

### **8.1.3 Biological Resources**

A reconnaissance-level biotic assessment was conducted for the planning area on November 2, 1994. In addition, a supplemental biotic assessment and a wetlands determination were conducted in April 1995. The reports are summarized herein and may be referenced in their entirety at the City of Riverbank Planning Department.

The research conducted indicates that the planning area is a habitat mosaic of irrigated and non-irrigated pastures, cultivated fields, orchards, ruderal vegetation and areas supporting surface water. The biological resources are illustrated in Figure 17. Habitat values of the planning area have been greatly reduced as a result of agricultural practices and residential development, resulting in a landscape atypical of former valley floor habitats. Of the 120 plant species identified during the survey, more than 71 percent (85 species) were non-native, and all of the remaining plant species (native) observed are widely distributed in California, either as wetland associates or as opportunistic ruderal types ("weeds"). Most of the wildlife species observed and predicted to occur in the planning area are typically associated with grasslands and/or disturbed areas, and are expected to be found throughout the different vegetation communities on the site.

The habitats of the planning area are qualitatively described below, focusing on representative plant and wildlife species.

#### **Pastures**

Pastures are the predominant habitat in the planning areas. Plant species vary from pasture to pasture based on irrigation frequency, grazing and mowing, but the dominant plant species are dallis grass, knotgrass, Bermuda grass, dropseed, alfalfa and plantain. Lower-lying portions of irrigated fields were dominated by hydrophilic species such as yellow waterweed, knotweed and in one field spikerush.

The wildlife value of the pastures vary depending on amount of irrigation and time of year. In the southeastern corner of the site, crayfish, bullfrogs and mosquito fish were observed in a seasonal pond. These species provide forage for the great egret and snowy egret. Species expected to occur at the site include California meadow vole, western harvest mouse, and black tailed hares. The California ground squirrel and the Botta's pocket gopher were observed mostly in drier fields or along berms and raised areas along fence-lines. Other animal species are expected to occur in the pastures and are listed in the biotic assessment.

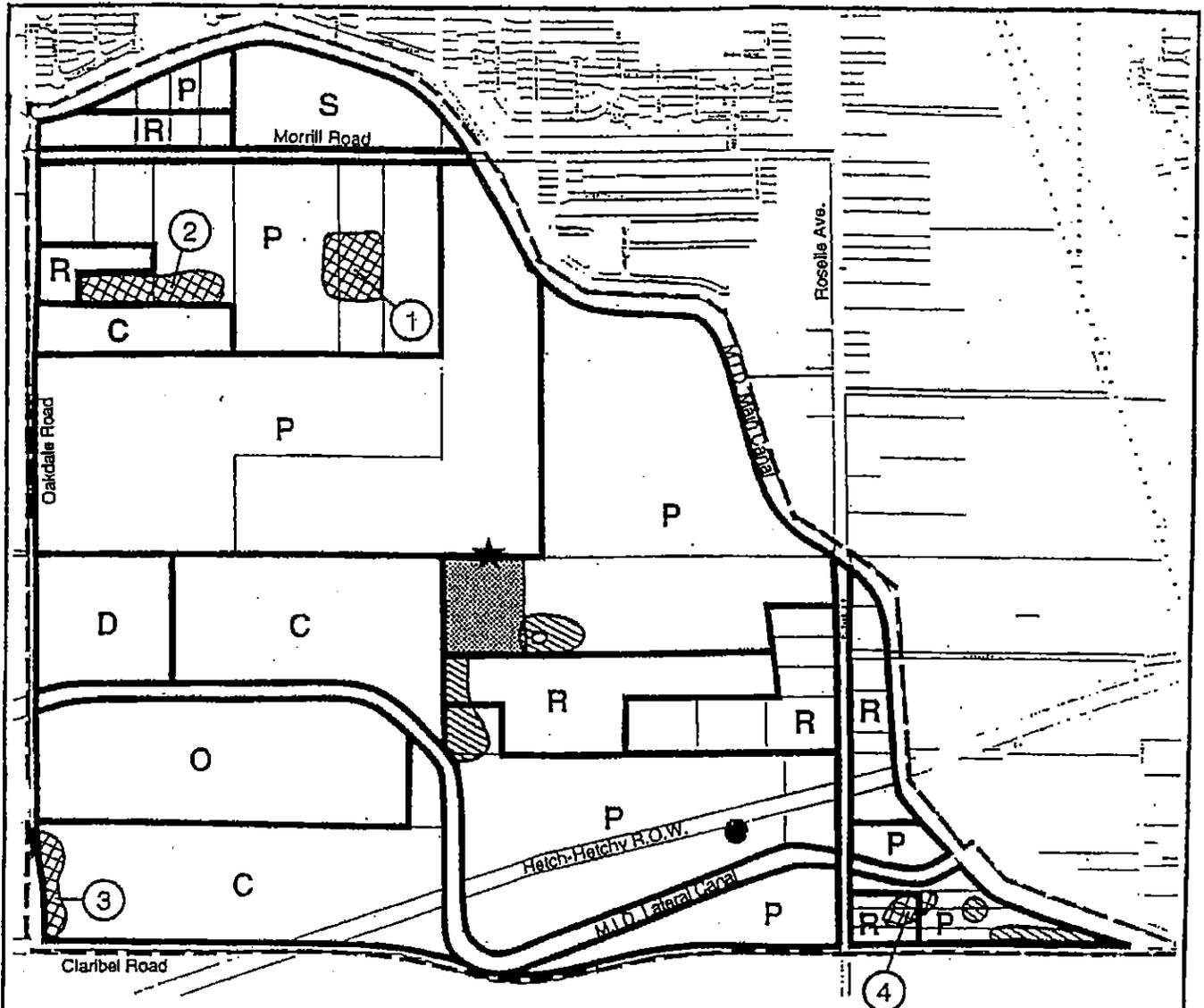
#### **Potential Wetlands**

During the November 1994 reconnaissance and a subsequent wetlands assessment conducted during May 1995 using the Corps of Engineers Wetland Delineation Manual, it was revealed that portions of irrigated pastures support surface water or highly saturated soils. Plants growing in these areas were predominantly hydrophilic (water loving). Figure 14 illustrates these specific locations. Based on soil samples, the

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hydrophitic plant species composition, estimated percent coverage, and the observation of surface water and/or saturated soil conditions, specific locations within the planning area were determined to be, and delineated as, potential jurisdictional wetlands.

Under Section 404 of the Clean Water Act, the U.S. Army Corps of Engineers (COE) is required to issue permits for discharge of dredge or placement of fill into waters of the U.S., including adjacent wetlands. Wetlands as defined in the Act are "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." The COE requires three parameters to be met for an area to be determined as a jurisdictional wetland: hydric soils, inundation/saturation for at least 14 consecutive days during a normal wet-season, and the presence of hydrophitic plant species.



- C Cultivated Field
- D Dairy
- O Orchard
- P Pasture
- R Ruderal
- S Subdivision

-  Potential Jurisdictional Wetland
-  Potential Wetland (1 - 4)
-  Potential Burrowing Owl Wintering Habitat
- ★ Burrowing Owl Observation (11/2/94)
- Red-tailed Hawk Nest



Source: Bryan Mori Biological Consulting Services

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In addition, as a result of the heavy rains that occurred during the interim period between November 1994 site visit and the May 1995 site visit by the biologists, other potential wetland areas were observed, but were not studied during the May 1995 site visit. These areas are also depicted in Figure 14 (designated 1-4). These areas were not delineated, and, therefore, have not been determined to be jurisdictional wetlands as of May 1995. Because of the uncertainty of the extent of potential wetlands (areas 1-4 on Figure 14) in the planning area at this time, future development in the portions of the planning area defined by areas 1-4 on Figure 14 will be required to conduct a wetlands delineation as part of future applications for development.

### **Cultivated Fields**

Cultivated fields include corn and fields plowed for hay production. Dallis grass and knotgrass are the principal plant species observed in the hayfield.

### **Orchard and Landscape Trees**

Almond and walnut orchards occur in the planning area. A variety of landscape trees occur along streets and near residential units. Due to the lack of an understory in the orchard, habitat value for wildlife is considered marginal. Though many species are expected to occur in the orchard area and in areas with landscape trees, such as the mourning dove, western kingbird, brewer's blackbird, loggerhead shrike, American crow, yellow-billed magpie, Virginia opossum and raccoon, only the red-tailed hawk was observed during the site visit. The hawk was observed nesting in a eucalyptus tree on April 19, 1995.

### **Ruderal**

Plant species in ruderal areas of the site consist predominantly of non-native invasive species typical of disturbed areas (e.g. roadsides) and similar to those located in pastures. Animal species associated with pasture also apply to ruderal areas.

### **Species of Special Concern**

Based on a November 1994 assessment and a focused rare plant survey conducted on May 28, 1995, no plant species of special concern were found in the planning area. However, despite years of agricultural operations, the area still provides habitat for sensitive wildlife. Based on a literature review, review of the CNDDDB, consultations with specialists and field surveys, seven sensitive wildlife species were identified as known or potential significant users of the planning area or immediate vicinity. The seven species include the western spadefoot toad, white-tailed kite, Swainson's hawk, northern harrier, burrowing owl, loggerhead shrike and horned lark. All were observed in the planning area, except the spadefoot toad and Swainson's hawk. Though habitat loss resulting from development of the Crossroads Community in and of itself would not be considered significant due to the presence of suitable habitat in annual grasslands east of Riverbank and in agricultural landscapes throughout the region, mortalities

would be considered significant given the special status of these species and/or their protection under the Migratory Bird Treaty Act. The following is a brief discussion of the aforementioned species.

**Western Spadefoot Toad.** This is a state species of special concern. The spadefoot toad primarily occurs in valley floor and foothill grasslands of friable soils, but is also known to persist in orchards, vineyards and pastures. The reasons for this species' decline in California includes loss of habitat from urbanization and intensive agriculture.

A focused survey for the toad was conducted in March and April 1995, the time period when larva would be present if the species occurred in the planning area (Mori 1995). Survey conditions were reported to be good and seven sites were sampled. No western spadefoot toads were observed during the survey. The results indicate western spadefoot toads do not occur on the planning area. This conclusion is bolstered by the fact that the survey was conducted during an above-normal 1994-95 rainy season.

**Northern Harrier.** This is a state species of special concern (breeding population). Northern harriers range throughout the state from the coast up to 5,700 feet in the Sierra Mountains. Harriers are primarily birds of open country and are seldom found in wooded habitats. Northern harriers nest in marsh habitats with tall emergent vegetation and in tall grasslands, constructing their nests on the ground. Fallow fields and grain fields are also used in areas where suitable habitat is lacking. This species is threatened by destruction of marsh habitats, the spread of urban and agricultural development into grasslands, and overgrazing by livestock.

One female harrier was observed foraging over the fields during the Nov. 2, 1994 survey. In the planning area, pastures that support tall vegetation may provide breeding habitat for this species. Hay fields may also provide nesting habitat depending on when the crops are mowed. Mortality to nesting harriers due to mowing or plowing in grain fields has been documented in the Central Valley (Mori 1995).

**White-Tailed Kite.** This species is designated a "fully protected" species by CDFG. Once considered endangered in California due primarily to shootings, kite populations have since increased significantly. Agricultural development, which has increased the vole population in the Central Valley, has contributed to this species' comeback (USFWS 1987). White-tailed kites are most frequent in oak savanna and agricultural habitats where occasional trees occur. Kites nest in trees located near foraging habitat (CDFG 1986).

Three kites were observed during the Nov. 2, 1994 survey, one foraging on-site and two roosting immediately south off-site. The landscape trees, and possibly the orchard trees, in the planning area provide potential nesting habitat for this species. Foraging habitat occurs throughout the planning area and region.

**Burrowing Owl.** This is a state species of special concern. Burrowing owls require open, valley grassland habitat, with short to moderate vegetation height and cover, areas of bare ground, and populations of burrowing mammals. This species depends on burrows of small mammals, most notably ground squirrels, for nest and roost sites,

although manmade structures may also serve this function. This species has experienced a serious decline throughout the state as a result of habitat loss from agriculture and urbanization, and probably from the secondary effects of ground squirrel poisoning programs (Mori 1995).

The Central California burrowing owl breeding population may be as low as 925 pairs, and that the breeding population of burrowing owls in Central California may have declined up to 65 percent over the decade spanning 1981-1991. In the San Joaquin and Stanislaus County area, the number of breeding and wintering owls have declined over the last 10 years. Colonies of up to 30 birds still persist in a few sites on the valley floor, but burrowing owls have become decidedly rare away from the valley floor proper (Mori 1995).

One burrowing owl was observed in the planning area on November 2, 1994, being chased by a loggerhead shrike. The planning area probably does not support a breeding population of this species based on:

- 1) Its pattern of distribution in the area;
- 2) The general lack of ground squirrel burrows in the planning area; and
- 3) The absence of owl signs (i.e., pellets, excrement) at observed ground squirrel burrows.

The owl may have likely been a transient or wintering migrant. Potential roosting habitat occurs within the Hetch-Hetchy easement and along an east-west oriented fence line near the central portion of the site, where ground squirrel burrows were present.

**Loggerhead Shrike.** This is a Candidate 2 species for federal listing as threatened or endangered. Loggerhead shrikes occur in grasslands and agricultural areas with scattered trees and shrubs. In the San Joaquin and Stanislaus County area, shrikes are fairly common but have declined by approximately 50 percent over the last 15 years (Mori 1995).

A loggerhead shrike was observed in the central portion of the planning area. The orchard and landscape trees throughout the planning area provide potential nest sites. The shrike probably occurs as a nesting species within the planning area.

**Horned Lark.** The California subspecies of the horned lark is a Candidate 2 species for listing as federally threatened or endangered. This species nests in shore-grass prairies on level to moderate relief, mountain meadows, open coastal plains, active and fallow grain fields, bare fields and alkali flats. Agricultural and urban development has reduced this species habitat, especially in the Central Valley. In the San Joaquin Valley, horned larks have been observed to nest on bare fallow fields and in grain fields where suitable grasslands are lacking (Mori 1995).

Several horned larks were observed throughout the planning area during the Nov. 2, 1994 survey. Based on the habitat requirements of this species, bare to sparsely vegetated fields in the planning area could provide nesting habitat. Suitable nesting

sites could include grazed pastures, alfalfa fields and plowed fallow fields, depending on irrigation and harvesting practices.

**Swainson's Hawk.** The Swainson's hawk is listed as a Threatened species under the California Endangered Species Act (Chpt. 1.5 Fish and Game Code) (CDFG 1990). The hawks are long distance migrants, breeding in northwestern Canada, western U.S., and Mexico, and wintering in South America. Formerly abundant and widespread in California, the species' California distribution now consists of two populations: one in northeastern California in Modoc, Siskiyou and Lassen Counties, and the other in the Central Valley, primarily in the southern Sacramento and northern San Joaquin valleys. Nesting habitat consists of riparian trees, oak groves, and roadside trees adjacent to and within about 18 miles of foraging habitat; cottonwoods and valley oaks are the most frequently used nest trees in the Central Valley. California vole and ground squirrels are preferred prey for Swainson's hawks. Nesting birds of the Central Valley arrive from wintering grounds in March, with the young fledging by the end of July. This species is threatened by conversion of grasslands to crops, the spread of urban development into grasslands and agricultural lands, reductions of oak woodlands in the Central Valley, pesticide residues, and destruction of wintering habitat in South America. It is estimated that the California breeding population declined 91 percent from its historic population size estimated at up to 17,000 breeding pairs down to 375 pairs in 1979.

A pair of Swainson's hawks was observed displaying courtship behavior along the Stanislaus River near the intersection of McHenry Road and River Road in Stanislaus County on April 19, 1995 (Mori 1995). One Swainson's Hawk was observed breaking a branch off of a tree. After a further review of the area where the hawks were observed by the biologist, a nest platform was observed. The hawks were not seen to enter or exit the nest during the survey. This nest can be considered a potential nest site and is within approximately seven miles of the planning area. This information has been submitted by the biologist to the California Natural Diversity Data Base (CNDDB).

There are no other known nest sites within 10 miles of the planning area. Most of the Swainson's hawk nests identified in the area are located near the confluence of the San Joaquin and Stanislaus Rivers, some 16-miles west of the planning area (Jones and Stokes 1990, Jim Estep, pers. com., June 20, 1996). This area contains high quality foraging habitat. The habitat east of Ripon and west of the foothills (including the planning area) is of lower quality due to the pre-ponderance of orchards, vineyards and pasture, but is considered suitable foraging habitat by the Department of Fish and Game (ibid).

#### **8.1.4 Geology and Seismicity**

The planning area is located in a physiographic region known as the San Joaquin Valley, between the low Sierra foothills in the east and the Diablo Mountains in the west. The geomorphology of the San Joaquin Valley is the result of numerous complex geologic events, including the uplifting and faulting of the surrounding mountains. The San Joaquin Valley was once a submerged trough, formed by movement along earthquake faults, and since filled with glaciated erosional sediments which provide the

base for the region's rich agricultural industry (Stanislaus Area Association of Governments 1974).

The San Joaquin Valley is juxtaposed between two regional fault systems: a series of faults in the coastal region including the San Andreas Fault (approximately 75 miles west), the Hayward Fault (approximately 50 miles west), Calaveras Fault system in the coastal region (approximately 50 miles west), and the Mother Lode Fault system of the Sierra Nevada (approximately 50 miles east). All of these faults are capable of generating large earthquakes capable of damaging both manmade and natural structures on a regional scale. Potential seismic hazards include ground-shaking, surface rupture and liquefaction. As with the majority of the land in California, ground-shaking resulting from a major earthquake on a proximate fault could cause significant impacts on the planning area.

### **8.1.5 Hydrology**

According to a report prepared by the Stanislaus Area Association of Governments (SAAG), the largest consumptive water use in the San Joaquin Valley is for irrigation (SAAG 1974). The water in Stanislaus County originates from the mineral-rich runoff in the Sierra Nevada. The Stanislaus and Tuolumne rivers flow into the San Joaquin River in the San Joaquin Valley. The City of Riverbank was founded on the banks of the Stanislaus River which is located approximately one mile to the north of the planning area.

Two MID canals traverse the planning area. They are used to transport and distribute irrigation water from the Sierras to the agricultural fields.

The planning area gently slopes to the southwest, with existing surface water draining to the minor ditches and percolating. Stormwater facilities include the following City collection facilities: the River Heights area which is served by a detention basin and pump, the residential area on Morrill northwest of the planning area, and the residential area east of the planning area both of which drain to a 36-inch line in Morrill Road which is then pumped at Dobbin Lane and Jackson Avenue. Drainage ultimately flows to the Stanislaus River. This existing infrastructure is not capable of meeting the storm drainage needs for the build-out of the Crossroads Community.

### **Groundwater**

This section is based on the *Stanislaus and Tuolumne River's Groundwater Basin Association, Draft Technical Memorandum No. 2*, prepared by Black and Veatch in January 1995. This memorandum is the second of two technical memorandums prepared for the Basin Association. This memorandum includes an in-depth description of the groundwater resource, including a groundwater balance, identification of major recharge and withdrawal zones, groundwater management issues, and existing and potential management operations. This report is summarized herein and is available for review at the City of Riverbank Planning Department and the city library. Technical Memorandum No.1, though not summarized in this EIR because it contains information

not relevant to an overall understanding of the existing groundwater conditions, includes a general description of the study area, well construction and abandonment regulations, current groundwater monitoring operations and a summary of groundwater constituents in the study area. This report is also available for review at the City of Riverbank Planning Department and the city library. Also incorporated in this groundwater discussion is information from the Stanislaus Area Association of Government's *Stanislaus Area Environmental Resources Management Element, Water* (February 1994). The Modesto Irrigation District (MID) Draft Groundwater Management Plan (GMP) of March 1996 was also reviewed. The GMP is based in part on the Black and Veatch report. The GMP is available for review at the City of Riverbank Planning Department, the city library and the MID office.

### **Environmental Setting**

The valley is underlain by a broad structural trough, which extends for the majority of the valley floor from San Joaquin County to Kern County. The Sierra mountain range to the east and the coastal mountain ranges to the west provide its borders. Fresh groundwater is contained in unconsolidated continental deposits; specifically in the Tulare Formation of Pliocene and Pleistocene age, terrace deposits of the Pleistocene age, and alluvium and flood basin deposits of the Pleistocene and Holocene ages.

The groundwater resource relevant to the proposed project is the Modesto Groundwater Basin (MGB), which lies almost entirely within the County of Stanislaus. The Modesto Irrigation District lies completely within the MGB. The boundaries of the MGB coincide with the natural hydrologic features rather than political boundaries. The eastern boundary is based on the limit of water bearing deposits. The Stanislaus, Tuolumne and San Joaquin Rivers are useful physical boundaries, though they cannot be considered geologic barriers in terms of groundwater flow. Within the MGB are its aquifers.

### **Aquifer Characteristics**

**Aquifers.** In Stanislaus County, groundwater is generally found in three types of formations:

- A body of unconfined and semi-confined water found in alluvial deposits, which is separated by the Corcoran Clay member of the Tulare Formation;
- A confined groundwater body which lies below the Corcoran Clay in alluvial and lake deposits; and
- A zone of saline connate water occurring in predominantly marine formations.

East of Highway 99, which is where the planning area is located, the Cocoran Clay layer is generally absent and groundwater is found in two bodies; the unconfined to semi-confined aquifer and the saline connate aquifer. These two aquifers vary in depth throughout the county.

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The natural quality of groundwater is determined by the geologic formations through which it passes. The groundwater basin is essentially closed, with major recharge provided by subsurface inflow and by stream and rainfall infiltration. Water is extracted from the groundwater basin by pumping for various water uses.

Some chemicals are present in varying amounts throughout the groundwater basin. These include chloride, nitrate, arsenic, total dissolved solids, radionuclides, and other trace organics (MID 1996).

**Groundwater Elevations and Flow Directions.** The depth to groundwater surface in most of the study area ranges from less than 5 feet to over 100 feet. Unconfined groundwater in the study area generally flows southwesterly from the mountains to the east toward the valley trough, except in areas influenced by the rivers or by urban pumping centers. Unconfined groundwater flow in the area west of the San Joaquin River moves southwest to northeast (MID 1996).

Groundwater depressions are apparent in the pumping centers in the Modesto urban area, the Riverbank and Oakdale area and near Salida. Recharge areas are located in the agricultural areas northeast and west of Modesto and also along some reaches of rivers. The proposed Plan Area is identified in the SAAG report titled - *Stanislaus Area Environmental Resources Management Element, Water (1974)*.

Changes in groundwater levels also affect streamflow in the river bordering the MGB. This creates a phenomena known as "gaining" or "losing". A "losing" river or stream contains segments where water is lost to the groundwater where groundwater level elevations adjacent to the river or stream are significantly lower than the water surface elevation of the river or stream. These segments lose through seepage into the groundwater and thus provide recharge. In 1985, the Tuolumne River was recorded to be losing water at a five-mile section near Central Modesto. In 1994, this segment of the river had extended approximately five additional miles to the east. The entire portion of the Stanislaus River east of Highway 99 was apparently a losing stream (MID 1996)

A "gaining" river or stream is where there is a gain in the stream flow because of groundwater seepage. This occurs where groundwater level elevations near the river is significantly higher than the river water surface elevation. In 1985, apparent gaining reaches included the Stanislaus River east of the City of Riverbank, approximately seven miles of Stanislaus River upstream of the confluence with the San Joaquin River, the San Joaquin River and the Tuolumne River upstream of Empire. In 1994, apparent gaining reaches included the following rivers: approximately a nine-mile long segment of the Tuolumne River near Waterford, an approximately five mile segment of the Tuolumne River upstream of the confluence with the San Joaquin River, the San Joaquin River, and approximately seven miles of the Stanislaus River upstream of the San Joaquin confluence (ibid.).

Generalized groundwater flow is in a southwesterly to westerly direction, except in areas of flow toward depressions created by pumping centers (in and around urban

areas) or away from mounds created by recharge areas. Recharge areas are located in the agricultural areas northeast and west of Modesto, and also along some reaches of rivers (Black and Veatch 1995).

**Fluctuations in Groundwater Elevations.** A drop in the surface water elevation is occurring and affects streamflow in the rivers bordering the area defined in the Black and Veatch report as the area in the Central Valley approximately 30 miles south of Stockton and 90 miles north of Fresno. Between 1984 and 1994, the water surface over most of the study area dropped at least 10 feet (ibid.). Areas near pumping centers experienced even greater reductions in water levels. The drop in water surface elevation also affects streamflow in the rivers bordering the study area. The site is in an area designated as a "withdrawal zone" (as opposed to "recharge zone") (ibid.).

**Recharge.** As stated previously, the MGB is part of a larger hydrologic system. The hydrologic system includes not only the groundwater system but also the agricultural and urban land surface systems. These latter systems comprise all of the processes that affect the deliver, consumption, and recharge of groundwater within agricultural and urban areas. Surface water diversions from the Tuolumne and Stanislaus Rivers, and the deep percolation of applied surface water to agricultural areas, comprise the major source of groundwater recharge for the basin.

### **Groundwater Balance**

**Groundwater Pumpage Amounts.** Pumpage from agricultural irrigation and drainage wells, and municipal supply wells in the study area average approximately 160,000 acre-feet per year (afy) in the irrigation district from 1970 to 1990. Pumpage amounts have varied widely from year to year, peaking in drought years. An overall upward increase in annual groundwater use is observed, which roughly corresponds to the increase in pumpage from urban areas. Of the 160,000 afy average amount, approximately 44,000 afy was in the Modesto urban area, 7,000 afy from other smaller urban areas, and 109,000 afy from MID, OID and privately owned irrigation and drainage wells. By 1994, pumpage in the Modesto urban area increase to around 60,000 afy and pumpage in the other smaller urban areas increased to approximately 8,000 afy, for a total municipal pumping rate of approximately 68,000 afy in the MGB area. These pumping amounts do not include the City of Oakdale, OID's small public water system, or numerous private domestic wells located throughout the MGB (MID 1996).

The Department of Water Resources published a report that indicated that this state agency estimated various components of the groundwater balance for the MGB. The components included:

Extractions	236,000 afy
Overdraft	15,000 afy
Perennial Yield	221,000 afy

Another balance calculation was prepared by Hydrologic Consultants, Inc. in 1993. Table 9 summarizes the average annual values for the various components of inflow and outflow that were used in modeling the area that approximates the MGB. The average annual water budget for 1952-1991 indicated an average overdraft of 2,300 afy.

**TABLE 9**

**SUMMARY OF GROUNDWATER WATER BUDGET (1952-91)**

Values Based on 40 Year Average	Acre-Feet per year
<b>Inflow:</b>	
Deep Percolation & Canal Seepage	226,000
Stream Bed Seepage	17,000
Modesto Reservoir Seepage	40,000
Groundwater Inflow	2,000
<b>Total</b>	<b>285,000</b>
<b>Outflow:</b>	
Irrigation and Drainage Well Pumping	100,000
Municipal Pumping	37,000
Discharge to Streams	150,000
<b>Total</b>	<b>287,000</b>
<b>Difference:</b>	
Change in Storage	-2,000

**Safe Yield.** Safe yield is used to mean the amount of groundwater that can be extracted over an average hydrologic period that will result in no long term decline in water levels. This average hydrologic period includes the years from 1970 to 1990 (MID 1996).

Estimates of safe yield within the basin is elusive because a "safe yield" depends on the water-level elevations maintained throughout the basin, particularly near the large streams (Black and Veatch 1995). However, estimates of pumpage for the period 1970-1990 indicate an average of about 160,000 acre-feet per year in the basin. Of the 160,000 afy, approximately 44,000 afy was in the Modesto urban area, 7,000 afy from other smaller urban areas, and 109,000 afy from MID, OID and privately owned irrigation and drainage wells. This pumpage of 160,000 acre-feet per year was accompanied by an overdraft of approximately 3,000 acre-feet per year (ibid.). "Overdraft" indicates a long-term water-level decline in an area during an average hydrologic base period (ibid.). Furthermore, the effects of drought to determine the

hydrologic base period are not included as these drought events are considered abnormal and not representative of long-term trends. Changes in storage in recent years have greatly exceeded the overdraft estimate because of the drought conditions (ibid.). It is important to note that the 3,000 acre-foot per year figure used in the Black and Veatch is a rough approximation of the overdraft over a 20 year period. It should be assumed by the reader that the overdraft of groundwater resources was greater during periods of drought when there was an increase in the amount of groundwater pumping.

The safe yield of the study area will be determined for any selected ground-water level. Because there are perennial sources of recharge on virtually all sides of the MGB, a stability in groundwater levels would eventually be expected to occur. This assumes a constant pumping rate from year to year and from place to place within the study area. Once adequate recharge is intercepted by expanding cones of depression, stabilization of the water level will result. Intentional recharge could also increase the safe yield of the basin, but this recharge would need to be practiced where the recharged water would not be lost to streamflow, or where shallow groundwater problems would not occur.

Overdraft and safe yield are not solely dependent on pumping and recharge activities within the MGB, but are also dependent on groundwater levels in adjacent areas. For instance, the Department of Water Resources show long term annual overdraft conditions in groundwater basins north and south of the MGB. North of the Stanislaus River, groundwater movement is generally from the southeast to the northwest flowing to the pumping depression located east of Stockton. South of the Tuolumne River, groundwater movement generally flows westward and southward towards the San Joaquin River, except in the area near the Eastside Water District where an average annual deficit of about 80,000 acre-feet has caused a cone of depression. These lower groundwater levels create head differentials that induce flow gradients from the MGB into these adjacent areas (MID 1996). The magnitude and extent of these flow patterns will require further evaluation (ibid.).

#### **Existing and Projected Groundwater Demand**

Existing and projected agricultural and municipal groundwater demands for the MID are indicated in the following table:

**TABLE 10**  
**EXISTING AND PROJECTED AGRICULTURAL AND MUNICIPAL GROUNDWATER DEMAND**

Year	Agricultural Demand (afy)	Municipal Demand (afy)	Total Groundwater Demand (afy)
1995	69,000	39,000	108,000
2000	94,000	53,000	147,000
2010	117,000	45,000	162,000
2020	147,000	75,000	222,000

**Agricultural Demand.** Irrigation water requirements are based on land use, crop types and irrigation practices. Other influences, such as state and federal laws that affect the use of water and water rights, are factors that ultimately determine the mix of surface water and groundwater supplies used to meet agricultural water requirements. Projections for MID, OID and private agricultural groundwater use could range from approximately 69,000 afy in 1995 to between 95,000 and 148,000 afy in 2020. The broad interval for projected agriculture groundwater use in 2020 represents uncertainty associated with regulations and cost on local water supplies and the adoption of changing irrigation technologies.

**Urban Demand.** Urban growth is a significant trend in the MGB. Urban land use is steadily displacing agricultural land and with this transition the need for potable water is also projected to increase in the future. Offsetting somewhat the use of groundwater resources is the Tuolumne River treatment plant which currently provides 33,600 afy of recharge. Further decreasing groundwater use will be expansion of the treatment plant capacity to 60,000 afy some time around the year 2005.

**Projected Mass Balance.** Given the current estimated safe yield of the MGB of approximately 160,000 (MID 1996), the projected groundwater extractions for agricultural and urban water supply could exceed this amount some time around 2010. Some estimates indicate that by 2020, the total groundwater demand for the basin could exceed 220,000 afy (MID 1996).

An important element of the hydrologic mass balance is the dynamic interaction between surface water and groundwater. The gaining and losing stream segments of the Stanislaus and Tuolumne Rivers and Dry Creek is directly related to groundwater levels, and estimating projections of these interactions is beyond the scope of this simple mass balance because of the uncertainty of future groundwater levels. Nevertheless, this mass balance does indicate that the combination of projected agricultural and urban groundwater production could exceed the current safe yield estimate, which could ultimately result in an unplanned dewatering of the basin and the reduction in groundwater storage availability (ibid.).

### **Local Agency Formation Commission (LAFCO)**

LAFCO has the responsibility to ensure that growth related to boundary change proposals in Stanislaus County and in the City of Riverbank does not outpace the service capacity of affected agencies or affect the availability of groundwater resources. LAFCO's criteria for future development is that an adequate supply of water be available to accommodate the water needs for all future development proposals prior to approval of each project.

### **Groundwater Management Plan**

Groundwater is a critical component of the water supply within the MID. According to the recent studies completed for the MID, groundwater is projected to be relied on more heavily as supplemental and by some users as a sole source of water supply for both agriculture and urban needs. As this groundwater production increases in the future, overall groundwater recharge is projected to decrease as a result of urban land use displacing agricultural lands. Based on this forecast, the MID has developed a goal which is "to optimize the use of groundwater for agricultural and potable requirements in such a way as to minimize the cost of the overall water supply and to improve the reliability of the water supply for all water users in the MID service area". Elements of the Groundwater Management Plan in support of the goal include continuation of existing and development of new management policies, potential groundwater yield enhancement programs, and the conjunctive use of surface and groundwater (MID 1996).

Groundwater management includes monitoring of groundwater production, storage and quality, administration and monitoring of well construction, and groundwater quality protection. Yield enhancement includes artificial recharge and recovery of contaminated groundwater. The conjunctive use of surface and groundwater is also important. This element is the combined use of surface and groundwater resources in such a way that the combined yield is greater than the yield that would occur from the sum of independent, uncoordinated operations of surface or groundwater resources. Conjunctive water use is commonly associated with storing water in groundwater basins for use during periods of drought or shortage (ibid.).

Implementing the GMP goal stated above requires a set of criteria from which to test the various elements of the GMP. The GMP must:

- Meet supplemental and future water demands;
- Protect or improve the existing groundwater quality;
- Have a minimum cost; and
- Be easy to implement

The groundwater management plan will be an integral part of satisfying the water demands in the MID service area. Since surface water availability is subject to hydrologic variations from year to year, with shortages occurring during dry years, groundwater can be managed to minimize both the peak seasonal demand for surface

water supplies and the need for surface water during dry years. Optimizing the MID conjunctive water use capabilities as a key element of groundwater management reveals a need for coordination with facility improvements being addressed in the MID's Irrigation Master Plan. If properly managed, the MGB should provide a reliable supplemental water supply of a suitable quality for all groundwater users (ibid.).

### **Historical and Current Water Use of the site**

Approximately 633 acres of the plan area is south of Morrill Road, which represents 48 of the 52 parcels in the plan area. The dominant historic agricultural use on the acreage south of Morrill Road is pasture land, with orchards serving a secondary role. The balance of the plan area, 54 acres located north of Morrill Road, consists of the recently developed 92-unit Stonebridge subdivision and lots 1 through 4 (refer to Figure 3). Lots 1 through 4 comprise a total of 12.64 acres. Approximately 27 single-family housing units currently exist in the plan area south of Morrill Road (no dwelling units currently exist in lots 1 through 4). Most of the 27 units occur on the smaller lots in the plan area (3 acre to 15 acre parcels).

The agricultural land and residential units south of Morrill Road derive water from both private wells within the plan area and the MID, which runs through the plan area. Some property owners will use one or the other source for irrigation and some property owners will use both sources for irrigation. The existing 27 dwelling units obtain their potable water supply from wells. The following water balance discussion pertains to the 633 acres south of Morrill Road only. The area north of Morrill Road is not included in the analysis because the existing Stonebridge subdivision already uses water which will not change the water balance analysis and lots 1 through 4 are not served by the MID and contain no residential structures. It is assumed that under current conditions, water is not applied to these four lots.

Based on MID's 1995 irrigation season water delivery information for the plan area, the MID delivered 1,015 afy of surface and groundwater to 28 of the 48 properties in the plan area (Ed Pattison, pers. com., July 23, 1996). The remaining 20 properties south of Morrill Road use the local groundwater resource via on-site wells. One of the 20 properties uses groundwater entirely from an on-site well to irrigate 47.25 acres of orchard. Irrigated pastures and orchards use an annual average of approximately 4.25 and 3.00 acre-feet of water per acre per year, respectively (Ed Pattison, pers. com., July 18, 1996).

Based on each of the existing 27 dwelling units using one-acre foot per year of groundwater and the orchard property using 142 afy of groundwater via an on-site well, the total groundwater use in the plan area is 1,184 afy ( $27 + 142 + 1,015 = 1,184$  afy). This water use is primarily during the late spring, summer and fall. Additional water may be used in the plan area for pasture irrigation through use of plan area wells. This could increase the total existing groundwater use. However, if additional irrigation occurs through use of well water, this is expected to be negligible, because it is cheaper for property owners to use MID water than it is to pay for well water. Well water costs more because of the cost of the electricity to pump the well water (Ed Pattison, pers. com., August 29, 1996).

### **Storm Drainage**

The development of the Crossroads Community will generate a significant increase in stormwater run-off.

Storm drainage within the Crossroads Community is proposed to be handled through the use of detention basins, partially located within the parks and adjacent to intersections and canals. The concept in providing detention basins is to ensure that a certain percentage of the surface water percolates through the soil and contributes to recharge of the groundwater.

The Crossroads Infrastructure Plan adopted January 2001 and may be amended, identifies stormwater maintenance.

#### **8.1.6 Cultural Resources**

Cultural resources can be defined as an historic or prehistoric building, structure, object, site or district possessing physical evidence of human activities over 45 years old (Lawrence 1994).

As described in Section 2 of this Specific Plan, the planning area lies within the San Joaquin Valley, which was inhabited for centuries, first by Native Americans, the Yokuts people, and later by Euro-American immigrants. Therefore, the potential exists for cultural resources to be present within the planning area.

A records search of the files at the Central California Information Center (CCIC), located at California State University, Stanislaus, indicated that no cultural resources are recorded within one mile of the planning area, and none are recorded within the planning area itself.

Regional information centers such as the CCIC were established by the California Office of Historic Preservation as the local repository for all archaeological reports which are prepared under cultural management regulations. In addition to the records search of the CCIC, the following sources were reviewed: the California Inventory of Historic Resources (1976), the California Historical Landmarks (1990), the California Points of Historical Interest listing (May 1992 and updates), the California Department of Transportation Local Bridge Survey (1989), the Survey of Surveys (1989), and other pertinent historic data available at the CCIC.

The CCIC recommends that if cultural resources are discovered during project-related activities, all work is to cease in the vicinity of the find and the lead agency and a qualified archaeologist are to be contacted regarding evaluation of the discovery. If Native American remains are found, the County Coroner and the Native American Heritage Commission in Sacramento are to be notified for recommended procedures.

### **8.1.7 Noise**

The noise element of the City's General Plan indicates that residential and other noise-sensitive land uses will not be permitted in noise-impacted areas unless effective mitigation measures are incorporated in the project design. Areas with noise levels exceeding 60 dB Ldn are designated as noise-impacted areas. The element also identifies noise contour levels for major streets projected to the year 2000. The arterial roadways surrounding the Community Crossroads will probably generate significant levels of noise by the year 2000.

### **8.1.8 Energy Conservation**

Over the last 50 years, people have used a greater amount of energy than ever produced or used previously. It has become increasingly evident that this over-consumptive and inefficient use of energy squanders our energy resources and, at the same time, creates hazards to our health. Therefore, it is imperative that communities of the twenty-first century employ techniques, many simple and available today, which efficiently conserve natural resources and energy.

State standards are in place to regulate energy-efficient construction and utility programs and provide suggestions for on-going energy efficiency. Innovations and advancements in energy technology provide further opportunities for saving energy and resources related to energy costs.

#### **State Standards**

All new buildings built in the State of California must meet Building Energy Efficiency Standards in accordance with the California Administrative Code, Title 20. Construction must also meet the compliance requirement of Title 24 when building permits are filed. Therefore, all development within the Crossroads Community must comply with state energy efficiency standards.

#### **Utility Programs**

As stated in Section 7.0 of this Specific Plan, Pacific Gas and Electric Company (PG&E) will provide gas and the MID. will provide electric utility service to the Crossroads Community. PG&E has made commitments to energy efficiency and provides customers with a wide range of energy efficiency programs, which should be applied in the Crossroads Community.

Currently, customers can obtain rebates through the Electric and Gas Industries Association (EGIA) for the purchase of more energy efficient appliances and insulation for their homes. Additionally, coupons are available to use toward the purchase of energy-saving items including shade trees, water heater blankets, low-flow showerheads, and air conditioner/heater filters. Home energy fact sheets that provide information ranging from weatherizing homes to tuning up central heating systems are available to all PG&E customers.

### **Design and Construction Innovations**

Design techniques should be utilized within individual residential units to encourage energy efficiency. This includes alternative methods in cooling and heating of homes, such as planting landscape materials for passive capture of solar heat in winter and shading for cooling in summer. The installation of solar collector panels, although not required, should be permitted behind residential units, screened from view of adjacent residences and properties.

Design innovations within individual residential units, such as compact composters and recycling stations, should be encouraged to encourage the reduction and recycling of solid waste.

### **8.2 Environmental Management Goals, Objectives and Policies**

*Utilize an environmentally responsible approach in the development of the Crossroads Community using design innovations to appropriately manage natural resources.*

#### **Agricultural Lands Objective**

*Prevent the premature conversion of agricultural land.*

#### **Agricultural Lands Policy 1**

*The City shall support cancellation of Williamson Act contracts only when a formal development application is on file and has been determined complete by the City.*

#### **Agricultural Lands Policy 2**

*The City shall review development plans for conflicts with existing agricultural lands, in order to prevent premature conversion of agricultural lands.*

#### **Air Quality Objective**

*Develop air quality mitigations to reduce project related impacts in accordance with Stanislaus County Air Pollution Control District guidelines.*

#### **Air Quality Policy 1**

*Implement proposed land use strategies that allow for a mix of uses, including convenience commercial, neighborhood commercial and promote user-friendly pedestrian circulation throughout the Crossroads Community.*

#### **Air Quality Policy 2**

*Provide a well-designed and well-maintained pedestrian corridor along all collector streets within the Crossroads Community.*

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**Air Quality Policy 3**

*Provide for a user-friendly public transit system with extended lines in and out of the Crossroads Community.*

**Air Quality Policy 4**

*Establish a citywide bikeways master plan, which includes the Crossroads Community, to encourage bicycle use throughout the City.*

**Air Quality Policy 5**

*Provide for contractor specifications to reduce project related air quality impacts during construction.*

**BIOLOGICAL RESOURCES OBJECTIVE**

*Provide opportunities to preserve, integrate and enhance existing special-status biological species in the Crossroads Community.*

**Biological Resource Policy 1**

*Survey proposed development sites prior to construction activities in those areas where burrowing owl habitat has been identified.*

**Biological Resource Policy 2**

*Tree removal and grading activities should be scheduled to begin during the non-breeding season (August 1 through March 15) to discourage use of the site for nesting and avoid incidental mortalities of nesting bird species.*

**Biological Resource Policy 3**

*Mature trees located within the planning area, including orchard trees, should be preserved whenever possible as a part of development design.*

**Biological Resource Policy 4**

*Conduct wetlands delineation for areas 1-4 identified as potential wetlands on Figure 14.*

**Biological Resource Policy 5**

*In areas delineated as jurisdictional wetlands, a Corps of Engineers wetlands determination is required.*

**SEISMIC SAFETY OBJECTIVE**

*Design and develop all structures within the Crossroads Community with an understanding of the potential for ground shaking resulting from earthquakes on faults proximate to the planning area.*

**Seismic Safety Policy 1**

*Future development within the planning area should be designed in accordance with earthquake design regulations of the Uniform Building Code.*

**Seismic Safety Policy 2**

*An emergency evacuation plan shall be prepared for the Crossroads Community.*

**HYDROLOGY OBJECTIVE**

*Encourage groundwater recharge and prevent contamination of the surface water runoff and potential runoff to the existing MID. irrigation canals located within the planning area.*

**Hydrology Policy 1**

*A series of detention basins should be designed that include groundwater recharge as a part of the design criteria.*

**Hydrology Policy 2**

*A drainage program should be designed that includes methods for minimizing adverse environmental effects.*

**CULTURAL RESOURCES OBJECTIVE**

*Prevent the potential loss of significant cultural resources within the planning area.*

**Cultural Resources Policy 1**

*In the event that archaeological or prehistoric artifacts (animal fossils, bones, etc.) are discovered during development, construction should be halted in the vicinity of the artifact, and a professional archaeologist should be consulted immediately.*

**Cultural Resources Policy 2**

*In the event that Native American artifacts (arrowheads, projectiles, pottery, bone, etc.), particularly those associated with burials, are discovered during development, the*

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*County Coroner and the Native American Heritage Commission, Sacramento should be notified for recommended procedures.*

### **Cultural Resources Policy 3**

*In the event that historic resources are identified during development, they should be protected, if appropriate.*

### **NOISE OBJECTIVE**

*Plan and design to mitigate noise impacts in accordance with the Noise Element of the Riverbank General Plan.*

### **Noise Policy 1**

Provide appropriate buffer setbacks along arterials surrounding the planning area and construct noise attenuation features (berms, landscaping, consistent fencing or walls within those setbacks) to limit noise-related impacts to the standards set forth in the Riverbank General Plan Noise Element.

### **ENERGY CONSERVATION OBJECTIVE**

*Provide opportunities to conserve energy when designing buildings and landscaping in the Crossroads Community.*

### **Energy Conservation Policy 1**

*Employ innovative energy-saving design techniques within building and landscape designs to encourage energy efficiency.*

## **8.3 Implementation Measures**

The following are implementation measures necessary to ensure compliance with the intent of the Environmental Management element:

1. Crossroads Community Developers shall incorporate into project design and/or construction specifications the policies and implementation measures specified herein.
2. Williamson Act Contracts shall be canceled prior to City approval of an application for development within the Crossroads Community which contains parcels under such contracts. Premature cancellation is not encouraged.
3. Crossroads Community developers shall address potential development/agricultural conflicts as a part of specific project design, to prevent

premature conversion of agricultural land. If the City determines conflicts potentially exist, methods to avoid the conflicts such as setbacks and buffers shall be employed in the project design, subject to City staff approval.

4. The City of Riverbank shall streamline and fast-track the permit process for development of the neighborhood commercial in order to reduce trips outside the planning area.
5. Crossroads Community developers shall incorporate user-friendly pedestrian facilities along all collector streets. All future project plans shall provide for a financing mechanism to establish long-term maintenance of these facilities.
6. The City of Riverbank should work with the public transit agency, the County, SAAG, and the Crossroads Community property owners/developers to expand the light rail system to Riverbank and establish a transit stop at Roselle and the Crawford Road extension.
7. The property owners and/or future developers shall be responsible for establishing appropriate bus stops as specified herein
8. The City shall work with the bus transit agency to expand service into the Crossroads Community as development occurs. In anticipation of expanded bus service to the planning area, future project proponents shall coordinate with the City of Riverbank and the transit agency to determine specifications and locations for bus stops necessary to serve the planning area. Future development shall then incorporate these bus stops into project designs, dedicate easements and construct the bus stops as a part of in-tract subdivision costs.
9. As part of the implementation plan to link recreational amenities within the Crossroads Community, Crossroads Community developers shall prepare a bikeways plan. This plan shall be completed prior to approval of the first tentative map or commercial development within the planning area. This plan shall be tiered into a citywide bikeways plan that will be the responsibility of the City to prepare.
10. Crossroads Community developers shall include the following additional air quality mitigations into project plans where appropriate to reduce project-related impacts:
  - Future commercial development within the planning area shall be required to join a Transportation Management Association to develop and incorporate into project designs trip reduction strategies.
  - All gas stations proposed within the planning area shall be required to make provision for a compressed natural gas fueling station.

- Future project proponents shall be required to incorporate fifty percent more trees into landscaped areas (which may include saving existing trees) beyond the number required by the City of Riverbank regulations.
  - Proponents of residential development shall be encouraged to install electrical recharge outlets conveniently located in all residential garages for electrical cars.
  - Where project proponents of future residential development propose to install fireplaces in homes or other facilities, they shall be required to install EPA-certified woodstoves, pellet stoves, or fireplace inserts.
  - Proponents of residential development shall be required to provide outdoor electrical outlets at all residential homes to allow the use of electrical landscape maintenance equipment.
  - Proponents of residential development shall be encouraged to make natural gas available in all residential backyards to allow the use of natural gas-fired barbecues.
11. Contractor specifications for any proposed construction project shall include SJVUAPCD dust control measures 8010, 8020, 8030 and 8070 and shall be printed on or affixed to plans to be submitted to the Building Department for review and approval prior to issuance of a grading permit for each specific development project.
  12. Crossroads Community developers shall survey for active burrowing owl dens prior to any construction activities in those portions of the planning area where burrowing owl habitat has been identified. Standard procedures shall be followed for the survey, in coordination with the CDFG, subject to review and approval of the City prior to issuance of a grading or building permit. If present, the owls shall be passively relocated to off-site habitat contiguous with the plan area, subject to the determination of the wildlife biologist. Relocation of the owls shall be performed by a qualified wildlife biologist, in coordination with CDFG. In the event that burrowing owls are determined to be nesting, the owls shall be relocated after a wildlife biologist has determined that the young have fledged. Passive relocation involves installing one-way doors in burrow entrances. The relocation shall be monitored for one week to confirm use of alternate burrows. Original burrows shall be filled to prevent reuse.
  13. Crossroads Community developers shall conduct nest surveys for those species identified in the Crossroads Community Biological Report, prior to construction activities for those projects scheduled to begin during breeding season (March 15 to July 31). If nests are found, construction activity must be delayed until after

the young have fledged, subject to the determination of a qualified biologist. If no nests are found, construction can begin immediately.

14. Crossroads Community developers shall provide, for each individual development project, a survey of existing trees, a listing of type, size and health of each tree on the planning area and an illustration (map) and listing of which trees will be retained and which will be cut.
15. Potential jurisdictional wetlands, as depicted on Figure 14, shall be reviewed by the COE to determine wetland status prior to City approval of a tentative subdivision map for any individual development project. Depending on the total wetlands acreage, the project would either require an Individual 404 Permit or a Nationwide Permit. For wetlands totaling under 10 acres, a pre-discharge notification needs to be submitted to the COE to determine if the project qualifies under a Nationwide Permit; mitigation may or may not be required under this scenario. For areas totaling 10 acres or greater, the city must apply for an Individual Permit, which requires the attachment of a mitigation and monitoring plan, plus an analysis of alternative site designs. Mitigation measures may include redesign of the Specific Plan to avoid wetlands; minimizing impacts to wetlands plus on-or off-site replacement at a maximum ratio of 3:1; or off-site acquisition of "in kind" wetlands at a minimum 1:1 ratio. In the event that an Individual 404 permit is required, mitigation measures must address avoidance as an alternative in order for the permit application to be considered by COE.
16. Crossroads Community developers whose projects may impact potential wetland areas 1-4 depicted in Figure 14 shall prepare additional wetlands assessments. The wetlands assessments shall be conducted by a qualified wetlands specialist to determine the presence or absence of potential jurisdictional wetlands in the planning area.
17. Crossroads Community Developers shall be responsible for designing buildings to the earthquake standards described in the Uniform Building Code. For construction of the police and/or fire substation, design to earthquake standards may be reimbursed through a Mello-Roos District.
18. The City of Riverbank Police Department shall develop an emergency evacuation plan for the Crossroads Community as a part of the City updating their general plan.
19. Crossroads Community developers shall be responsible for preparing a construction implementation soils analysis and design for the detention basin areas, with the intent that they also be utilized as groundwater recharge facilities. This can be completed in a phased manner, but appropriate facilities must be designed and approved by the City prior to recordation of a subdivision map.
20. The contractor work specifications for any individual development project shall include the requirement for all development to cease in the event that

archaeological artifacts (including Native American artifacts) are discovered during construction activity within the planning area, and specify the appropriate professional to evaluate the find.

21. If historic resources are identified during the design phase of individual projects, these resources should be evaluated by a professional historian and included in project design, if determined to be appropriate by the historian.
22. Individual project developers who propose development adjacent to Morrill, Oakdale, Roselle, and/or Claribel Roads within the planning area shall conduct a noise contour model-run to determine the potential noise contours for the subject roadway (or roadways) using the best available projected future traffic volumes and SAAG Model Land Use Listing. Areas that exceed the City General Plan noise standards by land use category shall be required to provide appropriate attenuation in design of individual projects consistent with the overall specific plan themes and adjacent project improvements.

The city shall require of all developers proposing soundwalls to submit soundwall design plans to the City of Riverbank Planning Director for review and approval. Soundwall design plans shall be integrated with a landscaping plan that incorporates a variety of vegetation (species and heights). Wall designs shall include surface relief features (e.g. sconces) such as wood, steel or concrete affixed to the outer wall. Such features could be free-standing trellises straddling soundwalls (or attached to walls). Sound walls shall be treated with graffiti-resistant material. Straight lengths of wall exceeding 50 feet without relief such as those described above shall not be permitted.

23. The City shall review individual project building and landscape designs for energy saving techniques which include, but are not limited to:
  - Alternative methods in cooling and heating of homes such as planting landscape materials for passive capture of solar heat in winter and shading for cooling in summer. Solar collector panels should be permitted behind residential units and screened from view of adjacent residences and properties.
  - Provision of compact composters and recycling stations within residential units and commercial areas to assist in the reduction and recycling of solid waste.
  - Use of water conserving plumbing and low-flow or drip irrigation systems for all buildings and landscaping located in the Crossroads Community to assist in water conservation.
  - Use of innovations such as fiber optic cable systems to allow residents direct connections to a variety of services, which could in turn eliminate the need for certain auto dependent trips, contribute to improved air quality, and reduce energy use.

## **9.0 CROSSROADS COMMUNITY FINANCING PROGRAM**

Adoption of the New System Development Fees and the Crossroads Infrastructure Plan dated January 2001 subject to future amendments and individual property Development Agreements, shall be the primary method of funding infrastructure.

Additionally, the City may consider land secured financing as a means of funding infrastructure improvements.

### **9.1 Financing Program Goals, Objectives, and Policies**

#### ***Financing Program Goal***

*Provide the necessary financing mechanisms for the development of the Crossroads Community*

#### ***Financing Program Objective 1***

*Develop a financing plan that appropriately matches the financing mechanism with the facility or service to be financed.*

#### ***Financing Program Policy 1***

*Establish and implement a financing plan as outlined in this section of the Specific Plan.*

### **9.2 Implementation Measures**

1. The City shall establish, by ordinance, impact fees for the Crossroads Community Planning Area commensurate with the leasing, landscaping and improvement plans envisioned for the Hetch-Hetchy Water and Power Company easement.
2. The City shall adopt an appropriate financing and phasing plan to fund on- and off-site transportation, infrastructure and service improvements for the Crossroads Community.
3. The individual developers shall be responsible to work with the City for the establishment of a landscaping, lighting, and maintenance district to provide funds for park and open space maintenance within the Crossroads Community.
4. The City shall adopt an agreement to share infrastructure development reimbursement between the existing property owners/City and future developers. This agreement shall take into account internal and external improvements associated with the Crossroads Community.

5. The City shall be responsible for the preparation of a specific fiscal implementation plan for the Crossroads Community. The City shall also prepare a Master Development Agreement or some other mechanism between the City, and the project proponents to allocate appropriate costs and responsibilities identified in the specific fiscal implementation plan. Property owners/future developers shall reimburse the City for costs of preparing and processing the Crossroads Specific Plan and environmental impact report.
6. Individual project developers shall be responsible for entering into agreements with the School districts with jurisdiction within the Crossroads Community for provision of school facilities. This agreement shall be approved by the City prior to recordation of any tentative map for development within the Community.
7. The City requires new development to finance the construction, to expand upon the infrastructure systems, and to maintain service through funding for construction, operation and maintenance. This being a pre-requisite for new development, the City shall not deem applications for development complete nor grant new entitlements for development until a plan for services is adopted, timing of improvements are established, and financing is scheduled.

## **10.0 REGULATORY AND ZONING IMPLEMENTATION**

### **10.1 Regulatory Framework.**

The City has prepared this Specific Plan as the principal mechanism to regulate land use, design, infrastructure and financing for the Crossroads Community planning area. A variety of processing and implementation steps will be required to create development opportunities in the planning area and to regulate the eventual development of the Crossroads Community. The diagram on the following page (Figure 18) summarizes the regulatory process. The specific implementation steps are listed throughout this document in each chapter as Implementation Measures.

### **10.2 Zoning Implementation**

The land use regulations provided herein are to implement the land use categories of the Crossroads Specific Plan. These regulations are established by state law as a Districting Plan to serve the public health, safety and general welfare of the City of Riverbank. The zoning regulations also provide the economic and social advantages resulting from an orderly, planned use of land resources.

#### **Land Use Regulation**

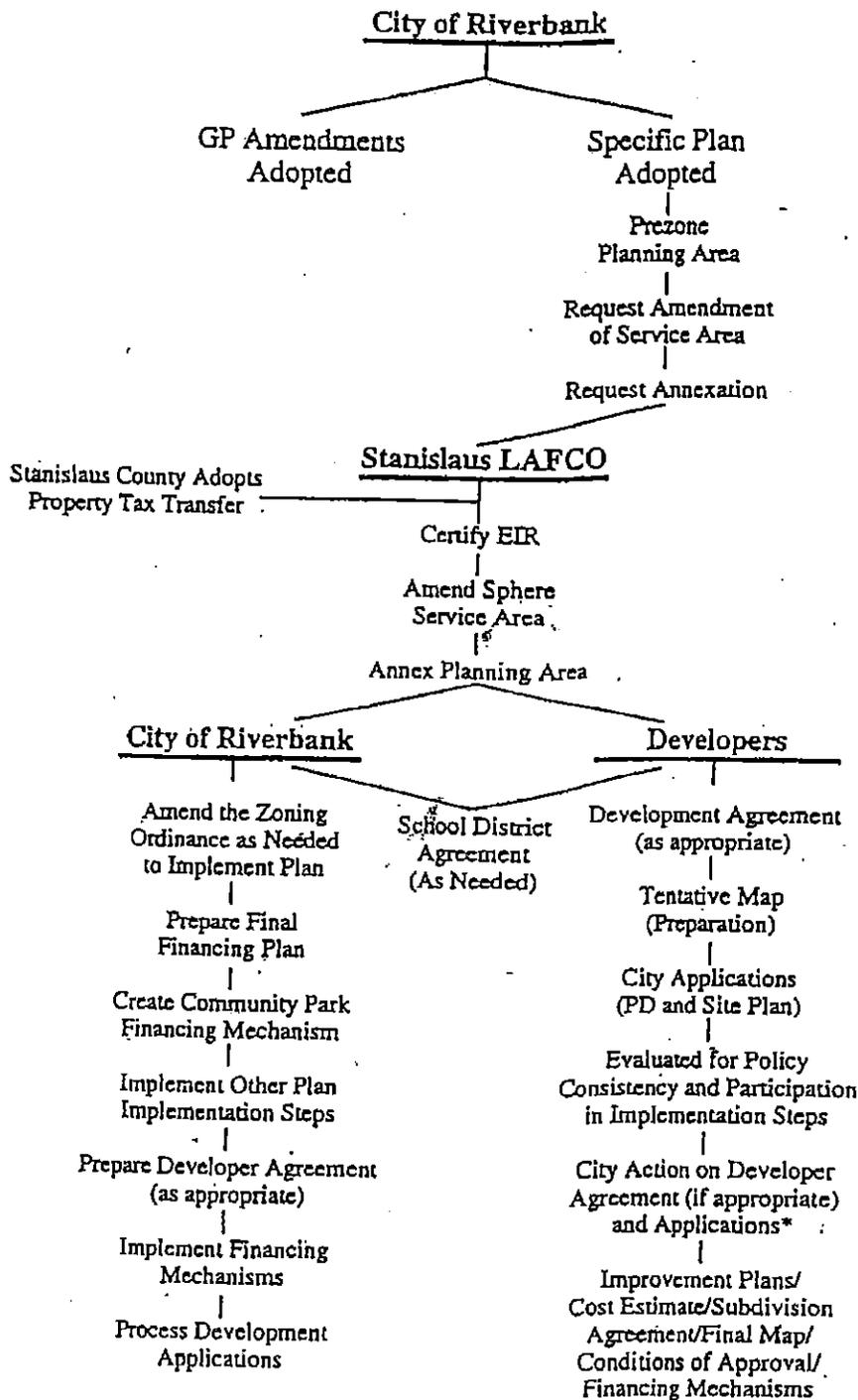
The zoning classification for the Crossroads Community Specific Plan will be SP97-1 as Figure 19 illustrates. The Specific Plan zoning classification is consistent with the Riverbank Zoning Ordinance. Section 3.2 of this Plan "Land Use Concept Overview," establishes Zoning Districts within the land use categories provided. Each of these categories provides development and potential uses of land as illustrated and described for the Specific Plan area. These regulations amend, and where not consistent, supersede, the regulations of the Riverbank Municipal Code. Where standards or regulations are not specified in this Specific Plan, the requirements of the Riverbank Municipal Code shall provide the regulatory authority. This section also identifies the procedures to be used to review site plans for development projects proposed within the Specific Plan area.

The Crossroads Community Specific Plan shall be implemented through a method of Planned Development (PD) permits and site plans. A PD permit is required for commercial, industrial, and multi-family projects. Each PD and/or site plan shall be subject to review and consideration of the City. Residential developments are subject to City review and approval of tentative and final subdivision maps. Site plans for single-family lots are subject to the review procedures of the building permit process in effect at the time of application for a building permit. Plans for landscape and open space areas are subject to review and approval of the Planning Department. Plans for parks are subject to the review and approval of the Recreation Commission.

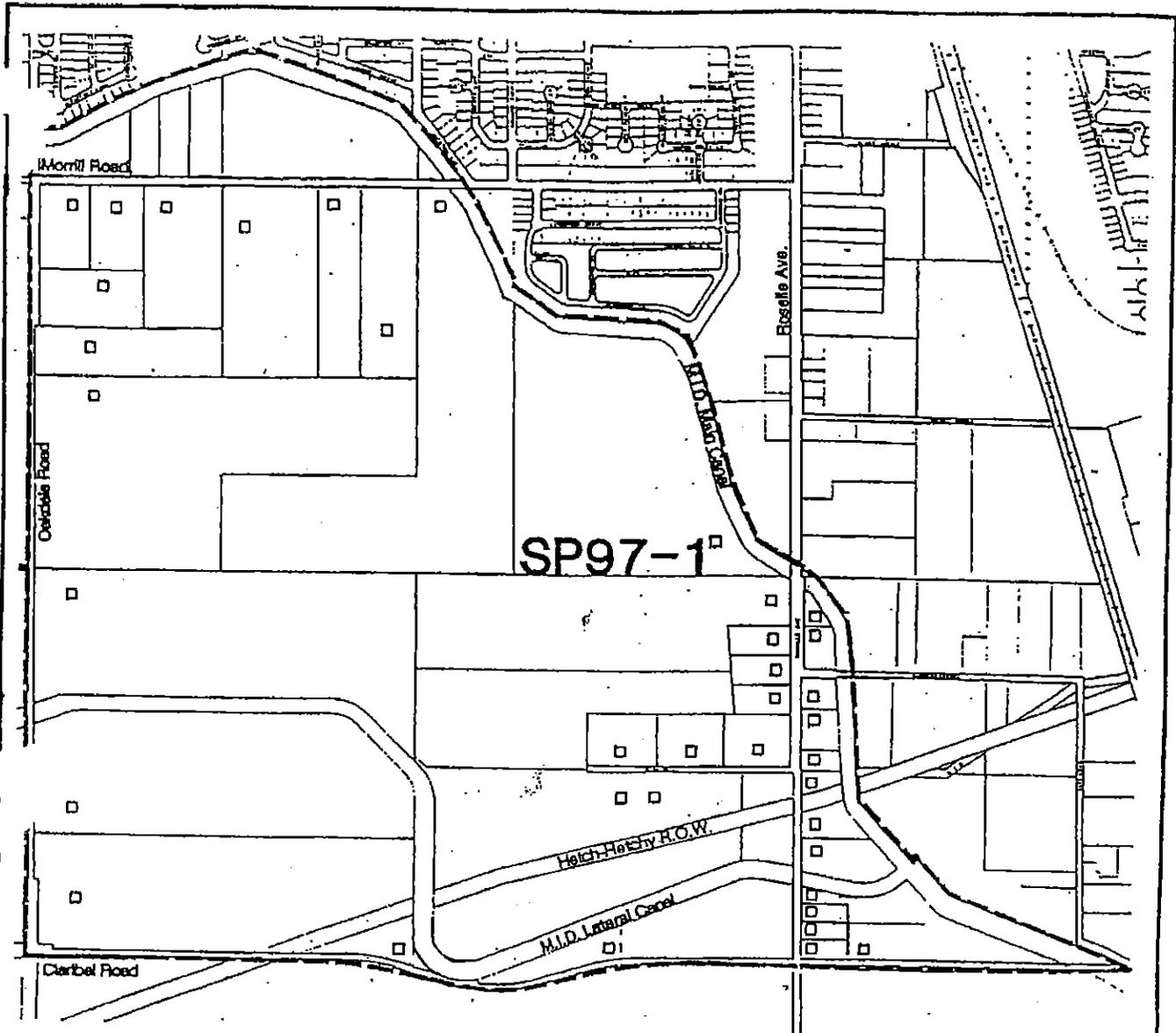
Adopted November 15, 2001, Resolution No. 2001-145

**Applications**

Application for review of plans and permits required above shall be in the form established by the Planning Director at the time of application for the plan/permit. Plan and permit request shall be evaluated for consistency with the adopted Specific Plan and for compatibility with adjacent projects within the planning area.



\*City action shall include, but not be limited to, review and approval by the City of Application (especially regarding lot patterns and residential layout/landscape plans, designs for public space, service plans, and signage and entryway features).



SP97-1: SP, Specific Plan District  
 Riverbank Municipal Code 10-21

□ Existing Structures



No Scale



A Land Use Planning  
 and Design Firm

City of Riverbank  
 Crossroads Community Specific Plan  
**Zoning Classification**

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Figure  
**19**

### **Environmental Determination**

It is anticipated that the Environmental Impact Report adopted for the Specific Plan will provide the basis for approval of future applications consistent with the adopted Specific Plan. The requirements of the California Environmental Quality Act shall be followed in determining whether additional environmental review is necessary.

### **Time Limitations**

Planned Development permit approval obtained for Crossroads Community Specific Plan projects shall be valid for two years from the date of approval. Request for extensions should be made to the Planning Commission prior to expiration of the permit and may be granted in one-year increments. If construction of the project does not begin with that period and proceed with due diligence thereafter, the approval of the PD permit shall terminate, and an additional submittal, review and approval shall be required. Due diligence shall be defined at a minimum having obtained grading and building permits and consistent completion of on-site work to develop the site, except for periods of inclement weather. Breaks in on-site work shall not exceed six months in length to be considered due diligence.

### **Revisions**

The Planning Director will be responsible for determining whether a proposed revision is in substantial compliance with the adopted Specific Plan and succeeding approvals. Significant changes, additions, or omissions shall be submitted for review and approval of the Planning Commission.

### **Appeals**

Any appeal of a staff decision may be made to the Planning Commission within ten (10) calendar days. Any appeal of a Planning Commission decision may be made to the City Council within ten (10) calendar days. An appeal shall be in the form established by the City at the time of filing, including any filing fee.

### **Zoning Districts**

The zoning regulations contained in the City of Riverbank's Zoning Ordinance, effective December 28, 1988, shall apply to the Crossroads Community unless otherwise specified herein. It is intended that the regulations for the Crossroads Community, along with the City's Zoning Ordinance, govern the implementation of proposed development within the planning area, and that these zoning regulations are hereby adopted and appended by reference to the City Ordinance.

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The following are the Districts that implement the Crossroads Community Specific Plan land use categories:

**RURAL/LOW DENSITY RESIDENTIAL DISTRICT ("RLR" ZONE)**

*Regulations:* The following regulations shall apply in all "RLR" Districts and shall be subject to Chapter 153.180, General Provisions of the Zoning Ordinance. All provisions of the "RLR" Zone described in the Specific Plan shall be subject to Section 153.030 through 153.045 with the following exceptions:

*Building Requirements*

Shall be subject to the Zoning Ordinance

(A) Building Site Area Required:

1. Minimum area - 21,000 square feet.
2. Minimum width, interior lot - 100 feet.
3. Minimum width, corner lot - 110 feet.
4. Minimum depth - 100 feet unless otherwise approved by the Planning Commission or City Council, whichever is the final decision-making body. Plot plans of lots for which less than the minimum depth is requested may be required to ensure that the lot is usable for residential purposes.

(B) Yards and Open Spaces Required:

1. Front yard and side yard of a corner lot - Not less than 20 feet from the planned right-of-way line provided that no vehicle opening of any building be closer than 25 feet to the property line or planned right-of-way line toward which the opening faces.
2. Side or rear yard when lot abuts an arterial - 20 feet.
3. Side or rear yard, interior lot, all other cases - 10 feet.
4. Detached accessory buildings - 10 feet from any other buildings.

(C) Lot Coverage: No more than 40 percent of the lot may be covered by buildings.

(D) Minimum Building Size:

1. Primary single-family dwellings and mobile homes - 1,000 square feet.
2. All other uses - no minimum size.

(E) Density: Maximum permissible density is two (2) dwelling units per gross acre.

**LOW/MEDIUM DENSITY RESIDENTIAL DISTRICT ("LMR" ZONE)**

The "LMR" Zone District shall be subject to Chapter 153.180, General Provisions and Single Family Residential District ("R-1" Zone) Sections 153.030 through 153.045 of the City Zoning Ordinance shall apply, with the following exceptions and unless otherwise amended by the Specific Plan:

*Building Requirements*

(B) Building Site Area Required:

1. Minimum area - 3,500 square feet. All single family detached lots of less than 5,000 square feet require review and approval of a Planned Development Permit by the City Planning Commission. Site plan review for lots greater than 5,000 square feet, shall be required for typical plot and elevation at the subdivision review stage and approved by the Community Development Director for all proposed subdivisions not requiring a Planned Development Permit to ensure consistency with the Specific Plan and particularly the Specific Plan Design Guidelines.
2. Minimum width, interior lot - 40 feet.
3. Minimum width, corner lot - 55 feet.
4. Minimum depth - 70 feet unless otherwise approved by the Planning Commission or City Council, whichever is the final decision making body. Plot plans of lots for which less than the minimum depth is requested may be required to ensure that the lot is usable for residential purposes.

(C) Density: Maximum permissible density is twelve (12) dwelling units per gross acre.

**DUAL DESIGNATION: LOW/MEDIUM AND MEDIUM/HIGH DENSITY RESIDENTIAL DISTRICT ("LMR/MHR" ZONE)**

The "LMR/MHR" Zone District shall be subject to Chapter 153.180, General Provisions and Single Family Residential District ("R-1" Zone) Sections 153.030 through 153.045 of the City Zoning Ordinance shall apply, with the following exceptions and unless otherwise amended by the Specific Plan:

*Building Requirements*

(B) Building Site Area Required:

1. Minimum area - 3,500 square feet. All single family detached lots of less than 5,000 square feet require review and approval of a Planned Development Permit by the City Planning Commission. Site plan review for lots greater

than 5,000 square feet, shall be required for typical plot and elevation at the subdivision review stage and approved by the Community Development Director for all proposed subdivisions not requiring a Planned Development Permit to ensure consistency with the Specific Plan and particularly the Specific Plan Design Guidelines.

2. Minimum width, interior lot - 40 feet.
  3. Minimum width, corner lot - 55 feet.
  5. Minimum depth - 70 feet unless otherwise approved by the Planning Commission or City Council, whichever is the final decision making body. Plot plans of lots for which less than the minimum depth is requested may be required to ensure that the lot is usable for residential purposes.
- (D) Density: Maximum permissible density is thirty (30) dwelling units per gross acre.

#### **MEDIUM/HIGH DENSITY RESIDENTIAL DISTRICT ("MHR" ZONE)**

The "MHR" Zone District shall be subject to all provision of Chapter 153.180 General Provisions and of the Multiple Family Residential District ("R-3" zone) of Section 153.060 through 153.064 of the City Zoning Ordinance shall apply, with the exceptions made by the "LMR" Zone and the "LMR/MHR" Zone described above. The maximum permissible density is thirty (30) dwelling units per gross acre.

#### **SENIOR HOUSING ("SR" ZONE)**

The "SR" Zone district shall be subject to all provisions of the Multiple Family Residential District ("R-3" zone) of Section 153.060 through 153.064 of the City Zoning Ordinance, subject to a Planned Development Permit, shall apply with the following exceptions:

##### *Building Requirements*

(A) Building Site Area Required:

1. Minimum Area – three (3) acres

##### *Development Standards*

(A) Density – Minimum permissible density is thirty (30) dwelling units per acre/

**HIGHWAY COMMERCIAL ("HC" ZONE)**

The "HC" Zone District shall be subject to all provisions Section 153.180 General Provisions and of the Neighborhood Commercial District ("C-1" zone), Section 153.075 through 153.079 of the City Zoning Ordinance, subject to a Planned Development Permit, shall apply with the following exceptions:

*Building Requirements*

(A) Building Site Area Required:

1. When residential is mixed with commercial, the height limit in (A) above is waived and subject to the "PD" permit.

(B) Yards and Open Spaces Required - Uses other than single family dwellings, duplexes, and triplexes.

1. Front, side, rear yard - no minimum setbacks shall be required.

(C) Floor Area Ratio requirements - Commercial Uses:

1. All buildings - 0.5:1.0.
2. Parking may be reduced and building landscaping increased, as appropriate for the use, subject to site plan review by the City Planning Commission.

*Development Standards*

(A) This standard is waivable by the Planning Commission during site plan review or on a PD permit.

(B) For commercial development, a minimum of ten (10) percent open space/landscaping shall be provided. The use of large gallon or mature trees in the landscape program is encouraged.

**REGIONAL COMMERCIAL/INDUSTRIAL/BUSINESS PARK ("RC/IBP" ZONE)**

The "RC//BP" Zone District shall be subject to Section 153.180 General Provisions and of the Planned Development ("PD" Zone) of the City Zoning Ordinance shall apply, with the designated Floor Area Ratio of 0.4:1.0.

The regulations provided herein for the zoning districts described may be modified by the City to implement this Plan.