8E.0 NATURAL ENVIRONMENT: AGRICULTURAL RESOURCES

8.1 OVERVIEW

Agriculture has long been the backbone of the Tehama County economy. The favorable growing season, arid climate, fertile soils and abundance of water contributed to make Tehama County an agricultural cornucopia in the northern Sacramento Valley. The lands that surround the Sacramento River are prime agricultural lands for irrigated crops. The foothills provide critical grazing land and production of dryland grain. The mountains provide timber and meadows for summer grazing. All of these factors contribute to shape the agricultural evolution of Tehama County.

Tehama County is rich with an interesting agricultural history. Since the early settlement of the county with the Mexican Land Grants, agriculture has intensified with the development of new technologies, fertilization, and irrigation systems. Tehama County was the home to the world's largest vineyard, the Vina Ranch owned by Leland Stanford, and also to one of the world's largest planned agricultural communities, the Maywood Colonies near Corning.

Agriculture is a vital industry in Tehama County. Agriculture, historically and currently, is the county's highest income producing industry. Agriculture provides Tehama County with its rural character, open space and lifestyle that are highly valued by its residents.

8.2 PURPOSE AND METHODOLOGY

Following data sources were used to develop the information presented in this section:

- National Agricultural Statistics Service
- Tehama County Agricultural Crop Reports
- United States Department of Agriculture Soil Survey of Tehama County
- California Department of Conservation Division of Land Resource Protection
- Tehama County parcel data

The National Agricultural Statistics Service (NASS) is responsible for collecting and analyzing agricultural statistical data. The first crop reports were released in July 1863. Subsequent crop reports have been released to provide farmers with detailed market information on a variety of commodities. Agricultural statistical data was available for Tehama County from 1880 to present. Initially, reports were released on a ten-year interval and have been released in five-year intervals since 1910.

Tehama County Agricultural Crop Reports were analyzed for each of the years between 1950 and 2003. Crop Reports contain acreage figures, as well as accounts of production and value of the agricultural crops produced in Tehama County. The information that enters these reports is derived directly from growers, processors, and government agencies.

Primary soils data for Tehama County was extracted from the United States Department of Agriculture's Soil Survey of Tehama County, 1967.

The California Department of Conservation's Division of Land Resource Protection was also an essential source of information regarding historic Williamson Act acreage and farmland protection and conversion. Data was compiled from the California Department of Conservation from 1992 to 2002 to monitor agricultural lands in Tehama County. An in-depth look at the 1998-2000 Tehama County Field Report and the 2000-2002 Tehama County Field Report were analyzed. Data from the 2002-2004 report is not yet available.

Tehama County parcel data was used to develop the current crop and Williamson Act acreage.

Historic books and other documents were used to interpret historic agricultural conditions. Interviews with various farmers and ranchers in the county were also used to provide a source of local information.

8.3 EXISTING SETTING

NUMBER OF FARMS

The number of farms in Tehama County has fluctuated dramatically over the years. Early in Tehama County history, Mexican Land Grants helped pave the way for settlement of the area. These large tracts of land were soon subdivided into smaller farms in the late 1800's and early 1900's (Phillips & Miller, 1915).

In the late 1800's, the number of farms reported in Tehama County ranged between 600-800. By 1910, over one thousand farms were in existence, and by 1945 there were 1,890 farms reported, the largest number in county history. Since the 1940's, the number of farms have steadily decreased until the early 1970's, where in 1974, 1160 farms existed. The reduction in farm numbers most likely was the consolidation of existing farms, creating a larger average farm size. In 2002, Tehama County reported a total of 1,573 farms, down six percent from 1,679 farms reported in 1997. The number of farms located in Tehama County is summarized on **Figure 8E-1**.

AVERAGE FARM SIZE

Average farm sizes in Tehama County can be traced back further than 200 years ago. In 1880, the average farm size was 820 acres. Since that time, average farm sizes have fluctuated between 600 and 1,000 acres. During the 1930's and the 1970's, average farm sizes increased. During the 1920's and between the 1940's and 1950's, the average farm sizes decreased. Average farm sizes are depicted on **Figure 8E-2**.

More recently, average farm sizes in the county have decreased substantially. In 1974, the average farm size was reported at 1,083 acres. In 2002, the average farm size was reported at 548 acres, the lowest ever recorded for Tehama County. The average farm size in California is 346 acres.

TABLE 8E-1
FARMS BY SIZE, 1987-2002

FARM SIZE	1987	1992	1997	2002
1 to 9 acres	237	240	251	212
10 to 49 acres	574	556	529	413
50 to 179 acres	274	249	259	323
180 to 499 acres	146	142	144	271
500 to 999 acres	59	70	67	91
1,000 acres or more	130	124	112	81

Source: National Agricultural Statistics Service, 1987, 1992, 1997, 2002

TOTAL ACREAGE IN FARMS

Total acreage in farms has continued to increase between the 1880's and the mid 1970's. During this time, total acreage peaked at nearly 1.3 million acres. From 1970 to the late 1980's, total acreage exhibited a slight decline. Between 1987 and 1997, it was reported that total farm acreage dropped from 1,104,584 acres to 885,426 acres (NASS, 2004). Total farm acreage is depicted on both **Table 8E-2** and **Figure 8E-3**.

TABLE 8E-2
AGRICULTURAL ACREAGE COMPARISON, 1950-2000

YEAR	ORCHARD	CROPLAND	TOTAL FARM ACRES
1950	10,673	281,710	1,131,660
1954	11,338	186,859	1,161,699
1959	15,203	N/A	1,254,707
1964	14,620	N/A	1,168,133
1969	21,948	147,752	1,101,562
1974	20,093	138,669	1,256,010
1978	26,985	156,827	1,165,043
1982	32,497	160,359	1,168,247
1987	32,908	131,869	1,104,584
1992	35,422	120,902	1,016,851
1997	36,956	127,019	885,426
2002	45,236	140,987	862,440

Source: National Agricultural Statistics Service

Cropland

Land that has been used for producing crops has fluctuated much over the years. Data indicates that at its peak in 1950, over 280,000 acres in Tehama County was designated as cropland (NASS, 2004). Many lands were farmed without irrigation, producing dryland grain hay and other crops. This trend has slowly decreased over the years, with a low in the 1990's around 120,000 acres. In 2002, total cropland was estimated at 140,000 acres. Cropland acreage trends are summarized on **Table 8E-2** and **Figure 8E-4**. Major crop types over time are included in **Figure 8E-5**.

Grain Production

Grain production in Tehama County has decreased significantly in recent years. Barley, oat, and wheat were widely produced historically and were very important economic crops. Many areas in the lower rolling foothills on the west side of the county were used historically for dryland grain farming (Smith, 1997). Other than a few remnant producers, dryland grain crops have been nearly eliminated from production in Tehama County. The low prices for grain and the increased costs of production are largely responsible for the decline in grain production. Grain production is depicted on **Figure 8E-6**. Hay production is included on **Figure 8E-7**.

Rice Production

Rice production has also seen a major decline in the past two decades. Plantings of rice date back the early 1980's, when nearly 3,000 acres were produced (NASS 2004). In 2003, only 600 acres were reported (Tehama County 2003). Increases in the cost of water have nearly eliminated water-intensive crops such as rice from agricultural production in Tehama County. Rice production is depicted on **Figure 8E-8**.

Orchard Production

Orchard production in Tehama County was initially reported by the NASS in 1930. During the 1930's to the mid 1960's, orchard production remained stagnant with an approximate 10,000 to 15,000 acres in production. By the late 1960's, total orchard production jumped to over 20,000 acres. Since this time, total orchard production has experienced a steady increase to 45,236 acres reportedly in orchards in 2002 (NASS, 2004). Tehama County orchards are predominantly walnuts, prunes, almonds, or olives. Total orchard acreage trends are summarized on **Table 8E-2** and **Figure 8E-4**. Specific orchard crop production trends are depicted on **Figure 8E-9**.

The combination of the availability of irrigation water, advances in irrigation technologies, relatively good commodity prices for orchard crops, and the availability of processing facilities are responsible for the drastic increase in orchard acreage. Many orchards have been established in western Tehama County on clay soils with drip irrigation. Earlier in Tehama County history, other factors that have led to the increase of orchard plantings were the construction of Shasta Dam in 1945, which drastically minimized the flood risk of prime agricultural lands adjacent to the Sacramento River, the development of the Red Bluff Diversion Dam combined with the Tehama/Colusa Canal and the Corning Canal, and the reduction in copper mine pollution from lower Shasta County in the early 1900's (Kristofors, 1973).

Walnuts are the most widely planted crop in the county, with a steep increase in plantings occurring in the 1990's. Walnut acreage is currently estimated at 14,057 acres (Tehama County 2003). Walnut acreage can be found nearly anywhere on the valley floor, but is primarily found on the Hwy 99 Corridor between Red Bluff and Vina.

Almonds have seen a tremendous increase in plantings in the early 1980's and somewhat stagnant growth in the early 1990's. Since the early 1990's, almond acreage has increased gradually, with a reported 7,268 acres in production in 2003 (Tehama County, 2003).

Dried plums have been a steady high-valued crop in the county for decades and are presently produced on 8,848 acres (Tehama County 2003). More recently, overproduction has led to the USDA's voluntary tree removal program in Tehama County.

Olives have remained the most stable orchard crop in Tehama County. A large processing facility is located in Corning. The Maywood Cannery in Corning was the only major olive processing facility in the county. In 1978, Bell-Carter Foods, Inc. purchased the Maywood Olive Company and the facility was renovated and opened in 1980. Since that time, Bell-Carter Foods has been the primary olive processing facility in the county, selling olives under the Lindsay Olives brand name (Bell-Carter, 2004). Olives are currently produced on 5,560 acres in Tehama County (Tehama County, 2003). Olives are planted primarily around the Corning area.

Peaches have historically been large orchard crops in Tehama County. In 1909, it was reported that 2,891 acres were planted for peach production (Grimes, 1983). In 1975, peaches were reportedly produced on 884 acres, and by 1985, the acreage dramatically dropped to 83 acres.

The reduction in prices and marketing outlets are a few of the many reasons for the decline of the production of this crop.

Livestock Production

Tehama County serves as grazing ground for many Northern California and Southern Oregon cattlemen. Both historically and today, cattle are wintered in the lower foothills of Tehama County and summered in the mountain meadows of Tehama County and other surrounding counties (Briggs, 1956). Some livestock producers keep cattle on irrigated pasture on the valley floor during the summer months.

Most of the early settlers in Tehama County depended primarily on livestock for their livelihood. In the late 1800's, of the farms reporting inventories, sheep production was much more prolific than cattle or hog production. The large sheep herds of the past are now gone, passing beef production the title of the largest livestock industry in the county. Livestock populations are depicted in **Figure 8E-10**.

General Cattle

Cattle inventories in Tehama County have drastically increased over the years. In the late 1800s, cattle numbers ranged near 10,000 head (NASS 2004). Over the next century, cattle numbers steadily increased to a peak of approximately 100,000 head in the 1970's. In 2002, total cattle inventories for Tehama County indicate approximately 68,000 cattle in the county. Two of the reasons for the drastic increase in cattle numbers were an increase in cattle commodity prices and the reduction of sheep populations in the county (Briggs, 1956).

Urban developments threaten the winter ranges in the foothills. Irrigated pastures serve as a location for cattle in the summer months, and have been slowly reduced over the years. The increasing cost of water and the high land values are challenges to a low-value crop such as irrigated pasture.

Hogs

Hog production was widespread in the late 1800's and the early 1900's, with the average hog population around 20,000 head residing in the county in any given year. Over the years, this number has experienced a steady decline. In 2003, only 1,000 domestic hogs were reported in the county (Tehama County 2003). It should be noted that wild pigs have been introduced into certain portions of the county over the years. The lower foothills on both the west and east side of the county contain wild pig populations.

Sheep

Sheep were historically the largest livestock commodity in Tehama County. The first reported estimate of sheep populations occurred in 1880, when 121,963 sheep were reported. Sheep production was much more common than cattle production during the early settlement of the county because they were primarily nomadic (Wentworth, 1948). Sheep production in Tehama County peaked in 1930, with nearly 350,000 head. The number has steadily declined since this time, and in 2003, only 5,800 head reportedly resided in the county (Tehama County 2003). Reasons for sheep numbers declining include the dramatic increase of predators, reduction in mountain summer ranges available to grazing, low commodity prices, and the unavailability of labor for sheep-herders (Briggs, 1996).

Poultry

Chickens and turkeys have been large commodities in Tehama County, but over the years, these populations have drastically declined. The amount of chickens especially has decreased over the years. In 1939, nearly 135,000 chickens were reported in the county. However, the poultry population has declined to the point where population estimates are not calculated by the local Ag Commissioner's office due to the low number of poultry in the county.

Timber

Timber has always played a large role in the economy of Tehama County. Timber harvesting zones in the county are located on the eastern and western mountain slopes. Timber harvesting over the years has faced an overall decline. Throughout the 1980's, timber harvesting in Tehama County extracted an average of 140 million harvested board feet annually. In the 1990's, the average of timber harvested dropped to below 100 million harvested board feet annually. In the 2000's, timber harvesting continues to drop. In 2003, approximately 74 million board feet of timber were harvested. This is nearly a fifty percent decrease in production compared to timber harvesting levels from the 1980's. In 2003, the gross value for timber production in the county was estimated at $17 million. Timber production is shown on **Figure 8E-11**.

HISTORY OF WATER DEVELOPMENT

Irrigation has led to the intensification and development of agriculture in Tehama County. The first irrigated field was supposedly located in Rancho Bosque, a Spanish land grant. A gristmill operated by waterpower is supposedly the first water extraction device for irrigation purposes somewhere between 1847 and 1852 (Gowans, 1967). In 1855, an irrigation ditch was created off of Elder Creek and supplied water to a fork of Mill Creek to provide water to a ranch near Paskenta (Bedford, 1991). Since that time, ditches were commonly constructed adjacent to streams to provide water for irrigation.

The livestock industry has played a significant role in the development of stock ponds and reservoirs. Between 1938 and 1954, 554 stock ponds and reservoirs were constructed in the county, with an estimated storage capacity of 3,349 acre-feet (Gowans, 1967). These stock ponds were primarily constructed in the lower foothills of western Tehama County, and many have the ability to hold water year-round. On the east side of the county, stock ponds were constructed by digging out small basins down to the bedrock. These smaller basins hold water for livestock during the winter and spring months, but dry out quickly during the summer.

In 1935, the authorization of the Central Valley Project helped paved the way for the construction of Shasta Dam (United States Bureau of Reclamation, 2004). The construction of Shasta Dam in 1945 was significant to water availability in Tehama County. An extension of the Central Valley Project that had a direct benefit on the Sacramento Valley included the Sacramento Canals Unit, which was designed to provide irrigation water for Tehama, Glenn, and Colusa Counties. The Sacramento Canals Unit was authorized on September 29, 1950. This unit included the construction of the Red Bluff Diversion Dam, Corning Pumping Plant, Tehama-Colusa Canal, and the Corning Canal. The Red Bluff Diversion Dam diverts water from the Sacramento River to the Corning and Tehama-Colusa Canals. This project was completed in August 1964.

The Tehama-Colusa canal serves water to Tehama, Glenn, Colusa, and Yolo counties. The canal is 110.9 miles long with eight different canal reaches. Reaches six and seven were

completed in 1979, and the eighth and final reach was complete in May 1980. The Tehama-Colusa Canal has a capacity of 2,530 cubic feet per second (CFS) (USBR, 2004).

The Corning Canal diverts water from the Tehama-Colusa Canal. This canal is 21 miles long and terminates four miles southwest of Corning. Construction of the canal started in November 1954 and was primarily completed in May 1957. The entire project was completed in July 1959. The Corning Pumping Plant diverts water at the Red Bluff Diversion Dam from the Sacramento River. The pumping plant was completed in November 1960. The Corning Canal has a capacity of 500 CFS (USBR, 2004).

Economic Agricultural Conditions

Gross Sales of Farms

Farms in Tehama County range from small "hobby farms" to large-scale agribusiness operations. Hobby farms are generally defined as a farm with under $10,000 in sales annually and are typically subsidized by the owner's income from other sources. The majority of farms, though not the majority of acreage, are designated hobby farms. 871 farms reported gross sales below $10,000 and 324 farms reported gross sales of over $50,000 in 2002. Farms by value of sales are summarized on **Table 8E-3**.

TABLE 8E-3
ECONOMIC CHARACTERISTICS OF FARMS, 1987-2002

FARMS BY VALUE OF SALES	NUMBER OF FARMS			
	1987	1992	1997	2002
$0-$9,999	809	746	693	871
$10,000 to $49,999	346	349	366	378
$50,000 or more	265	286	303	324
Total	**1420**	**1381**	**1362**	**1573**

Source: National Agricultural Statistics Service, 2002

Agricultural Contribution to Economy

The total value for Tehama County agricultural commodities in 2003 was an estimated $125 million (Tehama County, 2003). Orchard crops are the highest value crops in the county, with an estimated $68 million in gross revenue in 2003. Livestock and poultry were the next highest valued commodity with the total value approximately $22 million. Commodity value trends from 1999 to 2003 are included on **Table 8E-4**.

TABLE 8E-4
AGRICULTURAL COMMODITY VALUE COMPARISON SUMMARY ($), 1999-2003

COMMODITY	1999	2000	2001	2002	2003
Fruit & Nut Crops	47,655,250	58,914,500	58,525,470	71,377,000	68,112,790
Livestock & Poultry	19,195,500	21,170,250	24,205,560	21,500,000	21,808,520
Field Crops	6,356,750	5,867,250	6,813,050	6,187,770	5,970,320
Pasture & Range	9,020,000	9,020,000	8,965,000	9,295,000	10,225,000
Livestock & Poultry Prod.	11,491,000	12,079,500	15,475,120	12,147,300	13,797,500
Seed Crops	774,250	730,000	640,630	593,360	542,770
Nursery Crops	1,367,000	1,308,500	1,991,000	2,102,000	1,600,000
Apiary Products	941,500	1,453,000	1,173,000	3,009,630	2,921,800
Vegetable Crops	156,000	160,250	162,240	160,000	160,000
Total	**96,957,250**	**110,703,250**	**117,951,070**	**126,372,130**	**125,138,700**

Source: Tehama County Agricultural Crop Reports

Of the orchard crops, walnuts created the highest revenue of any commodity, nearly $28 million in 2003. Walnuts accounted for roughly 41 percent of the total values of orchard crop production. Almonds were the next highest value, with just over $16 million in value, accounting for approximately 24 percent of the total value of orchard crops in 2003. Dried plums accounted for roughly $13 million and olives accounted for just over $7 million.

Field crops play a relatively minor role in Tehama County agriculture. Alfalfa hay was valued at approximately $2 million in 2003. Nursery crops, such as strawberry plants, had a value of $1.6 million. Other crops, such as grain hay, silage, corn, and rice are also important field crops for the county. Cultivated agricultural commodities are summarized on **Table 8E-5**.

Agricultural commodities were grouped to estimate the value of each industry and/or specific crops to the economy. Walnut production remains the highest value crop or industry in Tehama County in 2003. The beef industry, with a total of approximately $26 million was the second highest-ranking industry behind walnuts. Timber production was the third highest grossing industry in Tehama County for 2003. The top ten agricultural commodities are summarized on **Table 8E-6**.

TABLE 8E-5
TOP TEN CULTIVATED AGRICULTURAL COMMODITIES, 2003

RANK	CROP	VALUE IN $
1	Walnuts	27,987,490
2	Almonds	16,280,230
3	Dried plums	13,130,430
4	Olives	7,005,600
5	Alfalfa hay	2,090,000
6	Nursery crops*	1,600,000
7	Grain hay	736,000
8	Silage	660,000

RANK	CROP	VALUE IN $
9	Corn	630,000
10	Rice	540,000
Total		**$70,659,750**

Source: 2003 Tehama County Agricultural Crop Report

* Orchard trees, Christmas trees, strawberry plants

Market Value of Production

In 2002, total agricultural production was valued at $126,372,130. Assuming there were 1,573 farms in existence in 2002, each farm received estimated gross revenue of $80,338. Also assuming the average farm size is 548 acres, the estimated gross revenue per farm acre in Tehama County is roughly $146 per acre.

TABLE 8E-6
TOP TEN AGRICULTURAL COMMODITIES, 2003

RANK	CROP	VALUE IN $
1	Walnuts	27,987,490
2	Beef industry[1]	26,694,265
3	Timber	17,137,043
4	Dairy industry[2]	16,496,000
5	Almonds	16,280,230
6	Dried plums	13,130,430
7	Olives	7,005,600
8	Apiary products[3]	2,921,800
9	Alfalfa hay	2,090,000
10	Fish[4]	2,000,000

Source: 2003 Tehama County Agricultural Crop Report

[1] Feeders, bulls, calves, range, rental, etc.

[2] Milk and cattle

[3] Honey, queens, packaged bees, etc.

[4] Sturgeons, trout, catfish, fishing, etc.

Sustainability

Tehama County's agriculture industry has always been based around the production of agricultural commodities. Agricultural commodities have varied over the years, such as wool and grain in the early days to the multitude of commodities that are produced today. While it may never be practical or even probable that the county need to sustain itself agriculturally, it is important to view sustainability in food production for the county.

According to the 2002 census, Tehama County contained 53,582 residents (United States Census Bureau, 2004). According to the 2003 Tehama County Agricultural Crop Report, the county's agricultural industry produced annually:

- Enough almonds for 217 pounds per resident

- Enough olives for 623 pounds per resident
- Enough dried plums for 700 pounds per resident
- Enough walnuts for 950 pounds per resident
- Enough wool for 0.65 pound per resident
- Enough wheat for 187 pounds per resident
- Enough rice for 67 pounds per resident

Soils

The contribution of agriculture to the economy is heavily dependent on the soils available to produce crops. Tehama County has three predominant types of terrain: the valleys, the foothills, and the mountains. Intensive irrigated agriculture is widely practiced on the valley soils, composed of flood plains and terraces. The foothills are well known for their grazing of sheep and livestock. The mountains are used primarily for timber production and limited summer grazing.

Valley Soils

Soils found in the flood plains are located primarily adjacent to the Sacramento River and associated tributaries. These soils are typically the most productive farmland in the county. Orchards and irrigated field crops are common. With the construction of Shasta Dam on the Sacramento River upstream of the watershed area, the concerns of flooding have largely diminished. This has led to the development of more permanent crop plantings, such as orchards, along the fertile alluvial soils adjacent to the Sacramento River. Major soil associations include:

- Columbia-Vina association
- Maywood-Tehama association
- Corning-Redding association
- Tuscan-Inks association

Columbia-Vina Association - The Columbia-Vina association is located primarily in the center of the county as a narrow strip adjacent to the Sacramento River. These soils are very deep and well drained. The soils found in this association are among the best in the county, used primarily for irrigated agriculture. Crops typically found on the Columbia-Vina association are orchards and irrigated cropland. Historically, flooding was a problem from the Sacramento River, but the construction of Shasta Dam has generally controlled the risk of flooding.

Maywood-Tehama Association - The Maywood-Tehama association is located predominantly west of the Sacramento River. The Maywood series can be found running on narrow floodplains along streams that run from west to east toward the Sacramento River. These creeks, Thomes, Red Bank, Burch, Rice, and Elder Creeks hold the largest areas of the Maywood series. These soils are usually medium-textured and very deep. Maywood soils are very productive and are capable of producing nearly any crop in the county. The Tehama soils can be found on the floodplains and terraces west of the Sacramento River. These soils are usually very deep and are typically used for irrigated pasture and dryland grains. The area around Corning contains these soils, many acres of which support olives. The limiting factor in the Tehama soils is the dense clay-like subsoil, which often inhibits drainage.

Corning-Redding Association - The Corning-Redding association is found mostly on high terraces west of the Sacramento River, and along associated tributaries. These soils are gravelly, medium-textured soils that have various depths. These soils typically contain a subsoil of very dense clay. The Redding series usually has a cemented hardpan underneath the dense clay. These soils are used agriculturally for grazing land and dryland grain production. Agricultural production is generally low on these soils.

Tuscan-Inks Association - The Tuscan-Inks association is found on old terraces east of the Sacramento River. These soils are cobbly and can be shallow to moderately deep. The Tuscan soils typically have a cemented hardpan. The Inks soils consist of cobbly loam and a clay loam over a cemented substratum. Other soils in this association, Anita, Keefers and Laniger series vary dramatically.

Foothill Soils

The foothills in Tehama County surround the lower country soils. The major land features are rolling oak foothills. Irrigated agriculture is typically limited on these soils. Most of these soils are used for pasture and range. Major foothill soil associations include:

- Newville-Dibble association
- Millsholm-Lodo association
- Toomes-Guenoc association

Mountain Soils

Soils in the far western and eastern portions of the county are grouped into the mountain soils. For this report, these soil series will not be analyzed for agricultural purposes. Major mountain soil associations include:

- Maymen-Los Gatos-Parrish association
- Henneke-Stonyford association
- Dubakella-Neuns association
- Sheetiron-Josephine association
- Cohasset-McArthy association
- Windy-Iron Mountain association
- Jiggs-Lyonville-Forward association

8.4 REGULATORY FRAMEWORK

FARMLAND PROTECTION

Farmland and rangeland are precious commodities in Tehama County. Temporary and permanent programs help provide landowners with incentives to keep their agricultural lands in production and prevent conversion to urban uses. Temporary programs, such as the Williamson Act, help provide property tax reductions to landowners for enrolled properties. Permanent protection can be found through conservation easements. An agricultural conservation easement maintains a property's agricultural focus by restricting residential or commercial development.

Williamson Act

The California Land Conservation Act of 1965, also known as the Williamson Act, is the primary program for the conservation of agricultural lands in California. The Williamson Act creates an arrangement between the private landowner and the county to preserve agricultural lands. Terms are established under 10 year contracts. The Williamson Act is a voluntary program that helps reduce property tax rates for private lands enrolled in the program. The benefits of the Williamson Act provide an estimated 20 to 75 percent savings in property taxes annually (Department of Conservation, 2004).

The Williamson Act is only eligible to landowners within a designated agricultural preserve. A local government, such as a city or a county, establishes an agricultural preserve. In Tehama County, the Board of Supervisors establishes agricultural preserves. Agricultural preserves are regulated by strict rules to provide guidelines that ensure the land within the preserve is maintained for agricultural or open space use. Agricultural preserves have a minimum of 100 acres. Smaller agricultural preserves may be established. Contiguous neighbors may team up to combine their properties to enter them into the Williamson Act. A minimum term for a Williamson Act contract is 10 years. A contract is renewed automatically each year. The Williamson Act contract is tied to the land and is transferred upon sale of the property. Compliance with the Williamson Act is enforced by the California Department of Conservation.

To remove land from the Williamson Act, a notice of non-renewal must be established. During the non-renewal process, the annual tax assessments increase. Once the 9-year non-renewal period is complete, the Williamson Act contract is terminated. Another removal process is to cancel the contract. Only the private landowner can petition to cancel a contract. The city or county must approve the contract cancellation. Current Williamson Act acreage is shown on **Figure 8E-14**.

Farmland Security Zone

In 1998, another option within the Williamson Act Program was established to provide additional property tax incentives for agricultural properties. The Farmland Security Zone was created to provide additional tax incentives for property owners to protect agricultural lands. Lands restricted by a Farmland Security Zone contract is valued for property assessment purposes at 65 percent of its Williamson Act valuation or 65 percent of its Proposition 13 valuation, whichever one is lower (Department of Conservation, 2004). Farmland Security Zones are shown on **Figure 8E-14**.

A Farmland Security Zone contract is nearly identical to a Williamson Act contract. Farmland Security Zones contracts are established for a 20-year minimum term. Similar to a Williamson Act contract, these contracts renew annually unless a "notice of non-renewal" is filed. Lands within a Farmland Security Zone are prohibited from being annexed from cities and special districts that provide non-agricultural services. School districts are also prohibited from acquiring FSZ lands for school facilities. For land to be eligible for the FSZ, the land must be designated as Prime Farmland, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance.

Williamson Act and Farmland Security Zone contracts are not intended to be cancelled. Cancellation is typically reserved for unusual, "emergency" situations. Therefore, the nine-year non-renewal process has been identified as the legally preferred method for terminating a Williamson Act contract.

Criteria for Williamson Act Land Classification

The Williamson Act classifies land under different categories, Prime Agricultural Land, Non-Prime Agricultural Land, Land in Non-Renewal, Farmland Security Zone Land, Urban and Built-Up Land, and Non-Enrolled Land.

Prime Agricultural Land

- Land which is Class I or Class II in the NRCS Land Use Capability Classification System
- Land which rates 80 to 100 in the Storie Index Rating System
- Grazing lands with an annual carrying capacity equivalent to at least one Animal Unit per Acre (AUM) as defined by USDA
- Land planted to orchards or vineyards which have a nonbearing period of less than five years and will bring a normal return not less than two hundred dollars per acre
- Land which has agricultural returns produce an annual gross value of not less than two hundred dollars per acre for three of the previous five years

Non-Prime Agricultural Land

- Land which does not meet any of the criteria for classification as Prime Agricultural Land
- Land is defined as Open Space Land of Statewide Significance
- Typically this type of land is used agriculturally for grazing or non-irrigated crops

Land in Non-Renewal

- Land which is in the process of non-renewal
- Annual tax assessment gradually increases

Farmland Security Zone Land

- Land created within an agricultural preserve identified by the County Board of Supervisors upon request of landowner(s)

Urban and Built-Up Land

- Land occupied by structures with a density of at least one unit to one and one-half acres
- Data is provided by the California Department of Conservation's FMMP

Non-Enrolled Land

- Land not enrolled in the Williamson Act Program

Lands in Tehama County protected under the Williamson Act total 747,396 acres (Department of Conservation, 2004). Farm Security Zones are established on 11,364 acres. Currently, there are 8,763 acres that are placed into the Notice of Non-Renewal for Williamson Act contacts.

Conservation Easements

Over the past few years, a significant amount of farmland has been protected under permanent conservation easements. A conservation easement compensates the landowner for the fair market value of their property less than the restricted value, determined by an accredited appraiser.

The Denny Ranch, the Vina Plains Preserve, Dye Creek Preserve, and the Sacramento River Corridor are all areas where permanent agricultural conservation easements are occurring. Extensive portions of the county have entered into conservation easements, seeking to permanently protect the rural character, economy and landscape of Tehama County. Some of these already discussed above are included on **Figure 8E-15**.

Lassen Foothills Project Area

The Lassen Foothills Project, initiated largely by The Nature Conservancy, seeks to protect 830,000 acres (1,300 square miles) of the Lassen foothills. The goal of the project is to protect critical habitat along the Sacramento River up through the rolling oak foothills into the Lassen Park area. This project is one of the few large-scale conservation initiatives seeking to protect rural landscapes throughout the state from encroaching development.

Denny Ranch

The Denny Ranch is a 36,000-acre conservation easement located in the eastern foothills near Red Bluff. The ranch, owned by Denny Land and Cattle Company, protects land by a conservation easement held by The Nature Conservancy. The conservation easement was established in 1999. The Denny Ranch has one of the largest protected stands of blue oaks in California, as well as several large vernal pools surrounded by extensive grasslands (TNC, 2004)

Dye Creek Preserve

The Dye Creek Preserve is 37,540 acres located in the Lassen foothills. The Nature Conservancy assumed management of the Dye Creek Preserve in 1987 as a result of a 25-year lease with the State of California. The property has continued as a working cattle ranch. The land also provides an area for an outdoor classroom and laboratory (TNC, 2004).

Vina Plains Preserve

The Vina Plains Preserve is a 4,600-acre preserve owned by The Nature Conservancy and is managed as a demonstration cattle ranch. This preserve is managed for dual purposes, livestock and endangered species. The goal is to manage noxious weeds and native species by livestock grazing. Although some may argue all of these uses are not compatible, the goal of this preserve is to maintain agricultural lands while preserving and enhancing the environment (TNC, 2004).

Sacramento River Conservation Area

The Sacramento River Conservation Area seeks to promote the re-establishment of the 100-year flood plain along the Sacramento River. State Legislature in 1986 passed Senate Bill 1086, which called for a management plan for the Sacramento River that would help restore, protect and enhance the riparian and aquatic habitat. After much debate, the Upper Sacramento River Fisheries and Riparian Habitat Management Plan was developed in 1989. This plan called for fish bypass structures on the Sacramento River and its tributaries, as well as the Shasta Dam

temperature control structure. After the implementation of these projects, the advisory council reconvened to complete additional work. This led to the Sacramento River Conservation Area Handbook that would guide riparian habitat management along the river. In 1999, a MOU (Memorandum of Agreement) was signed by most entities involved in management activities along the river. Currently, the Bureau of Land Management has acquired roughly 15,000 acres of riparian lands along the Sacramento River (Sacramento River Conservation Area Forum, 2002).

Lindauer Ranch

An example of habitat protection along the Sacramento River is found at the Lindauer Ranch. The Lindauer Ranch farms 400 acres of prunes along the banks of the Sacramento River south of Red Bluff. They have designated a 50-acre riparian habitat protection corridor along the river, to provide examples of what historic California riparian vegetation was like. This preserve, kept by a willing landowner, is an example of stewardship that is found in many private landowners throughout Tehama County.

CALIFORNIA DEPARTMENT OF CONSERVATION'S FARMLAND MAPPING AND MONITORING

The California Department of Conservation has established a Farmland Mapping and Monitoring Program (FMMP) in 1982. The primary goal of this program was to assess the location, quality, and quantity of agricultural lands and their conversion to other uses over time. Currently, the FMMP maps both agricultural and urban land use on over 90% of the state's private lands. Reports are compiled every two years. Department of Conservation mapping for Tehama County is included on **Figure 8E-16**.

Agricultural and non-agricultural ground is divided into multiple categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Urban Built-Up Land.

- Prime Farmland - Land on which has the best combination of physical and chemical characteristics for the production of crops. Qualities include optimal soil quality, growing season, and moisture to produce high yielding crops.
- Farmland of Statewide Importance - Land that contains a good combination of physical and chemical characteristics that produces irrigated crops.
- Unique Farmland - Land that does not meet the criteria for Prime Farmland or Farmland of Statewide Importance, yet still has the capability to produce high valued crops. Examples of these crops include oranges, olives, avocados, rice and grapes.
- Farmland of Local Importance - Land that has the capability of production or is used for the production of confined livestock. This land includes soils that may qualify for Prime Farmland or Farmland of Statewide Importance, but are not cultivated or irrigated.
- Grazing Land - Land on which existing vegetation is suitable for grazing or browsing of livestock. Does not include heavily brushed, timbered, excessively steep, or rocky lands.
- Urban and Built-up Land - Land used for residential, industrial, commercial, construction, institutional, public administrative purposes, railroad yards, landfills, sewage treatment plants, and other development purposes.
- Other Land - Land including rural residential development, brush, timber, wetlands, government lands not available for agricultural use, vacant and non-agricultural land

surrounded by urban development, confined livestock/poultry/aquaculture facilities, mines, gravel pits, and many other rural land uses.

8.5 ISSUES AND OPPORTUNITIES

TEHAMA COUNTY LAND CONVERSIONS

Between 1992 and 2002, many acres were converted from agricultural land to urban and other uses in Tehama County. Agricultural land (farm land and grazing land) losses have varied over the past decade in the county. On average, Tehama County loses 2,300 acres of agricultural land every two years to urban uses. The exception from this average occurred between 1996 and 1998, where over 6,000 acres were lost to urban uses.

Land that is irrigated has the ability to produce the highest valued crops in Tehama County and is classified as Prime Farmland and Farmland of Statewide Importance. Unique Farmland and Farmland of Local Importance are generally irrigated and also are capable of producing high valued crops. Prime Farmland in 1992 totaled 83,716 acres and in 2002, totaled 74,126 acres. This equates to a loss of 9,590 acres total in a decade. Other factors contribute to changes in total Prime Farmland, such as land being fallow for a period of time, planting and removal of orchards. Urban encroachment upon Prime Farmland is a problem in Tehama County.

Farmland of Statewide Importance in 1992 was located on 21,560 acres throughout the county. In 2002, Farmland of Statewide Importance shrank to 19,871 acres. Unique farmland and Farmland of Local Importance acreage was up substantially between the years 1992 to 2002. This conversion was due to idling of Prime Farmland for consecutive years and the planting of Eucalyptus groves.

Agricultural Land Conversion to Urban Land

Tehama County is experiencing increased urban growth at the expense of agricultural lands. For the past decade, the Department of Conservation's FMMP has tracked these trends. Reports are based on two-year intervals. Most of the changes in Tehama County were concentrated in the Lake California area, foothills around the City of Red Bluff, and near the City of Corning. Urban growth in the Red Bluff area is shown on **Figure 8E-17**.

- Prime Farmland **-** Over the past decade, 1,345 acres of prime farmland have been converted to urban uses. From 1996 to 1998, the largest conversion of prime farmland to urban uses occurred (762 acres). Based on the last decade, it is estimated that 130 acres of prime farmland are lost annually to urban development. In 2002, Prime Farmland occupied 74,126 acres in Tehama County.
- Farmland of Statewide Importance - Farmland of Statewide Importance is lost at a much slower rate than other land classifications. Over the past decade, only 279 acres of Farmland of Statewide Importance were lost to urban uses. This represents approximately 30 acres annually. Tehama County contained 19,871 acres of Farmland of Statewide Importance in 2002.
- Unique Farmland - Unique Farmland was converted to urban uses at a very slow rate between 1992 and 2002. In 2002, Unique Farmland was located on 18,468 acres in Tehama County.
- Farmland of Local Importance - Farmland of local importance typically is converted at a higher rate than other types of farmland in Tehama County. Usually, this type of land has been fallow for a few years in anticipation of development. Between 1996 and 1998,

3,765 acres of Farmland of Local Importance were lost to urban uses. This was the highest rate in the decade studied. It is estimated that approximately 800 acres of Farmland of Local Importance are lost annually to urban uses. In 2002, 132,980 acres of Farmland of Local Importance were located within the county.

- Total Farmland - Grouping all types of farmland together, trends of loss or conversions to urban uses are evident. Between 1992 and 2002, 9,962 acres of farmland were lost in Tehama County to urban uses. The annual average of farmland lost is nearly 1,000 acres. Total farmland in Tehama County was estimated at 245,445 acres in 2002.
- Grazing Land - Grazing land is also lost to urban uses. Between 1992 and 2002, 5,373 acres of grazing land were converted to urban uses. This indicates that over 500 acres annually are lost. Grazing lands are lost at a slower rate than all types of farmland.

TABLE 8E-7
CONVERSION OF AGRICULTURAL LANDS TO URBAN USES (IN ACRES), 1992-2002

LAND CLASSIFICATION	92-94	94-96	96-98	98-00	00-02	TOTAL	ANNUAL AVERAGE
Prime Farmland	152	140	762	144	147	1,345	135
Farmland of Statewide Importance	8	7	256	5	3	279	28
Unique Farmland	10	1	282	2	2	297	30
Farmland of Local Importance	1,090	1,110	3,765	1,086	990	8,041	804
Total Farmland	1,260	1,258	5,065	1,237	1,142	9,962	996
Grazing Land	1,090	1,081	1,080	1,064	1,058	5,373	537
Agricultural Lands Total	2,350	2,339	6,145	2,301	2,200	15,335	1,534

Source: California Department of Conservation, Division of Land Resource Protection

Development of Irrigated Lands 1998 – 2002

Other land use changes from grazing land to irrigated farmland included the development of irrigated crop fields and the establishment of new orchards. Irrigated fields were developed on grazing lands during this time near Red Bluff, Gerber, and Kirkwood totaling an increase of 270 acres. Over 800 acres of orchards were developed throughout the county, with significant acreage planted west of Corning. Drip irrigation technology is largely responsible for this increase in irrigated lands. This type of land use change is beneficial to the agricultural economy in Tehama County.

Challenges with the Agriculture and Urban Interface

Open Range

Tehama County is currently a "closed" range county. This means that it is the livestock owner's responsibility to fence in their cattle. Historically, Tehama County was an open range county, where cattlemen were not required to fence their cattle into their lands; it was the responsibility of the landowners to fence "out" other cattle.

The county board of supervisors is analyzing the effects of switching some portions of the county back into an "open range" policy. This will help reduce costs to cattlemen, who typically have a

hard time maintaining the many roadside fences found throughout the county. The liability of cattle being hit on the road is the responsibility of the cattlemen, but falls indirectly on the county. As the population of Tehama County swells, the rural areas that would be affected by this policy will see an increase in vehicular traffic.

Confined Animal Feeding Operation

Animal agriculture is dominant in Tehama County and contributes to a large portion of the economy. Concerns of nutrient and sediment pollution of water, greenhouse gas emissions and air quality have prompted the Environmental Protection Agency to release new guidelines to address confined livestock operations (NRCS, 2003). Confined Animal Feeding Operations are defined as point sources of pollution under the Clean Water Act. This requires the need to create nutrient management plans that addresses nutrient output of the farm and water quality. Annual reports also must be submitted. Best management practices must be followed to ensure proper environmental protection.

Tehama County contains one parcel with a poultry operation, four parcels with a beef feedlot operation, and 46 parcels that contain dairy operations. Concentrated Animal Feeding Operations are shown on **Figure 8E-16**. The majority of concentrated feeding operations in Tehama County are in the form of dairies located on the valley floor. With the exception of one large beef feeding operation, beef cattle and poultry operations are limited in size throughout Tehama County. A few dairies exist between Red Bluff and Corning, but the vast majority of Tehama County dairies are located at the southern end of the county, near the towns of Kirkwood and Capay.

Beef cattle feeding operations are only found on four parcels throughout the county. The largest feeding operation in Tehama County is the Masami Cattle Ranch found near Rancho Tehama. Two other smaller operations were also found as beef cattle feeding operations, one located near Interstate 5 north of Red Bluff and the other was located east of Highway 99E near Dairyville.

The largest confined animal feeding operation in Tehama County is the Masami Cattle Ranch, located near Rancho Tehama. The Masami Cattle Ranch was founded in 1991 and typically can contain between 5,000 to 8,000 animals at one time (Masami Cattle Company, 2004).