7 Conservation

The Conservation Element establishes policies for the conservation of natural resources in Turlock. The Element addresses open space resources; agriculture and soil resources; hydrology and water quality; biological resources; cultural and historic resources; and mineral resources. Air quality and greenhouse gases are also highly important environmental issues for Turlock and are addressed in Chapter 8.

As a city surrounded by productive, high-value farmland, Turlock must balance resource conservation with development considerations.

7.1 OPEN SPACE

State planning law (Government Code Section 65560) provides a structure for the preservation of open space by identifying open space categories. An additional category is proposed for this Plan to help define the urban edge. These are:

- **Open space for public health and safety**, including, but not limited to, areas that require special management or regulation due to hazardous or special conditions. These might include flood-prone areas, areas of unstable soil, watersheds, earthquake fault zones, areas of high wildland fire risk, and areas required for the protection of water quality.
- **Open space for the preservation of natural resources**, including, but not limited to, natural vegetation, fish and wildlife, and water resources.
- **Open space for resource management and production**, including, but not limited to, agricultural and mineral resources, forests, rangeland, and areas required for the recharge of groundwater basins.
- **Open space for outdoor recreation**, including, but not limited to, parks and recreational facilities, areas that serve as links between major recreation and open space reservations (such as trails, easements, and scenic roadways), and areas of outstanding scenic and cultural value.
- **Open space for the protection of Native American sites**, including, but not limited to, places, features, and objects of historical, cultural, or sacred significance such as Native American sanctified cemeteries, places of worship, religious or ceremonial sites, or sacred shrines located on public property (further defined in California Public Resources Code Sections 5097.9 and 5097.993).

- **Open space to shape and limit urban form**, including, but not limited to, greenbelts, storm drainage swales, and open space corridors specifically established to implement community design goals and objectives.

OPEN SPACE INVENTORY

Open Space for Public Health and Safety

According to the State Office of Planning and Research's General Plan Guidelines, issues relating to this category of open space include geology and seismicity, slope stability, cliff erosion, flood-prone areas, and wild land fire risk. No open space lands in this category are designated on the General Plan Diagram. The Study Area does not include any known geologic faults or areas of significant known geologic instability. The extremely level topography of the area means that risks associated with slopes are negligible. In addition, no parts of the Study Area have been mapped by the Federal Emergency Management Agency (FEMA) as within the 100-year flood zone. A small portion of the Study Area is within the dam inundation area of the New Exchequer Dam (see section 10.3). However, it is not necessary to set aside any open space lands exclusively to protect public health and safety.

Open Space for the Preservation of Natural Resources

The Land Use Diagram does not designate any lands specifically for the purpose of preserving natural resources because no plant or animal species or areas of special concern have been located in the Study Area (see discussion in Section 7.4). Pastures, vineyards, row crops, and orchards that are classified as Open Space for Resource Management, however, may serve as habitats or foraging areas for a variety of species.

Open Space for Resource Management

Resource management categories identified in the General Plan Guidelines include forest lands, agricultural resources, soil resources, groundwater recharge areas, water bodies important for commercial fisheries, and mineral resources. In the Study Area, lands in agricultural production and with potential for agricultural production are by far the most important of these categories of open space. Virtually all non-urbanized portions of the Study Area are in agricultural production, with almonds; grain, hay and field crops; and truck and berry crops most prevalent. Most

of these lands have been designated as Prime Farmland by the U.S. Department of Agriculture. Agricultural lands that are not planned for urban development within the planning period are designated as "Urban Reserve" on the General Plan Diagram.

The Study Area is dependent on groundwater for water used for all non-irrigation purposes. Groundwater recharge areas have not been definitively mapped, though the recharge areas mapped by various sources are in general in the northern and eastern part of the Study Area, overlapping to a considerable extent with lands designated for Agriculture by the General Plan Land Use Diagram.

Agricultural open space and related policies are covered in section 7.2 below.

Open Space for Outdoor Recreation

The Land Use Diagram's park and recreation classification includes existing and planned public recreation sites (see Table 4-1 for existing parks as of 2010.) Section 4.1 describes the General Plan program for public parks and recreation, including policies for linear recreation corridors. Facilities for pedestrian and bicycle circulation, which often receive recreational use, are discussed in Section 5.3. One category of recreational open space is discussed in this chapter: storm drainage basins that serve a dual use for public recreation.

Dual-Use Storm Drainage Basins

Turlock's parks system and storm drainage system are related, with dual-use playfields in several of the City's drainage basins. This arrangement adds to the City's recreational open space, and minimizes the extent to which storm drainage requirements disrupt neighborhoods with unsightly basins. At the same time, the design requirements for storm drainage basins limit their functionality for recreational uses.

Previous plans have not distinguished between park land that serves a dual use as storm drainage basin and park land available for recreational use year-round. This General Plan establishes a new approach, calculating dual-use drainage basins separately from other park land, and providing standards for each. Standards for parks are in Chapter 4, while standards for dual-use drainage basins are here. It remains the City's policy to plan the storm drainage system to maximize utility of drainage basins for recreational use, and to require that drainage basins be designed and improved as such to the greatest extent feasible.

Top: Agricultural land not planned for development during the planning period is designated as "Urban Reserve" on the General Plan Land Use Diagram.

Bottom: Parks and drainage basins located along the edge of the City serves a specific open space function of shaping and limiting urban form.

Open Space for the Protection of Native American Sites

The Land Use Diagram does not designate any open space specifically for the purpose of protecting Native American sites. A records search conducted by the Central California Information Center of the California Historic Resources Information System at CSUS identified 38 properties in the Study Area included in the State's Historic Property Data File. None of these were associated with Native American sites or activities (see Section 7.5.)

Open Space to Shape and Limit Urban Form

While not defined by the State, the concept of open space to shape and limit urban form has become increasingly important in Turlock. It has long been City policy to maintain Turlock as a free-standing community, whose urban edges do not meet those of neighboring communities. Numerous land uses serve the role of open space shaping and limiting urban form—parks, drainage basins, and in some cases the large rear setbacks associated with Rural or Very Low Density Residential uses.

Open space to shape the urban edge is covered in the Parks, Schools, and Community Facilities Element (Chapter 4) and the City Design Element (Chapter 6.)

OPEN SPACE PLAN AND ACTION PROGRAM

Every city and county in the State is required to prepare, adopt, and submit to the Secretary of the Resources Agency a "local open-space plan for the comprehensive and long-range preservation and conservation of open-space land within its jurisdiction" (Government Code Section 65563). As shown in Table 7-1, components of the Open Space Plan are found in several General Plan elements.

The open space plan must contain an "action program" consisting of specific programs which the City intends to pursue (Government Code Section 65564). The action program policies are the implementing policies found in each of the General Plan sections cited in Table 7-1 below.

A conservation element is required to address issues relating to the management of natural resources to prevent waste, destruction, and neglect, often resulting in an overlap with the requirements of an open space element. The Open Space and Conservation Element integrates requirements of the two State-mandated elements. Topics related to agriculture, soils,

TABLE 7–1: COMPONENTS OF OPEN SPACE PLAN	
GENERAL PLAN SECTION	TOPIC(S) ADDRESSED
2.2	Land Use Classifications, including Parks, Agriculture, and Urban Reserve
4.1	Parks, Trails, and Recreational Open Space
5.4	Pedestrian and Bicycle Circulation and Facilities
7.1	Dual-Use Storm Drainage Basins
7.2	Agriculture and Soil Resources
7.3	Hydrology and Water Quality
7.4	Biological Resources
7.5	Cultural and Historic Resources
7.6	Mineral Resources

water, biological, archaeological, and mineral resources are described in this chapter's following sections. Open space for outdoor recreation is addressed in Chapter 4, except that policies for dual-use storm drainage basins are in this section. Open space for public health and safety is addressed in Chapter 10.

POLICIES

See also Chapter 4 for policies relating to recreational open space.

Guiding Policies

7.1-a **Dual-Use Storm Drainage Basins.** Continue to coordinate the storm drainage system and the park system in new master plan areas, and optimize the use of drainage basins as recreational open space.

Implementing Policies

7.1-b **Requirements for Water Detention.** Basins must function effectively for the detention (not the retention) of water, and include underground piping for quick removal of water following storm events.

7.1-c **Open Space Character and Functionality.** Design all dual-use drainage basins to suit a recreational purpose, such as a playing field, or an environmental amenity, such as

a water feature. Basins should be varied in shape, and well-landscaped around the edges. Basins must not have slopes steeper than 1:6. Adequate parking along the adjacent street or on site shall be provided to accommodate recreational use of the drainage basin and to avoid impacts to adjacent uses.

7.1-d **Landscaping.** Drainage basins that serve a dual use for public recreation must be entirely landscaped with irrigated turf, with trees along the top of the basin following City spacing requirements.

7.1-e **Screening of Buildings and Structures.** Any pump stations or other utility structures associated with dual-use drainage basins shall be located and screened to minimize the visual impact to adjacent uses and from the public right-of-way and shall meet all other applicable development standards and design guidelines. Any fencing provided for utility structures shall be fully landscaped in accordance with the standards of the applicable zoning district, with a minimum three-foot wide landscaped area provided to support vines on all sides.

7.1-f **Exception for Drainage Basin at Water Quality Control Facility.** The storm drainage basin planned to be developed south of the Turlock Regional Water Quality Control Facility will have a location that is not suitable for public use or recreation. This basin may be excepted from the requirement for dual use standards.

When development occurs in the Southwest, this basin would be converted to dual-use standards.

7.2 AGRICULTURE AND SOIL RESOURCES

Commercial agriculture was established in the region by ranchers as early as the mid-1800s, with cattle and then sheep. The next phase of the area's agricultural evolution was experimentation with grain, which heralded an extensive switch to cultivation. Farming was successively aided by introduction of the railroad, formation of the Turlock Irrigation District, development of refrigerated shipping, and construction of the La Grange Dam on the Tuolumne River. Extensive farming gave way to intensive methods, and the cultivation of vineyards, orchards, truck crops, dairy products and poultry were introduced. These activities continue to be an integral part of the region's economic and social life.

While Turlock's economic base has expanded substantially beyond farming, the city remains a community physically and socially characterized by its agricultural past and current farming activity. Many of Turlock's major industries are food processors, thus directly tied to agriculture. General Plan policies preserve the belt of agricultural land around city limits, maintaining Turlock as a stand-alone community within an agricultural region. At the same time, necessary urban expansion will result in conversion of agricultural land to urban uses. The General Plan Land Use Diagram and Plan policies define the long-term edge between urban and agricultural activities and support continuing agricultural production in the Study Area.

AGRICULTURE IN THE STUDY AREA

Agricultural Products

Figure 7-1 shows the crops produced on the farmland in and around the Study Area. Most of this farmland produces almonds; truck and berry crops; and grain, hay, and field crops.[1] Other nuts and fruits, a category that includes apples, peaches, walnuts, and other orchard products, are also grown in and around the Study Area. Dairies constitute the remaining predominant agricultural use around Turlock.

Farmland Classification

The California Department of Conservation uses the Important Farmlands Inventory to classify farmland into several categories based on soil type and current land use: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, Grazing Land, Urban and Built-up Land, and Other Land.

- *Prime Farmland* is land that has the best combination of physical and chemical characteristics for crop production. It has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops when managed (including water management) according to current farming methods. Prime Farmland must have been used for the production of crops within the last three years.

1 Truck and berry crops include bush berries, tomatoes, melons, onions, peas, potatoes, spinach, flowers, asparagus, and other fruits and vegetables that are relatively perishable. Grain, hay, and field crops include barley, wheat, oats, dry beans, flax, corn, and safflower, among others. (State of California Department of Water Resources, 2009.)

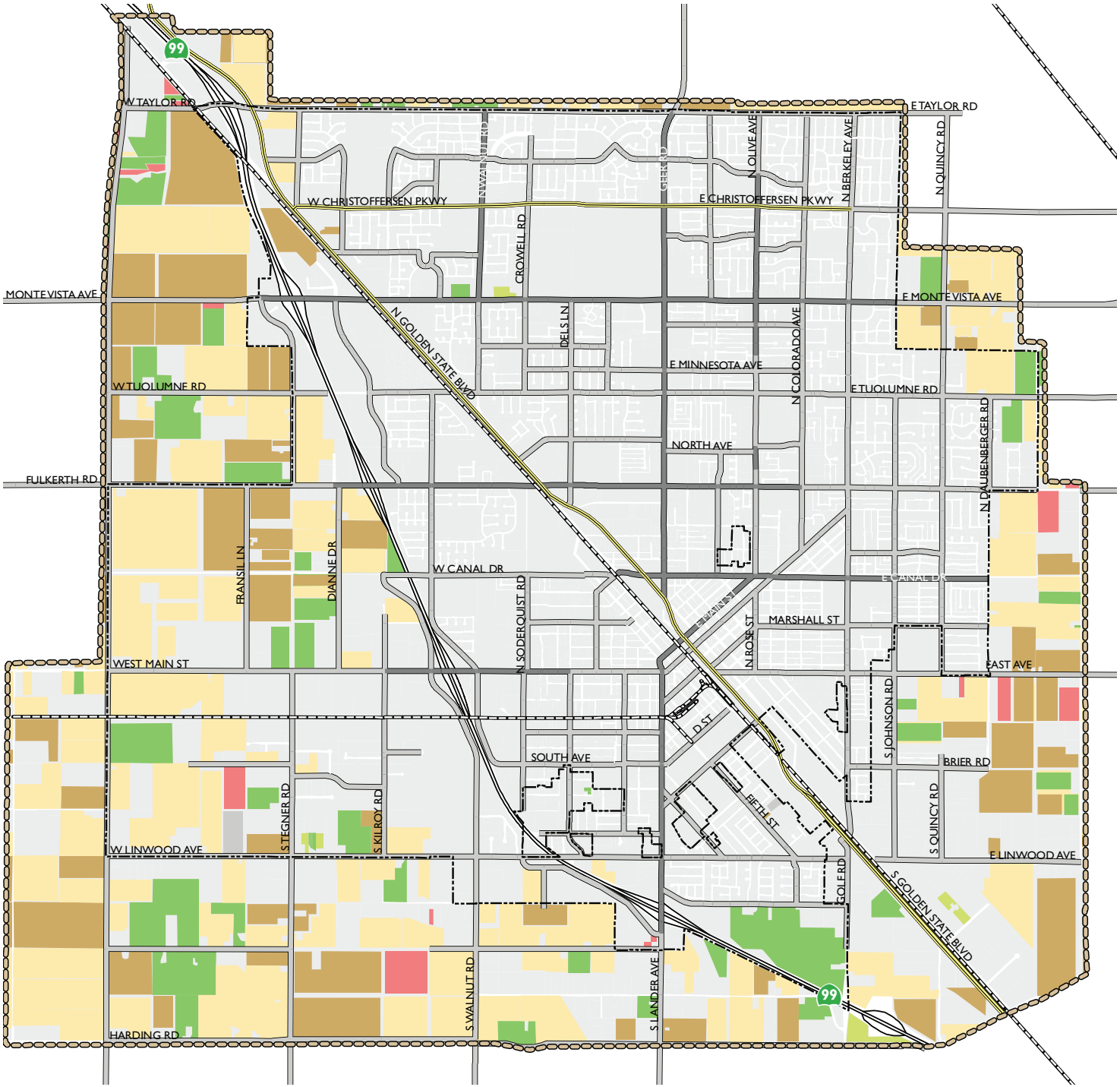


Figure 7-1: Crop Pattern

- Almonds
- Pasture
- Grain, Hay, and Field Crops
- Truck and Berry Crops
- Other Nuts and Fruits
- Other Crops

- Study Area Boundary
- City Limits & County Islands

Existing Circulation Network

- Freeway
- Existing Expressway
- Existing Arterial
- Existing Collector
- Railroads

0 0.25 0.5 1
Miles

Source: California Department of Agriculture, 2008; City of Turlock, 2008; Dyett and Bhatia, 2010;

- *Farmland of Statewide Importance* is land other than Prime Farmland that has a good combination of physical and chemical characteristics for crop production. It must have been used for crop production within the last three years.
- *Unique Farmland* is that which does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, but which is currently used for the production of specific high economic value crops (as listed in the last three years of California Agriculture, produced by the California Department of Food and Agriculture). It has the special combination of location, soil quality, growing season, and moisture supply to produce sustained high quality or high yields of a specific crop when treated and managed according to current farming practices. Examples may include oranges, olives, avocados, rice, grapes, and cut flowers.
- *Farmland of Local Importance* is either currently producing crops or has the capability to do so. It is land other than Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, but it may be important to the local economy due to its productivity.
- *Grazing Land* is that on which the existing vegetation, whether grown naturally or through management, is suitable for livestock grazing.
- *Urban and Built-up Land* is occupied by structures with a building density of at least one unit to 1.5 acres, or approximately six structures to a 10-acre parcel.
- *Other Land* includes low-density rural developments; brush, timber, wetland, and riparian areas not suitable for livestock grazing, confined livestock, poultry or aquaculture facilities; strip mines; borrow pits; and water bodies smaller than forty acres; and vacant and nonagricultural land surrounded on all sides by urban development and greater than forty acres.

As shown on Figure 7-2, the majority of land encircling the urbanized area of Turlock is categorized as Prime Farmland. The exception is to the south, where most of the land is Farmland of Statewide Importance, with significant patches of Unique Farmland, especially in the southeast quadrant of the Study Area. These classifications do not provide information about actual productivity of the land, which is also affected by availability of irrigation water, and the use of agricultural management techniques. Many valuable commodities (for example, milk) are produced in areas with relatively poor soils.

Recognizing that agricultural preservation policies should not be based solely on soil classification, Stanislaus County's General Plan Agriculture Element (updated 2007) calls for a definition of "most productive agricultural areas" that takes into account soil ratings as well as other factors.

FARMLAND CONSERVATION

Williamson Act

The California Land Conservation Act of 1965, also known as the Williamson Act, aims to discourage the unnecessary and premature conversion of productive agricultural land to other land uses. Farmers with land under Williamson Act contracts agree not to develop their land for 10 years, and in exchange, they are taxed according to the land's farm income-producing value, as opposed to its "highest and best use." Contracts are automatically renewed every year; cancellation requires "extraordinary circumstances," payment of a penalty of 12.5 percent of the land's fair market value, and a public hearing. Local governments receive an annual subvention of foregone property taxes from the State, through the Open Space Subvention Act of 1971.

As of 2011, a total of 2,833 acres (35 percent of the total agricultural acreage in the Study Area) were under Williamson Act contracts. Of this land, 467 acres (6 percent of the Study Area's farmland) were in non-renewal as of 2011, meaning that at the end of their 10-year period, they will not renew their contracts (parcels whose contracts expired between 2006 and 2009 are not counted). Williamson Act parcels are most prevalent in the Study Area's southwest, which is not planned for urban growth under the General Plan. A considerable amount of farmland in areas designated for growth under the General Plan is also under contract. There are several expiring Williamson Act parcels in the Turlock Regional Industrial Park.

Role of the General Plan

The General Plan plays an important role in the conservation of farm land, because the City's growth over the next 20 years will be guided by General Plan policies and the Land Use Diagram. While the General Plan emphasizes infill development, projected growth in the Study Area will also necessitate some conversion of agricultural land. If the General Plan were developed to its full capacity, just over 1,000 acres of agricultural land would be replaced by urban development (including parks and schools.) Land classified as "Prime Farmland" and "Farmland of Statewide Importance" account for almost 90 percent of this land, or 570 and 332 acres, respectively. Much

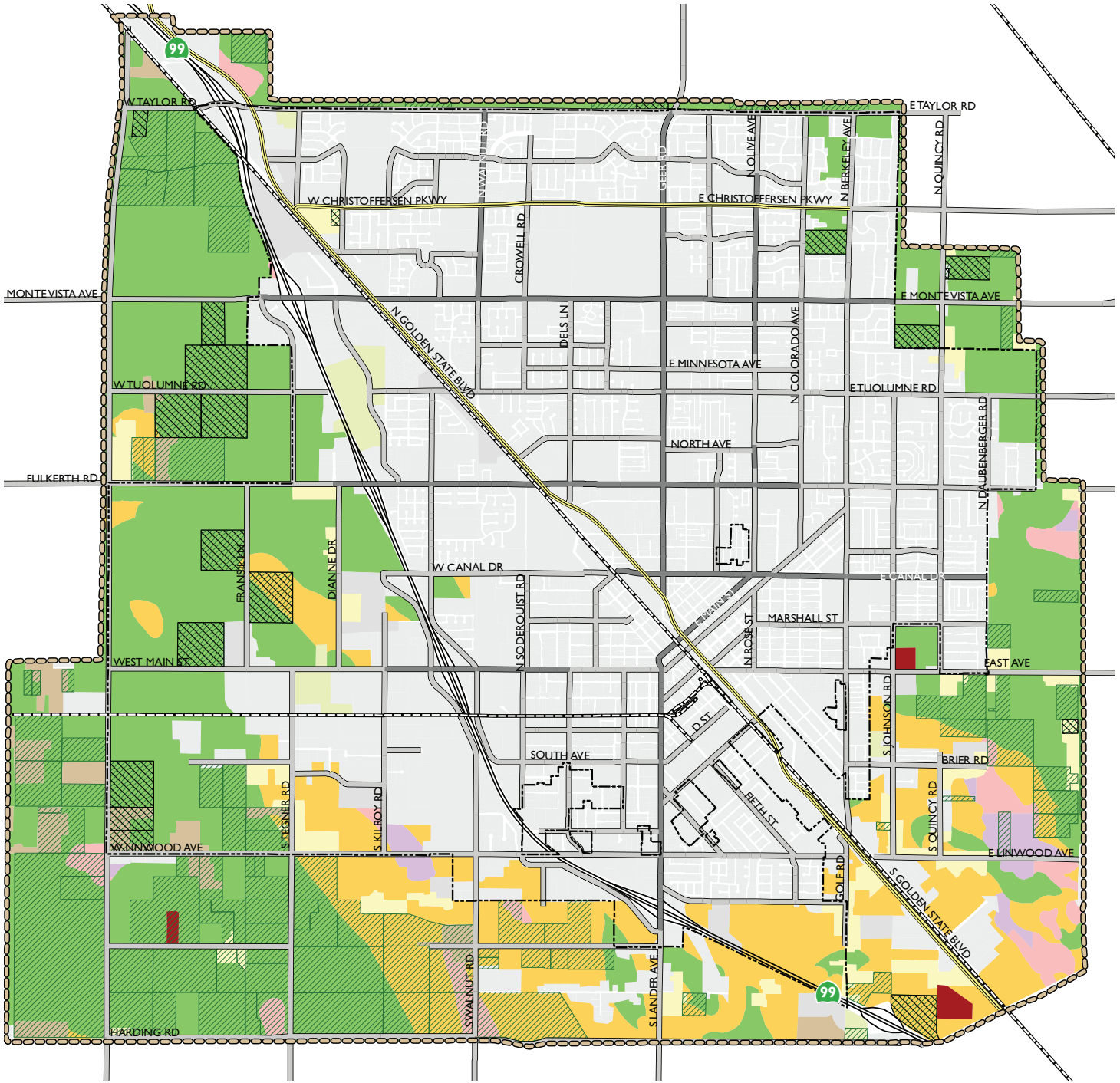


Figure 7-2: Farmland Classification and Conservation

- Prime Farmland
- Farmland of Statewide Importance
- Farmland of Local Importance
- Unique Farmland
- Grazing Land
- Confined Animal Agriculture
- Rural Residential Land
- Vacant or Disturbed Land
- Semi-Agricultural/Rural Commercial Land
- Williamson Act Land
- Williamson Act Land Contracts Under Non-Renewal
- Study Area Boundary
- City Limits & County Islands

Existing Circulation Network

- Freeway
- Existing Expressway
- Existing Arterial
- Existing Collector
- Railroads

Source: California Department of Conservation, 2009, 2006; City of Turlock, 2008; Dyett & Bhatia, 2010.

of the farmland that is expected to be urbanized over the next 20 years is inside City limits, mainly in the Turlock Regional Industrial Park, and was designated for development previous to this General Plan. More than 6,400 acres within the Study Area would remain in agricultural use at the end of the planning period. The percent of the Study Area composed of farm land by classification is shown in Table 7-2, for the present and by the time of General Plan buildout.

Economic Impacts of Farmland Conversion

In 2011, the price of agricultural land was generally under $100,000 per acre, compared to up to $200,000 per acre for industrial land and $300,000 to $500,000 per acre for centrally-located commercial and residential land in parts of Turlock.[2] This price differential, along with the uncertainty of farm income, explains why farmland is vulnerable to conversion to urban uses.

Agriculture employed 8.9 percent of the labor force in Stanislaus County in 2007, and 6.5 percent of the labor force in Turlock.[3] Agriculture's overall share of employment is expected to decline over the coming years as non-farm employment in industries such as manufacturing, services, education, and healthcare grows. In absolute terms agricultural employment levels are expected to remain fairly stable, and agriculture will remain an important part of the regional economy.

TABLE 7–2: FARMLAND CLASSIFICATION IN THE STUDY AREA

TYPE	EXISTING ACRES	PERCENT OF STUDY AREA	ACRES AT GENERAL PLAN BUILDOUT	PERCENT OF STUDY AREA	CHANGE
Prime Farmland	4,973	29%	4,403	25%	(570)
Farmland of Statewide Importance	1,705	10%	1,373	8%	(332)
Unique Farmland	240	1%	177	1%	(63)
Farmland of Local Importance	119	1%	58	<0.5%	(61)
Grazing Land	144	1%	136	1%	(8)
Confined Animal Agriculture	286	2%	282	2%	(4)
Total Farmland	**7,467**	**43%**	**6,429**	**37%**	**(1,038)**
Study Area	**17,449**	**100%**	**17,449**	**100%**	**–**

Sources: Department of Conservation, Division of Land Resource Protection, 2009, City of Turlock, 2008, Dyett & Bhatia, 2010.

2 LoopNet Commercial Real Estate Listings, 2011.

3 California Employment Development Department, 2008.

The average production value from agricultural land was approximately $2,352 per acre in 2009.[4] If secondary impacts were to be included, with a high multiplier[5] of 5, loss of income associated with agriculture would be about $11,760 per year for each acre of land converted to other uses. At this rate, urbanization over the next 20 years of approximately 1,000 acres of agricultural land contiguous to Turlock's City limits, consistent with General Plan policies, will result in the loss of $2.4 million annually, in current dollars, of direct agricultural income, and an estimated $12.2 million including secondary impacts. Economic losses would be offset by the value of urban development and its multiplier effects, but agricultural productivity in the Study Area would be diminished.

SOILS AND SOIL EROSION

Soils in the Study Area

A region's geology ultimately determines the types of soils that cover its surface, and soils have implications for agricultural productivity, natural hazards, and development potential. Almost all of the soils in the Study Area are sandy loam or loamy sand, meaning they have high sand content, low clay content, and low to moderate silt content. According to soil survey information obtained from the United States Department of Agriculture's Natural Resources Conservation Service (NRCS), three soil types, Dinuba sandy loam, Hilmar loamy sand, and Delhi loamy sandy, account for two-thirds of the Study Area's soil.[6] Some 23 additional soil types are present in relatively small amounts. For a more detailed discussion of soils, see the Environmental Impact Report.

Soil Erosion

Soil erosion is a process by which soil materials are worn away and transported to another area, either by wind or water. Rates of erosion can vary depending on the soil material and structure, and the placement and level of human activity. Soil containing high amounts of silt can be easily eroded, while sandy soils are less susceptible. Erosion is most likely to occur on sloped areas with

4 Stanislaus County Department of Agriculture. *2009 Annual Crop Report*.

5 The ratio of primary plus secondary economic impacts to primary impacts is termed a "multiplier."

6 Dinuba sandy loam, Hilmar loamy sand, and many other soils are further distinguished by additional characteristics, such as soil depth, drainage capacity, and salinity. The soil type designator (e.g., DrA) refers to the specific variant.

Top: While the General Plan emphasizes infill development, projected growth in the Study Area will also necessitate some conversion of agricultural land.

Bottom: Buffers should function to mark the urban edge, provide public open space, and ensure that urban development does not constrain agricultural practices.

exposed soil. In the case of agricultural or open space uses, erosion potential is highest when there is little vegetation. Soil erosion matters for agricultural land because it causes the fertile topsoil to wash away.

Soil erosion potential or susceptibility is identified by the soil's "K factor," which indicates a soil's inherent susceptibility to erosion, absent slope and groundcover factors. Values of K range from 0.05 to 0.43; the higher the value, the more susceptible the soil is to sheet erosion by water.[7] In the Study Area, 647 acres have K values of 0.43; these soils are located in the far west of the Study Area, where agriculture is planned to remain the predominant use. Other agricultural areas have soils moderately susceptible to erosion. Good agricultural management is important in conserving soil. Soil hazards are further discussed in Chapter 10, Safety, and displayed in Figure 10-3.

POLICIES

See also Chapters 2 and 3 for policies relating to preserving agricultural areas through urban growth management.

Guiding Policies

7.2-a **Preserve Farmland.** Promote the preservation and economic viability of agricultural land adjacent to the City of Turlock.

7.2-b **Limit Urban Expansion.** Retain Turlock's agricultural setting by limiting urban expansion to designated areas and minimizing conflicts between agriculture and urban activities.

7.2-c **Protect Soil and Water.** Work to protect and restore natural resources essential for agricultural production.

The quality of soil and water affect agricultural productivity. Policies are in other sections of this Element.

7.2-d **Support Air Quality Improvements.** Support efforts to reduce air quality impacts created in part by agricultural operations.

See Chapter 8, Air Quality and Greenhouse Gases, for more detail about air quality issues.

7 Institute of Water Research, Michigan State University, website: http://www.iwr.msu.edu/rusle/kfactor.htm. Viewed April 13, 2007.

Implementing Policies

7.2-e **Require Compact Development.** Require development at densities higher than typical in recent years in order to limit conversion of agricultural land and minimize the urban/agricultural interface.

Refer to Chapter 2: Land Use and Economic Development for more detail on historic and proposed development density.

7.2-f **Annex Land As Needed.** Annex land to the City only as it is needed for development of designated growth areas, consistent with policies in Chapter 3 and with the City's Annexation Policy. Do not annex agricultural land unless urban development consistent with the General Plan has been approved.

The Program specifies that City staff will reject as premature any application proposing prezoning and annexation of land that is not contiguous to the City's existing urban limits or that is not within the City'sapproved Sphere of Influence.

7.2-g **Participation in county-wide agricultural mitigation program.** Continue to work collaboratively with Stanislaus County and jurisdictions within the county on the development of a countywide agricultural mitigation program, which would mitigate the loss of Important Farmland to urban development through the required purchase of agricultural easements or other similar measures.

7.2-h **Allow Agricultural Uses to Continue.** Where agriculture exists within City limits, allow uses to continue until urban development occurs on these properties, including the establishment of community gardens serving the immediate neighborhood.

7.2-i **Support Participation in Williamson Act Program.** Support participation in the Williamson Act program by Study Area landowners.

About half of the farmland in the Area is under Williamson Act contract; see discussion of Williamson Act above. Under the Williamson Act program, farmers agree not to develop their land for 10 years in exchange for a lower tax rate, whereby they are taxed on the land's income-producing value, rather than its "highest and best use."

7.2-j **Support Right to Farm.** Support the implementation of Stanislaus County's Agricultural Element and Right-to-Farm ordinance.

The County's ordinance establishes a number of mechanisms designed to protect normal agricultural operations from pressures that can be created by urban neighbors.

7.2-k **Create Buffer.** Require a permanent buffer to be established between residential and agricultural activities along the long-term urban edge of Turlock.

See policies in Chapter 6: City Design for buffer standards.

7.2-l **Support Agricultural Industry.** Support agricultural industry within the city, while discouraging industrial uses in the unincorporated portions of the Planning Area.

Stanislaus County allows agricultural industry on land designated in its General Plan for Agriculture. If adjacent or near the city, such industrial activity would blur the city's edge and could create demand for annexation and city services. Industrial development within the city is supported by the provision of industrially-zoned land. Furthermore, agricultural industries are supported through economic development programs, cost-of-business advantages, and other aspects addressed in Chapter 2: Land Use and Economic Development.

7.2-m **Reduce Pollution.** Participate in inter-jurisdictional efforts to improve agricultural practices in order to reduce pollution and health problems associated with particulate matter production and use of agricultural chemicals.

Projects may be undertaken by the San Joaquin Valley Air Pollution Control District, StanCOG, or other organizations.

7.2-n **Minimize Soil Erosion.** Require new development to implement measures to minimize soil erosion related to construction. Identify erosion-minimizing site preparation and grading techniques in the zoning code.

7.3 HYDROLOGY AND WATER QUALITY

There are no natural defined streams in the Planning Area. Three open irrigation canals, Turlock Irrigation District (TID) Laterals 3, 4, and 5, pass through the Planning Area from east to west, spaced two and a half miles apart. There are also several local detention basins distributed throughout the City, which capture runoff during stormwater events and then discharge it to the canals.

Turlock is located in the Turlock Subbasin of the San Joaquin Groundwater Basin. All of the City's current potable water supply comes from a deep groundwater aquifer. The City also uses shallow groundwater for irrigation of some landscape areas. The City of Turlock is evaluating a Regional Surface Water Supply Project (RSWSP) that would supply treated Tuolumne River water from the TID to provide an additional source of potable water.

Because the Planning Area does not have natural streams, and because both surface water and groundwater in the Planning Area are closely related to the City's urban water use and stormwater drainage systems, the General Plan discussion of hydrology and water quality is covered in Section 3.3 Infrastructure.

POLICIES

See Section 3.3: Infrastructure for policies regarding protection of water quality, conservation of groundwater, and development of the water, sewer, and stormwater systems.

7.4 BIOLOGICAL RESOURCES

WILDLIFE HABITATS

Up until about 150 years ago, Turlock was a part of a larger grass- and marsh land where wild animals roamed freely. However, Turlock's eventual agricultural land use and urban development have resulted in a general absence of native vegetation in the Study Area. In addition, the lack of natural waterways and topography contribute to a dearth of habitat. However, agricultural uses do not preclude the use of the land by some species, particularly birds and small mammals. Orchards act as food sources and migratory corridors for some wildlife; livestock pastures serve as habitat to rodents and snakes. Detention basins, when holding water, can act as intermittent water sources and habitat for waterfowl. There are no riparian areas or vernal

pools in the Study Area—the only large surface-water bodies are irrigation canals and man-made retention basins such as Donnelly Lake.

SPECIAL STATUS SPECIES

Special-status species are plants and animals that, because of their documented rarity or vulnerability to various causes of habitat loss or population decline, are recognized by federal, state, or other agencies. Some of these species receive specific protection that is defined by federal or state endangered species legislation. Others have been designated as "sensitive" on the basis of adopted policies and expertise of state resource agencies or organizations with acknowledged expertise, or policies adopted by local government agencies to meet local conservation objectives.

According to the California Natural Diversity Database (CNDDB), two special-status species are presumed to be present in the Study Area, as shown on Figure 7-3. Swainson's hawk is listed as Threatened in the state of California. Swainson's hawk usually breeds in stands along riparian areas, and forages in grasslands, pastures, hay and alfalfa fields, and row cropland.[8] While the Study Area does not contain land typical for the hawk's breeding and nesting, it is presumed to be present.

The Hoary bat roosts in trees, and hunts over open areas or lakes. It is migratory, and its North American population is found from Canada to the southern United States, and is presumed to be present along Monte Vista Avenue west of Highway 99 (see Figure 7-3). The Hoary bat is not listed on Federal or State registers or identified by as a Species of Special Concern by the California Department of Fish and Game (CDFG), but it is monitored in the CNDDB.

Other species may occur within the Study Area, and are presumed to exist in the vicinity. Table 7-3 summarizes the sensitive plant or animal species that may occur in the Study Area, based on a search of the CNDDB for the four USGS quadrangles encompassing the Study Area. Portions of the study Area may provide potential habitat, and pastures, vineyards, row crops, and orchards in the Study Area may provide foraging areas for some of these species.

The Valley elderberry longhorn beetle is native to riparian forests of the Central Valley, and is in long-term decline due to habitat loss and fragmentation. It is listed as threatened under the

8 Audubon Society WatchList, http://www.audubon2.org/watchlist/viewSpecies.jsp?id=199 and California Department of Fish and Game Life History Accounts and Range Maps, http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx

federal Endangered Species Act. With its lack of suitable habitat, the species is not likely to be present in the Study Area.

Five other animal species present in the vicinity of the Study Area do not have legal status but are considered species of Special Concern. The hardhead is a fish, and lacks suitable habitat in the Study Area. The silvery legless lizard lives in loose sandy soil or leaf litter, typically in dunes, an environment not characteristic of the Study Area. The tricolored blackbird, the western pond turtle, and the Suisun song sparrow rely on riparian, pond, or marsh habitats, which are present in the region but not in the Study Area.

Two species of native vegetation, Merced Monardella and San Joaquin Valley Orcutt Grass, were identified as potentially existing in the Study Area. The California Native Plant Society (CNPS) presumes the Merced Monardella to be extinct; San Joaquin Valley Orcutt Grass is listed as threatened by the federal government and endangered in California. Due to the prevalence of urban and agricultural uses in the Study Area, it is more likely that this grass species is present in the general region but not in the Study Area.

Swainson's hawk is one of two special-status species presumed to be present in Turlock. Swainson's hawk is listed as Threatened in the State of California.

POLICIES

Guiding Policies

7.4-a **Increase Biological Diversity.** Make efforts to enhance the diversity of Turlock's flora and fauna, including street trees.

Implementing Policies

7.4-b **Sensitive Site Planning.** Protect mature trees and natural vegetation and features wherever feasible in new development areas.

7.4-c **Urban Trees.** Protect and expand Turlock's urban forest through public education, sensitive maintenance practices, and a long-term financial commitment adequate to protect these resources. Continue to require the planting of appropriately-spaced street trees in new development areas.

7.4-d **Special Review if New Information Becomes Available.** Establish environmental review procedures, such as site reconnaissance and certification by a biologist, as part of the project development application process if new information to support existence of a Special Status species becomes available.

TABLE 7–3: SENSITIVE BIOLOGICAL RESOURCES POTENTIALLY FOUND IN THE STUDY AREA				
COMMON NAME (SCIENTIFIC NAME)	FEDERAL / STATE STATUS	CDFG STATUS	CNPS STATUS	PRESENCE IN PLANNING AREA
Animal Species				
Valley elderberry longhorn beetle (Desmocerus californicus dimorphus)	Threatened / None			
Swainson's hawk (Buteo swainsoni)	None / Threatened			Presumed Present
Hardhead (Mylopharodon conocephalus)	None / None	SC		
Hoary bat (Lasiurus cinereus)	None / None			
Silvery legless lizard (Anniella pulchra pulchra)	None / None	SC		
Suisun song sparrow (Melospiza melodia maxillaris)	None / None	SC		
Tricolored blackbird (Agelaius tricolor)	None / None	SC		
Western pond turtle (Emys marmorata)	None / None	SC		
Hoary bat (Lasiurus cinereus)	None / None			Presumed Present
Merced kangaroo rat	None / None			
(Dipodomys heermanni dixoni)	None / None			
Moestan blister beetle (Lytta moesta)	None / None			
Plant Species				
San Joaquin Valley Orcutt grass (Orcuttia inaequalis)	Threatened / Endangered		1B.1	
Merced monardella (Monardella leucocephala)	None / None		1A	

Key to Special Status Designations

California Department of Fish and Game (CDFG)

SC: Species of Special Concern (those considered to be indicators of regional habitat changes; no legal status but should be taken into special consideration)

California Native Plant Society (CNPS)

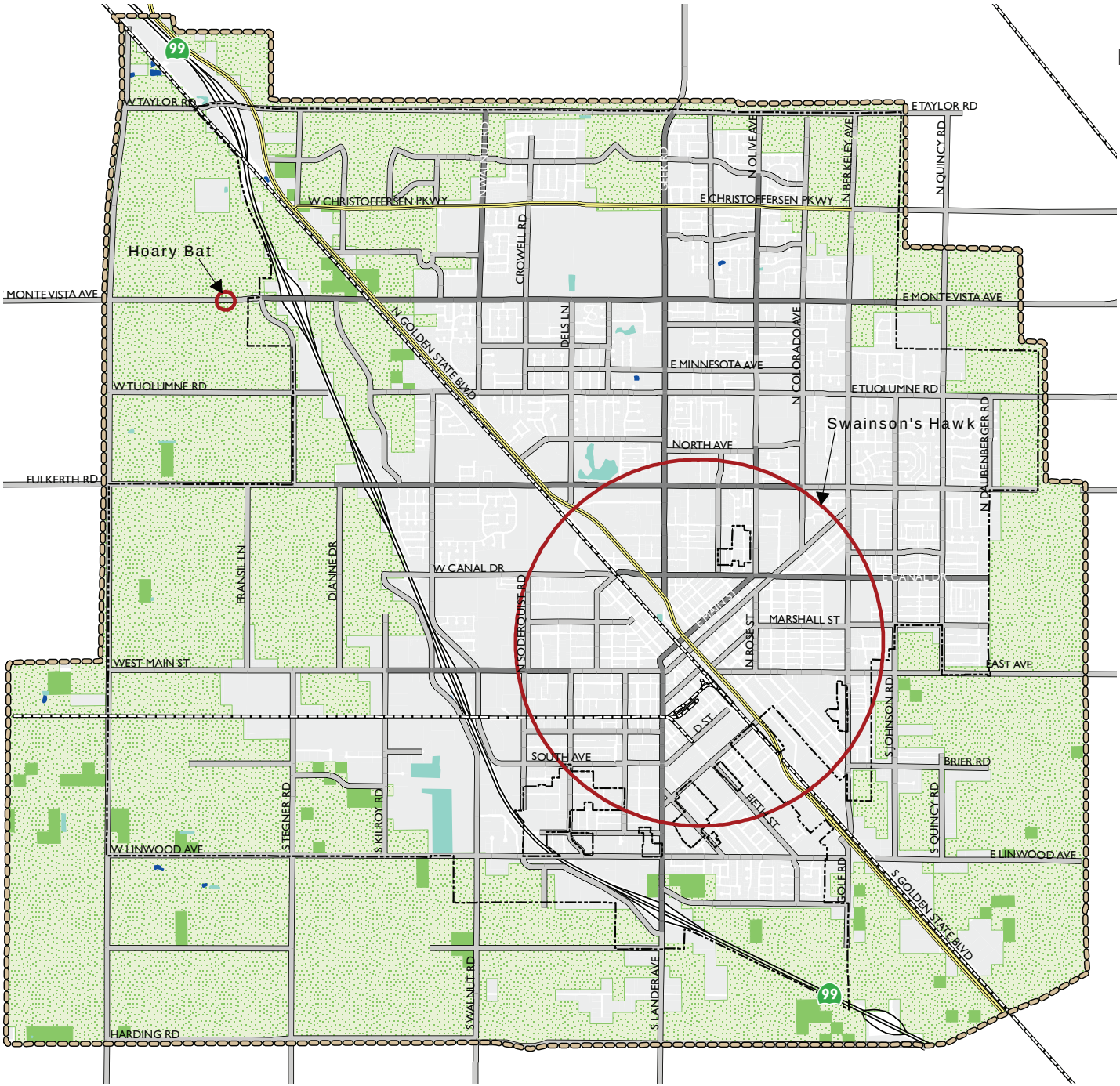
1A: Presumed extinct; has not been seen or collected in the wild in California for many years.

1B: Rare, threatened, or endangered in California and elsewhere; category fulfills the criteria of "rare" under CEQA and should be considered in Environmental Impact Reports

0.1 to 0.3 indicates level of endangerment, with 0.1 being most endangered.

Sources: California Natural Diversity Database, California Department of Fish and Game 2010; California Native Plant Society 2010

Figure 7-3: Biological Resources



Special Status Species

Wetlands
- Freshwater Emergent Wetland
- Freshwater Forest/Shrub Wetland
- Freshwater Pond

Vegetation
- Agriculture
- Herbaceous

- Study Area Boundary
- City Limits & County Islands

Existing Circulation Network
- Freeway
- Existing Expressway
- Existing Arterial
- Existing Collector
- Railroads

0 0.25 0.5 1
Miles

Source: CNDDB, 2009; California Resources Agency, Legacy Project, 2003; United States Fish and Wildlife Service, 2008; City of Turlock, 2008; Dyett & Bhatia, 2010.

Mature trees provide many benefits to residents and to the environment, and should be maintained and protected.

7.4-e **Identify and protect nesting habitat.** Projects on greenfield sites proposing to commence construction or other ground-disturbing activities during the typical nesting season (February through mid-September) shall be required to conduct a survey by a qualified biologist no more than 10 days prior to the start of disturbance activities. If nests are found, no-disturbance buffers around active nests shall be established as follows until the breeding season has ended or until a qualified biologist determines that the birds have fledged and are no longer dependent on the nest for survival:

- 250 feet for non-listed bird species;
- 500 feet for migratory bird species; and
- One-half mile for listed species and fully protected species.

7.4-f **Swainson's Hawk protection**. If Swainson's Hawks are found foraging in an agricultural area prior to or during construction, project proponents shall consult a qualified biologist for recommended proper action, and incorporate appropriate mitigation measures. If specific project activities on sites where suitable nesting habitat may exist are to take place during the normal breeding season (February through mid-September), project proponents shall be required to conduct a survey by a qualified biologist for nesting raptors in all potentially suitable trees no more than 10 days prior to the start of disturbance activities. If an active Swainson's Hawk nest is found, appropriate mitigation measures may include, but are not limited to:

- Establishing a one-half mile buffer around the nest until the breeding season has ended or until a qualified biologist determines that the birds have fledged and are no longer dependent on the nest for survival
- Mitigating habitat loss within a 10 mile radius of known nest sites as follows:
  - Providing a minimum of one acre of habitat management land for each acre of development for projects within one mile of an active nest tree
  - Providing a minimum of 0.75 acres of habitat management land for each acre of development for projects within between one and five miles of an active nest tree
  - Providing a minimum of 0.5 acres of habitat management land for each acre of development for projects within between five and 10 miles of an active nest tree

7.5 CULTURAL AND HISTORIC RESOURCES

One objective of the General Plan is to preserve community assets, which include sites with cultural significance. These cultural resources include sites, buildings, structures, or objects that may have archaeological, paleontological, historical, cultural, or scientific significance. The Study Area has a rich history of human habitation, including primarily the Yocut tribe of Native Americans. Related to more recent history, a substantial inventory of historically significant buildings in Turlock has been developed, which contribute to the City's visual interest and unique sense of place. The existence of cultural resources of all varieties in Turlock underscores the need for policies to protect the resources of which we are aware and to guide actions if and when additional resources are discovered in the future.

RESOURCE IDENTIFICATION

State laws (notably CEQA) protect archaeological and other cultural resources. In order to preserve historic resources, the State has formed the State Historical Resources Committee that conducts the State Historic Resource Inventory and maintains the California Register of Historic Resources. This body also makes recommendations for the National Register of Historic Places.

Tribal Consultation

Passed in 2004, Senate Bill (SB) 18, now Government Code Section 65351 and 65352, establishes a procedure to help tribes and jurisdictions define tribal cultural resources and sacred areas more clearly and incorporate protection of these places earlier into the General Plan process. The SB 18 process mirrors the federal 106 Review process used by archaeologists as part of the environmental review conducted under NEPA. While not a component of CEQA review per se, the Lead agency is required to request consultation with responsible and trustee agencies, such as NAHC and neighboring tribes, during the initial study and EIR process.

In December 2008, a letter to the Native American Heritage Commission requested a review of the sacred lands file applicable to the Study Area and a list of Native American contacts within the region. The sacred lands file did not contain any known cultural resources information for the immediate Study Area.

The Turlock Carnegie Library, built in 1916, and the Turlock High School Auditorium and Gym, built in 1925, are listed on the National Register of Historic Places. The Carnegie Library, gutted by fire in 2006, has been restored for use as an arts center.

HISTORIC RESOURCES IN THE STUDY AREA

A records search conducted by the Central California Information Center (CCIC) of the California Historic Resources Information System at CSUS identified 38 properties in the Study Area included in the state's Historic Property Data File. Most of Turlock's historic properties are residential, dating from as early as 1906 and as late as 1957 (buildings must be at least fifty years old to qualify).

There are three properties listed on the National Register of Historic Places and the California Register of Historic Places in Turlock. The oldest of these is the Turlock Carnegie Library, built in 1916 in the Classical Revival style. While under renovation in 2006, the library was gutted by fire. Also on the National and State Register is the Turlock High School Auditorium and Gymnasium, a handsome example of the Mission-Spanish Revival style, from 1925. Third, the site of the Turlock Assembly Center, at the Stanislaus County Fairgrounds, is a nationally- and state-listed historic property and is also a California Historical Landmark. In the summer of 1942, the Fairgrounds was used as an "assembly center" where 3,699 Japanese-Americans were imprisoned before being moved to longer-term relocation sites. Later, the site was used as a U.S. Army Rehabilitation Center. While many of the Fairgrounds buildings from that time remain, there is no evidence of Assembly Center structures, and no historical marker.

Two additional properties on the list, Iwata Store, 2305 South Golden State Boulevard, and Turlock Social Hall, 326 S. Center Street, were identified in a Reconnaissance Level Survey, but have not been evaluated for National Register status. All of the remaining properties in the Historic Property Data File have been determined ineligible for the National Register. Figure 7-4 maps Turlock's historic properties, most of which are in and around the Downtown area; these are listed in Table 7-4.

TABLE 7–4: HISTORIC RESOURCES IN THE STUDY AREA		
MAP ID	**ADDRESS (NAME)**	**YEAR CONSTRUCTED**
California Historical Landmarks, and Listed on National Register of Historic Places and California Register of Historic Places		
1	Turlock Assembly Center	1942[1]
National Register of Historic Places and California Register of Historic Places		
2	250 N Broadway (Turlock Carnegie Library; burned in 2006)	1916
3	1574 E Canal Drive (Turlock High School Auditorium and Gymnasium)	1925
Properties Identified in Historic Property Data File and Not Evaluated for National Register or California Register		
4	326 S Center Street (Turlock Social Hall)	1913
5	2305 S Golden State Boulevard (Iwata Store)	1921

Notes:

1 Year of historic occupancy.

Other sites shown on Figure 7-4 are on the Historic Property Data File but have been determined ineligible for listing on the National Register.

Source: Central California Information Center, 2008.

Figure 7-4: Historic Resources

- # California Historical Landmarks, and Listed on National Register of Historic Places and California Register of Historic Places
- # National Register of Historic Places and California Register of Historic Places
- # Properties Identified in Historic Property Data File and Not Evaluated for National Register or California Register
- Properties Identified on Historic Property Data File but determined ineligible for listing on the National Register or California Register

Study Area Boundary
City Limits & County Islands

Existing Circulation Network

Freeway
Existing Expressway
Existing Arterial
Existing Collector
Railroads

0 0.25 0.5 1
Miles

Source: California historical resources information system data, 2008; Central California Information Center, 2008; Dyett & Bhatia. 2010: City of Turlock. 2008.

POLICIES

Guiding Policies

7.5-a **Protect Archaeological Resources.** Protect significant archaeological resources in the Study Area that may be identified during construction.

7.5-b **Preserve Historic Places.** Integrate historic preservation into planning for Downtown and other areas with historic significance.

Implementing Policies

See also Section 6.6: Historic Preservation.

7.5-c **Evaluate Resource Discoveries.** Should archaeological or human remains be discovered during construction, work shall be immediately halted within 50 meters of the find until it can be evaluated by a qualified archaeologist. If it is determined to be historically or culturally significant, appropriate mitigation measures to protect and preserve the resource shall be formulated and implemented.

7.5-d **Follow State Certified Local Government Guidelines for Historic Preservation.** Form an historic preservation committee in accordance with State Certified Local Government guidelines which would conduct a survey when requested by the owner, occupant, or other knowledgeable source.

7.5-e **Historical Site Contracts.** Continue to support the preservation, maintenance, and adaptive reuse of historic buildings by administering historic site contracts as provided for under Chapter 9-5 Article 8 of the Turlock Municipal Code and facilitating property tax abatement under the Mills Act.

7.5-f **State Historic Building Code.** For State-designated historic buildings, use the State's historic building code to ease adaptive reuse.

The City should encourage the preservation and adaptive reuse of historic buildings through incentives to property owners and revisions to the zoning code.

7.6 MINERAL RESOURCES

The Study Area is underlain by two geologic units, the Modesto Formation and Riverbank Formation. Both are comprised of alluvial fan deposits which include sand, gravel, silt, and clay. The Modesto Formation is estimated to range in age from about 9,000 to less than 100,000 years old, while the Riverbank Formation is estimated to range from about 130,000 to 450,000 years old.

The Study Area does not include any known historic or current mining operations other than minor excavations for fill material, which is not considered a significant resource. The only significant mineral commodities that might be found in the two formations mentioned above are sand and gravel for road and building construction. The sources of most sand and gravel used in the road and construction industry in the Study Area are from mining operations along the Tuolumne River and Merced River.

The California Geological Survey's Mineral Land Classification in Stanislaus County study completed in 1993 provides more detailed information on mineral resources within the Study Area.

POLICIES

Guiding Policies

7.6-a **Protect Significant Resources.** Cooperate with regional agencies to protect significant mineral resources in the Study Area that may be identified in the future.

Implementing Policies

7.6-b **Plan After Discovery.** When and if significant mineral resources are discovered in the Study Area, work with regional agencies to determine a course of action to protect the resources.