduction ordinances, indirect source programs, etc.).

B. INTEGRATED PLANNING

1. Integrate land use planning, transportation planning, and air quality planning to make the most efficient use of public resources and to create a healthier and more livable environment.
- a. The City shall consider air quality when planning land use and transportation systems to accommodate expected growth in the community.
 - b. All City submittals of transportation improvement projects to be included in regional transportation plans (RTP, RTIP, CMP, etc.) shall be consistent with air quality goals and policies of the General Plan.
 - c. The City shall consult with transit providers to determine project impacts on long range transit plans and ensure that impacts are mitigated.

Implementation Strategies:

COMMUNICATION, COOPERATION, AND COORDINATION

- Ensure that development projects are submitted to the SJVAPCD for CEQA comments. Train staff preparing CEQA documents on how to use the *Guide for Assessing and Mitigating Air Quality Impacts* manual.
- Consult with the SJVAPCD regarding the effectiveness of mitigation measures. When using measures from the SJVAPCD list of suggested measures, consider site-specific factors that make measures feasible.
- Impacts of small residential, commercial, and industrial projects may be addressed by standard conditions that institutionalize mitigation measures, making them applicable to all projects regardless of size.
- Innovative measures can be identified during a pre-application consultation process and during city/applicant negotiation over CEQA mitigation.
- Encourage staff to keep up with activities in neighboring jurisdictions and regional agencies by sending representatives to appropriate meetings, by contacting other agencies, and by active participation in regional programs.
- When development is proposed in another agency, air quality issues should be examined, such as:
 - Congestion on roads in Firebaugh from increased traffic caused by the project.
 - Proposed circulation amendments that may restrict traffic flow to or from Firebaugh or that increase urban sprawl.
 - Proposed project may preclude or minimize the effectiveness of regional bike paths, transit, and pedestrian-oriented development.
- Work with the Fresno COG on programs implementing transportation control measures to reduce vehicle trips and vehicle miles traveled.
- Work with Fresno County or neighboring cities and counties to ensure programs are complimentary.
- Be involved in the rule development process.

Time Frame: Ongoing/during project reviews
Responsibility: City Planner

- d. The City shall work with Caltrans and the Fresno COG to minimize the air quality, mobility, and social impacts of large scale transportation projects on existing neighborhoods.

Implementation Strategies:**INTEGRATED PLANNING**

- Ensure that land uses proposed in the general plan are supported by a multi-modal transportation system, including coordination with local transit providers.
- Analyze project submittals for consistency. Examples of inconsistent projects are a road widening project that does not consider transit, bicycling, and pedestrian needs, or an intersection signalization project that does not involve signal actuators that can be activated by pedestrians or bicyclists.
- Provide safe pedestrian and bicycle connections between neighborhoods, shopping areas, and the downtown.

Time Frame: Ongoing, during project reviews

Responsibility: City Planner

C. EDUCATION

1. Educate the public on the impact of individual transportation, lifestyle, and land use decisions on air quality.
 - a. The City shall work to improve the public's understanding of the land use, transportation, and air quality link.
 - b. The City shall encourage local public and private groups that provide air quality education programs.

Implementation Strategies:**EDUCATION**

- The City should assist in educating developers and the public on the benefits of local programs that can reduce vehicle trips and miles traveled.
- It is recommended that the City, working with the SJVAPCD and the Firebaugh-Las Deltas Unified School District, develop educational materials regarding air quality, the impact of air quality on people, plants, and animals, and measures that help to improve air quality.
(www.valleyair.org/KidsElemCurr.htm)
- Work with the Farm Bureau, the University of California Extension Studies, and farm organizations on educational programs.

TimeFrame: Ongoing

Responsibility: City Planner, City Manager

D. PUBLIC FACILITIES/OPERATIONS

1. Public facilities and operations should provide a model for the private sector in implementing air quality programs.
 - a. City fleet vehicle operators shall replace or convert conventional fuel vehicles with clean fuel vehicles as rapidly as feasible.
 - b. The City shall support the use of teleconferencing in lieu of employee travel to conferences and meetings when feasible.
 - c. The City shall encourage departments to set up trip reduction programs for their employees.

Implementation Strategies:

PUBLIC FACILITIES/OPERATIONS

- City Departments should encourage and implement trip reduction programs to reduce staff commute trips. Examples of trip reduction programs include:
 - Establishment of flexible work schedules for city employees and a 4/10 weekly work schedule.
 - Department-sponsored carpooling efforts and rideshare programs
 - Incentives for employees who use alternative means of transportation (biking, walking, carpooling, etc.)
- Budget for clean fuel vehicles in capital expenditure plans.
- Participate in the San Joaquin Valley Clean Cities Coalition to identify fleet vehicle purchase and shared infrastructure investment opportunities.
- Incorporate infrastructure to facilitate the use of clean-fuel vehicles, such as a L/CNG refueling stations for clean fuel vehicles.
- Identify departments where telecommuting is feasible, or where video and web-based conferencing options can result in travel cost and employee time savings.

Time Frame: Ongoing
Responsibility: City Manager, Finance
Director, Public Works
Director

**E. CONGESTION MANAGEMENT /
TRANSPORTATION CONTROL MEASURES**

1. Reduce traffic congestion and vehicle trips through more efficient infrastructure and support for trip reduction programs.
2. Ensure that new development provides facilities that improve the effectiveness of transportation control measures and congestion management programs.
 - a. The City shall consider measures to increase the capacity of the existing road network prior to constructing more capacity (additional lanes, etc.).
 - b. The City shall work with employers and developers to provide employees and residents with affordable transportation alternatives.
 - c. The City shall encourage state-of-the-art communication infrastructure linked to the rest of the world.

Implementation Strategies:

CONGESTION MANAGEMENT

- Measures that may increase capacity and reduce congestion on existing roads include:
 - Where possible, synchronize traffic signals to assure smooth-flowing traffic through intersections.
 - Modify intersections using turn restrictions, channelization, etc., where necessary and feasible. Consider the use of round-a-bouts or traffic circles on some local and collector roadways
 - Redirect truck traffic.
- Require major new development to provide on-site facilities that encourage employees to use alternative transportation modes as air quality and transportation mitigation measures. Some examples include:
 - Showers and lockers provided in office buildings
 - Safe and secure bicycle parking areas
 - On-site or nearby cafeterias and eating areas
- Some methods employers may use to encourage trip reduction include rideshare and vanpool matching, flexible work schedules, telecommuting, and preferential parking for ride-sharing vehicles.
- Developers can provide site designs that increase the ability to walk, bicycle, or use transit.
- Encourage new homes and businesses to be wired with fiber-optic cables or to require wiring conduits with easy access and adequate capacity to allow for efficient retrofitting.

Time Frame: Ongoing

Responsibility: Public Works Director, City Engineer, City Planner

F. TOXIC AND HAZARDOUS EMISSIONS

1. Minimize exposure of the public to toxic air emissions and odors from industrial, manufacturing, and processing facilities.
2. Provide adequate sites for industrial development while minimizing health risks to people resulting from toxic or hazardous air pollutant emissions.
 - a. The City shall require residential projects and other sensitive receptors to be located an adequate distance from existing and potential sources toxic emissions such as freeways, industrial sites, and hazardous material locations.
 - b. The City shall require new air pollution point sources such as industrial, manufacturing, and processing facilities to be located an adequate distance from residential areas and other sensitive receptors.

Implementation Strategies:**TOXIC AND HAZARDOUS EMISSIONS**

- Consult with the SJVAPCD to identify sources of toxic air emissions and determine the need for and requirements of a health risk assessment for a proposed development, including developments that may exempt from CEQA.
- Require project proponents to prepare health risk assessments in accordance with SJVAPCD procedures when the proposed industrial process has toxic emissions designated by the state as a toxic air contaminant or, similarly, by the federal government as a hazardous air pollutant.
- Designate industrial land in areas well-separated from sensitive uses. Protect vacant industrial sites from encroachment by residential or other sensitive uses through appropriate zoning.

Time Frame: Ongoing and during project reviews
Responsibility: City Planner

G. FUGITIVE DUST/PM10

1. Reduce particulate emissions from sources under the jurisdiction of the City of Firebaugh.
2. Reduce emissions of PM₁₀ and other particulates under local control.
 - a. The City shall work with the SJVAPCD to reduce particulate emissions from construction, grading, excavation, and demolition to the maximum extent feasible.
 - b. The City shall require all access roads, driveways, and parking areas serving new

Implementation Strategies:**FUGITIVE DUST/PM10**

- The City should include PM10 control measures as conditions of approval for subdivision maps, site plans, and grading permits. This will assist in implementing the SJVAPCD's Regulation VIII, Fugitive PM10 Prohibitions.
- Provide a condition of project approval addressing compliance with District Rule 9510 prior to the issuance of building permits for each project phase including

development to be constructed with materials that minimize particulate emissions and are appropriate to the scale and intensity of use.

- c. The City shall reduce PM₁₀ emissions from City-maintained facilities to the maximum extent feasible.

H. ENERGY

1. Reduce emissions related to energy consumption and area sources.
2. Encourage the use of energy conservation features and low-emission equipment for all new residential, commercial, and industrial development.
 - a. The City shall cooperate with the local building industry, utilities and the SJVAPCD to promote enhanced energy conservation standards for new construction.
 - b. The City shall encourage new residential, commercial, and industrial development to reduce air quality impacts from area sources and from energy consumption.

Implementation Strategies:

- Encourage the incorporation of energy conservation features in the design of all new construction and the installation of conservation devices in existing development.
- Encourage the use of passive design concepts that make use of the natural climate to increase energy efficiency.
- Incorporate the most energy-efficient design feasible for all local government facilities and equipment.
- One medium-sized tree (20-40 foot canopy at full growth) shall be provided on each interior residential lot front yard. Two medium-sized trees shall be provided for each corner lot, with one placed on each street frontage. The trees shall be so placed as to provide shade to the street at full growth.

continued

- payment of applicable fees.
- Encourage construction firms to demonstrate that their construction fleets can meet the emissions reduction requirements set by District Rule 9510.
- In addition to Regulation VIII, apply the following mitigation measures to reduce PM₁₀ emissions:
 - a. Water all active construction sites at least twice daily. Frequency should be based on the type of operation, soil, and wind exposure.
 - b. Prohibit all grading activities during periods of high wind (over 15 mph).
 - c. Apply chemical soil stabilizers on disturbed lands within construction projects that are unused for at least four consecutive days.
 - d. Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut and fill operations
 - e. Haul trucks shall maintain at least 2'0" of freeboard.
 - f. Plant vegetative ground cover in disturbed areas as soon as possible.
 - g. Cover inactive storage piles.
 - h. Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person shall respond and take corrective action within 48 hours.
 - i. Continually maintain the existing pavement keeping it clear of dirt, dust, and mud until the project is accepted by the City, and install gravel filters with minimum 1-inch base rock at each construction entrance extending across the entrance and a minimum of 55-feet into the site.
- Use strategies to minimize soil disturbance including:
 - Use alternatives to disking, such as mowing, to the extent feasible.
 - Condition grading permits to require that graded areas be stabilized from the completion of grading to commencement of construction.
- Include paving requirements as part of

continued

- As many energy-conserving features as possible shall be included in each new project. Examples include, but are not limited to, increased wall and ceiling insulation, EPA-certified fireplace inserts and/or wood stoves or natural gas fireplaces, electrical and natural gas outlets installed around the exterior of the units to encourage use of electric yard maintenance equipment and gas-fired barbeques, and each home wired for computers/internet and electronic meter reading.
- Support the use of weatherization programs for existing residential units and businesses.
- Examine the possibility of requiring solar water heaters for new residential units.
- Encourage the use of solar water and pool heaters, and energy efficient lighting.
- Encourage developers to orient housing units and landscape building sites to maximize solar heating and cooling.
- Support the use of electric and/or hybrid vehicles, including golf carts and NEVs, where appropriate.

Time Frame: During project review/ongoing
 Responsibility: City Planner, City Manager

I. LAND USE, TRANSPORTATION AND AIR QUALITY

1. Reduce motor vehicle trips and vehicle miles traveled and increase average vehicle ridership.
2. Create a land use pattern that will encourage people to walk, bicycle, or use alternative transportation for a significant number of their daily trips.
 - a. The City shall consider air quality and mobility when reviewing any proposed change to the land use pattern of the community.
 - b. The City shall encourage projects proposing pedestrian-oriented designs at suitable locations.
 - c. The City shall plan areas within 1/4 mile of activity centers for higher density development.

continued

- the development standards of the Subdivision Ordinance.
- Develop a street cleaning program aimed at removing heavy silt loading that result from sources such as storm water runoff and construction sites.
 - Pave shoulders and pave or landscape medians.

Time Frame: During project review/construction
 Responsibility: City Planner, Building Inspector

Implementation Strategies:

LAND USE, TRANSPORTATION AND AIR QUALITY:

- Pursue projects to improve the image of pedestrian-oriented neighborhoods and the downtown (pedestrian amenities, street trees, transit facilities, etc.).
- Designate high and medium-density housing at sites within walking distance of neighborhood commercial services and transportation corridors during general plan updates and developer-initiated general plan amendments.
- Encourage upper story residential uses above commercial within the downtown.
- Designate mixed-use areas during general plan updates.
- Designate park sites on the general plan or as part of major general plan amendments.
- Require developers to dedicate park sites as a condition of project approval at sites that are accessible by walking and bicycling.
- Incorporate school sites into larger neighborhood activity centers which could include parks, day care facilities, and limited commercial uses.
- Work with Caltrans to identify suitable park and ride sites along Hwy 33.
- Encourage all development to incorporate pedestrian-oriented designs and work with the developer and other appropriate parties in the design and approval of development

Time Frame: Ongoing
 Responsibility: City Planner

- d. The City shall encourage mixed-use developments that provide a combination of residential, commercial services, employment, and cultural amenities.
- e. The City shall promote the downtown as the primary pedestrian-oriented, specialty commercial and financial center in the city.
- f. The City shall plan adequate neighborhood commercial shopping areas to serve new residential development.
- g. The City shall encourage subdivision design that provides neighborhood parks in proximity to activity centers and schools.
- h. The City shall plan park and ride lots to serve local commuters.

J. **COMPACT DEVELOPMENT**

- 1. Plan development in a way that makes the most efficient use of the land and reduces impacts to the environment.
- 2. The City shall provide for an orderly outward expansion of new urban development so that it is contiguous with existing development, allows for the incremental expansion of infrastructure and public services, and minimizes impacts on the environment.
 - a. The City shall encourage infill of vacant parcels.

Implementation Strategies:

COMPACT DEVELOPMENT

- Identify areas that can be most efficiently served and cause the fewest environmental impacts and designate those areas for development during major general plan updates.
- Support projects that infill vacant areas and areas contiguous on at least one side to a developed area.
- Work with landowners to re-designate vacant lands suitable for higher densities during general plan updates and periodic reviews.
- Encourage projects that increase pedestrian activity and mixed-uses.
- Encourage commercial uses that are complimentary to employment centers.
- Strategically locate high-density development to provide access to transportation corridors.
- Include in the proposed Design Guidelines, standards that identify and incorporate compact development principles for implementation.

Time Frame: Ongoing
Responsibility: City Planner

K. SITE DESIGN

1. Promote site designs that encourage walking, cycling, and transit use.
 - a. The City shall encourage project sites designed to increase the convenience, safety and comfort of people walking or cycling, and for future transit use.
 - b. The City shall review all subdivision street and lot designs, commercial site plans, and multifamily site plans to identify design changes that can improve access by transit, bicycle, and walking.

Implementation Strategies:

SITE DESIGN

- Include in the proposed Design Guidelines, pedestrian-oriented design standards to help staff and developers identify measures that can create a pedestrian and transit-friendly community.

Time Frame: Within two years

Responsibility: City Planner

- Require as a part of the site plan review or subdivision process a description of design measures proposed for the site. Some specific design features include:
 - Subdivision street and lot designs that promote pedestrian, bicycle, and transit use
 - Pedestrian access improvements and amenities (sidewalks, benches, water fountains, landscaping, etc.)
 - Parking lot designs that enhance rather than detract from pedestrian access
 - The location and type of bicycle improvements (bicycle parking/lockers, relation to bike paths or routes serving the site)

Time Frame: Ongoing, during project reviews

Responsibility: City Planner

L. TRANSPORTATION INFRASTRUCTURE

1. Develop innovative transportation systems that incorporate alternative transportation modes into system designs.
 - a. The City shall plan for a multi-modal transportation system that meets the mobility needs of the community and improves air quality.
 - b. The City shall vigorously pursue and use local, state, and federal funds earmarked for bicycle and transit improvements.
 - c. The City shall ensure to the extent feasible that pedestrian, bicycle, and automobile connections are maintained in existing neighborhoods affected by transportation and other development projects.

Implementation Strategies:

TRANSPORTATION INFRASTRUCTURE

- Ensure that updates to the Circulation Element and submittals of regional transportation improvement projects to the Fresno COG reflect designs and facilities that support a multi-modal system.
- Coordinate with transportation providers to develop a complete range of innovative, practicable and cost-effective options.
- Ensure that Regional Transportation Improvement Plans include alternative transportation mode projects best suited to the community.

Time Frame: Ongoing

Responsibility: City Engineer, City Planner

M. TRANSIT

1. The City shall require transit improvements at sites deemed appropriate and necessary by the transit provider and consistent with long-range transit plans.
 - a. The City shall consider the long-term requirements of future transit alternatives such as fixed route stops and regional transportation corridors and reserve appropriate right-of-way as appropriate.

Implementation Strategies:

TRANSIT

- Require dedication of sites and improvements as environmental mitigation measures. Include dedication requirement as a condition of approval of subdivision maps, site plans, and use permits.
- Identify appropriate sites during general plan updates, and review of specific plans and major general plan amendments.
- Work with transit providers to develop a comprehensive long range transit plan. Revise street and road design standards to include bus turn-out designs and passenger loading area designs where appropriate.

Time Frame: Ongoing, during project review
Responsibility: City Planner, City Engineer

N. BICYCLES

1. The City shall require the inclusion of bike lanes and other improvements related to bicycling in future developments.
 - a. The City shall ensure that a comprehensive system of bikeways and pedestrian paths is planned and constructed in accordance with policies in this General Plan.
 - b. The City shall ensure that regional and commuter bikeways are extended to serve the community consistent with an adopted bikeway plan.
 - c. The City shall ensure that upgrades to existing roads (widening, curb and gutter, etc.) include bicycle and pedestrian improvements in their plans and implementation where appropriate.
 - d. The City shall require new major activity centers and commercial development to provide secure bicycle storage and parking facilities.

*Implementation Strategies:***BICYCLES**

- To maximize bicycle use, the following actions may be included in street design standards:
 - Bikeways should be part of a network that connects major destination points within the community
 - Provide separate bike paths in areas where motor vehicle speed or volume make on-street bike lanes unsafe or unpleasant to use
 - Provide adequate paved shoulder on arterial and collectors to keep cyclists and motorist separate
- On-site improvements that can increase bicycle use include the provision of bike racks or enclosed bicycle storage at major activity centers, office and commercial establishments and the downtown.
- Identify all planned and existing regional bikeways in a comprehensive bikeways plan. Use local, state and federal funds to fund the system.
- Require bicycle lanes on larger streets.
- Require pedestrian pathways between existing developments to existing and planned transit or multimodal facilities. Identify potential paths during general plan updates.

Time Frame: Ongoing, during project review
Responsibility: City Planner, City Engineer