

Chapter 5 COMMUNITY AND SAFETY HAZARDS

Being aware of the community and safety hazards that can affect Sutter County is an important part of planning for future development. There are unique considerations for each hazard area, and proper preparation and compliance with applicable regulations and safety management plans is an important part of ensuring the health and safety of those that live, work, and visit Sutter County. This chapter describes the existing conditions and safety hazards and highlights the key regulatory requirements necessary for protection of residents in the County.

The Community and Safety Hazards chapter is divided into the following sections:

5.1 Geologic and Seismic Hazards

5.2 Fire Hazards

5.3 Hazardous Materials Management

5.4 Noise

5.5 Flood Hazards

5.1 GEOLOGIC AND SEISMIC HAZARDS

This chapter includes a review of the geologic and seismic hazards in Sutter County with information on potential effects of seismic activity. This chapter reviews structural hazards and critical facilities, fire hazards, emergency response, flood hazards and dam safety, solid and hazardous waste management, and airport safety. The County's seismic hazards, flood hazards, fire hazards, noise, and hazardous materials are also addressed. Information for this section is based upon the Sutter County Multi-Hazard Mitigation Plan, the County's current General Plan for overall background information, information published by the Department of Conservation, California Geology Survey (CGS, formerly Division of Mines and Geology), and information from the Natural Resources Conservation Service (NRCS).

■ INTRODUCTION

Although all of California is typically regarded as seismically active, the Central Valley region does not commonly experience strong ground shaking resulting from earthquakes along known and previously unknown active faults. Though no active earthquake faults are known to exist in Sutter County, active faults in the region could generate ground motion felt within the county. Numerous earthquakes of magnitude 5.0 or greater on the Richter scale have occurred on regional faults, primarily those within the San Andreas Fault System in the region.¹ There are several potentially active faults underlying the Sutter Buttes which are associated with deep-seated volcanism.

According to CGS, Sutter County is fairly safe from geologic hazards. There are, however, isolated areas within the County that have soils and other conditions which could result in structural damage induced by seismic activity. The County is located upon an alluvial plain

1 Quad Knopf, SYSCO Draft EIR, June 2000.

which contains some low-lying, poorly consolidated to unconsolidated sediment that are often water-saturated and, therefore, subject to seismically induced ground disturbance. A discussion of potential seismic hazards is presented below.

■ **SUMMARY OF KEY FINDINGS**

- The faults identified in Sutter County include the Quaternary Fault located in the northern section of the County within the Sutter Buttes. The second area is the Pre Quaternary Fault located in the southeastern corner of the County just east of where Highway 70 enters in to the County. Both Faults are listed as non-active faults, but have the potential for seismic activity.
- Erosion does occur in Sutter County and is especially a concern along the banks of rivers and drainages during winter storm events.
- Relatively localized problems due to landslides have occurred in the County during periods of heavy precipitation with minimal impact to residents.
- Several soil types in the County have been identified with a combination shrink-swell potential, changing at varying soil depths, which can cause significant damage including structural damage, cracked driveways and sidewalks, heaving of roads and highway structures; and disruption of pipelines and other utilities. Based on this data, 34 percent of soil types in Sutter County have a high shrink-swell potential and 23 percent have a low shrink-swell potential.
- The sandy layers paralleling the Sacramento River, Feather River, and Bear River have lower soil densities, a high overall water table, and are potentially a higher risk area for liquefaction if major seismic activity were to occur. Areas of bedrock, including the Sutter Buttes, have high density compacted soils and contain no liquefaction potential, although localized areas of valley fill alluvium can have moderate to high liquefaction potential.

■ **EXISTING CONDITIONS**

Topography and Geology

Sutter County is located in the flat surface of the Great Valley geomorphic province of California. The Great Valley is an alluvial plain approximately 50 miles wide and 400 miles long in the central portion of California. The Great Valley's northern portion is the Sacramento Valley, drained by the Sacramento River, and its southern portion is the San Joaquin Valley, drained by the San Joaquin River.

The geology of the Great Valley is typified by thick sequences of alluvial sediments derived primarily from erosion of the mountains of the Sierra Nevada to the east, and to a lesser extent, erosion of the Klamath Mountains and Cascade Range to the north. These sediments were transported downstream and subsequently laid down as a river channel, floodplain deposits, and alluvial fans.

Soil Hazards

Erosion

Erosion is a two-step process by which soils and rocks are broken down or fragmented and then transported. The breakdown processes include mechanical abrasion, dissolution, and

weathering. Erosion occurs naturally in most systems, but is often accelerated by human activities that disturb soil and vegetation. The rate at which erosion occurs is largely a function of climate, soil cover, slope conditions, and inherent soil properties such as texture and structure. Water is the dominant agent of erosion and is responsible for most of the breakdown processes as well as most of the transport processes that result in erosion. Wind may also be an important erosion agent. The rate of erosion depends on many variables including the soil or rock texture and composition, soil permeability, slope, extent of vegetative cover, and precipitation amounts and patterns.

Erosion increases with increasing slope, increasing precipitation, and decreasing vegetative cover. Erosion can be extremely high in areas where vegetation has been removed by fire, construction, or cultivation. High rates of erosion may have several negative impacts including degradation and loss of agricultural land, degradation of streams and other water habitats, and rapid silting of reservoirs.

The vulnerability of erosion of natural soil types (erodibility) has been mapped by the U.S. Soil Conservation Service in a Soil Survey for Sutter County. Potential erodibility has been grouped in the following three generalized categories.

- **Slight** – 83 percent of Sutter County soil types have been identified in the Soil Survey as having slight erodibility and generally consist of those soil types with slopes of 0-9 percent.
- **Moderate** – 10 percent of Sutter County soil types have been identified in the Soil Survey as having moderate to high erodibility and generally consist of those soil types with slopes of 9 to 30 percent.
- **High** – 5.5 percent of Sutter County soil types have been identified in the Soil Survey as having high to very high erodibility and generally consist of those soil types with slopes of 30 to 75 percent.

More specific information by soil type is contained in TBR Section 4.2, Agriculture, Soils, and Mineral Resources. The moderate and high groups contain soil types found in the Sutter Buttes. It should be noted that there are some naturally erodible soil types in the moderate and high groups which do not have slopes as high as 9 to 75 percent.

With the exception of moderate to high erosion in the Sutter Buttes, the following factors make Sutter County an area of low erosion activity:

- 1 percent of Sutter County is water;
- Sutter County's average annual precipitation is 15 to 20 inches;
- with the exception of the Sutter Buttes, Sutter County does not have slopes in excess of 9 percent; and
- the naturally erodible soil types are located in the Sutter Buttes.

Expansive Soils

Expansive soils are prone to change in volume due to the presence of moisture. Soft clay soils have the tendency to increase in volume when moisture is present and shrink when it is dry (shrink-swell). Swelling soils contain high percentages of certain kinds of clay particles that are capable of absorbing large quantities of water, expanding up to 10 percent or more as the clay becomes wet. The force of expansion is capable of exerting pressures of 20,000 per square

foot (psf) or greater on foundations, slabs, and other confining structures.² Soils composed predominantly of sand and gravel have a low volume change and are classified in the three following designations:

1. **Low absorption soils** include sands and silts with relatively low amounts of clay minerals. Sandy clays may also have low expansion potential, if the clay is kaolinite. Kaolinite is a common clay mineral.
2. **Moderate absorption soils** include silty clay and clay textured soils if the clay is kaolinite and also includes heavy silts, light sandy clays, and silty clays with mixed clay minerals.
3. **High absorption soils** are clay with mixed montmorillonite, a clay mineral which expands and contracts more than kaolinite.

Expansive soils can cause damages including structural damage; cracked driveways, sidewalks, heaving of roads and highway structures; and disruption of pipelines and other utilities. Building can occur successfully on expansive soils with proper mitigation to offset the vertical and horizontal forces of the soil type. Expansive soils are most likely to occur in basins and on basin rims with non expansive soils accruing along the river and river valley and steep mountain slopes. Several soil types in the County have been identified with a combination shrink-swell potential changing at varying soil depth. Based on this data, 34 percent of soil types in Sutter County have a high potential and 23 percent have a low potential.³

Subsidence

Subsidence is the sinking of a large area of ground surface in which the material is displaced vertically downward, with little or no horizontal movement. Subsidence is usually a direct result of groundwater, oil, or gas withdrawal. These activities are common in several areas of California, including parts of the Sacramento Valley and in large areas of the San Joaquin Valley.

Subsidence is a greater hazard in areas where subsurface geology includes compressible layers of silt and clay. Subsidence due to groundwater withdrawal generally affects larger areas and presents a more serious hazard than does subsidence due to oil and gas withdrawal. However, localized subsidence due to oil and gas withdrawal has been observed at numerous locations in California, primarily in the Los Angeles basin.

In portions of the San Joaquin Valley, subsidence has exceeded 20 feet over the past 50 years. In the Sacramento Valley, preliminary studies suggest that much smaller levels of subsidence, up to two feet may have occurred. In most of the valley, elevation data are inadequate to determine positively if subsidence has occurred. However, groundwater withdrawal in the Sacramento Valley has been increasing and groundwater levels have declined in some areas.

The amount of subsidence caused by groundwater withdrawal depends on several factors, including: (1) the extent of water level decline, (2) the thickness and depth of the water-bearing strata tapped, (3) the thickness and compressibility of silt-clay layers within the vertical sections where groundwater withdrawal is occurring, (4) the duration of maintained groundwater level decline, (5) the number and magnitude of water withdrawals in a given area, and (6) the general geology and geologic structure of the groundwater basin.

2 Sutter County Multi-Hazard Mitigation Plan, May 2007.

3 Sutter County, Multi-Hazard Mitigation Plan, May 2007.

The damaging effects of subsidence include gradient changes in roads, streams, canals, drains, sewers, and dikes. Many such systems are constructed with slight gradients and may be significantly damaged by even small elevation changes. Other effects include damage to water wells resulting from sediment compaction and increased likelihood of flooding of low-lying areas.

Sutter County is not subject to high subsidence. A number of the previously described factors needed to cause subsidence do not exist in Sutter County. A list of the factors contributing to the low subsidence potential is described below.

1. Although Sutter County contains several natural gas withdrawal locations in the western and southern portions of the county, these gas fields are spread out over a large area (not producing concentrated drawdowns) and do not individually generate a high volume of gas.
2. Although Sutter County does have groundwater drawdowns for domestic and agricultural water supply, the subsurface geology of the county has a significant recharge capability from the Sacramento River, the Feather River, and runoff from the Sierra Nevada snow melt.
3. A large portion of Sutter County households (in the cities of Yuba City and Live Oak) do not rely on groundwater because the public water supply is delivered from surface water withdrawal from the Feather River.
4. Sutter County does not have oil withdrawal drawdowns.

Future potential for subsidence in Sutter County could result from prolonged periods of drought and significant increases in natural gas withdrawal.

Seismic Hazards

Earthquakes are due to a sudden slip of plates along a fault. Seismic shaking is typically the greatest cause of losses to structures during earthquakes. Earthquakes can cause structural damage, injury and loss of life, as well as damage to infrastructure networks such as water, power, gas, communication, and transportation lines. Other damage-causing effects of earthquakes include surface rupture, fissuring, settlement, and permanent horizontal and vertical shifting of the ground. Secondary impacts can include landslides, seiches, liquefaction, and dam failure.

Seismicity

Earthquake magnitude is a quantitative measure of the strength of an earthquake or the strain energy released by it, as determined by the seismographic or geologic observations. It does not vary with distance or the underlying earth material. This differs from earthquake intensity, which is a qualitative measure of the effects a given earthquake has on people, structures, loose objects, and the ground at a specific location. Intensity generally increases with increasing magnitude and in areas underlain by unconsolidated materials and decreases with distance from the hypocenter.

Several magnitude scales have been developed with the most commonly used scale called the moment magnitude (M_w) scale. Moment magnitude is related to the physical size of fault rupture and the movement or displacement across the fault, and as such is more uniform measure of the strength of an earthquake. Another measure of earthquake size is seismic moment. The seismic moment determines the energy that can be radiated by an earthquake.

The moment magnitude of an earthquake is defined relative to the seismic moment for that event.

Earthquake intensity in a given locality is typically measured using the Modified Mercalli intensity scale with values of this scale ranging from I to XII (Table 5.1-1). The most commonly used adaptation covers the range of intensities from the conditions of a value of I that is defined as not felt except by very few, favorably situated, to XII that is defined as damage total, lines of sight disturbed, and objects thrown into the air. While an earthquake has only one magnitude, it can have much intensity, which typically decreases with distance from the epicenter.

Table 5.1-1. Earthquake Magnitude Scales

Richter Scale	Modified Mercalli Scale	Effects
0.1 – 0.9	I	Earthquake shaking not felt.
1.0 – 2.9	II	Shaking felt by those at rest.
3.0 – 3.9	III	Felt by most people indoors; some can estimate duration of shaking.
4.0 – 4.5	IV	Felt by most people indoors. Hanging objects rattle wooden walls and frames creak.
4.6 – 4.9	V	Felt by everyone indoors; may estimate duration of shaking. Standing autos rock. Crockery clashes, dishes rattle, and glasses clink. Doors open, close and swing.
5.0 – 5.5	VI	Felt by all who estimate duration of shaking and direction. Sleepers awaken, liquids spill, objects displaced, weak materials crack.
5.6 – 6.4	VII	People frightened and wall unsteady. Pictures and books thrown, dishes/glass are broken. Weak chimneys break. Plaster, loose bricks and parapets fall.
6.5 – 6.9	VIII	Difficult to stand, waves on ponds, cohesionless soils slump. Stucco and masonry walls fall. Chimneys, stacks, towers and elevated tanks twist and fall.
7.0 – 7.4	IX	General fright as people thrown down. Hard to drive, trees broken, damage to foundation and frames. Reservoirs damaged. Underground pipelines broken.
7.5 – 7.9	X	General panic, ground cracks, masonry and frame buildings destroyed. Bridges dams, dikes and embankments damaged. Railroads bent slightly.
8.0 – 8.4	XI	Large landslides, water thrown, general destruction of buildings, pipelines destroyed railroads bent.
8.5 +	XII	Total nearby damage, rock masses displaced. Lines of sight/level distorted. Objects thrown into air.

Source: Sutter County General Plan, Background Report, November 1996.

In populated areas, the greatest potential for loss of life and property damage can come as a result of ground shaking from a nearby earthquake. The degree of damage depends on many interrelated factors. Among these are the Richter magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surface deposits or bedrock, degree of consolidation of surface deposits, presence of high ground water, topography, and finally, the design, type, and quality of building construction.

Active faults, as defined by the California Mining and Geology Board, are those faults which have caused soil and strata displacement with evidence of surface displacement within the Holocene epoch; that is, within the last 11,000 years. Some faults are characterized as active based on surface displacements within historic time, approximately the last 200 years, while others are characterized as active based on surface displacements in rocks or sediments which

are less than 11,000 years old. Some faults may have been active in this time period, but did not result in identifiable surface displacements, while other faults may still be active although they have not been active during the Holocene. Several documented high magnitude earthquakes have occurred on faults not previously recognized as active.

Potentially active faults are also defined by the California Mining and Geology Board and are those for which there is evidence of surface displacement within the Quaternary period, that is, within the last 1.6 million years. Faults that have experienced movement in the last 11,000 to 750,000 years are conditionally active faults.

The faults identified in Sutter County include the Quaternary Faults, located in the northern section of the County within the Sutter Buttes, and the Pre Quaternary Fault, located in the southeastern corner of the Planning Area, just east of where Highway 70 enters in to the County (Figure 5.1-1). Both Faults are listed as non active faults, but have the potential for seismic activity. Table 5.1-2 provides the most recent regional seismic activity for Sutter County.

Table 5.1-2. Local and Regional Faults

Fault	Most Recent Activity; Richter Scale Magnitude
Sutter Buttes	Quaternary
Dunnigan Hills (near Arbuckle)	Holocene
Foothills Suture Zone Cleveland Hill Swain Ravine-Spenceville	1975; M 5.7
Midland	Quaternary
Unnamed (1892 epicenters between Vacaville and Winters)	
Green Valley-Concord –Calaveras	
Rodgers Creek-Hayward	1968; M 6.8 1936; M 7.0
San Andreas	1989; M 7.1 (Loma Prieta) 1906; M 8.3
Eastern Sierra Nevada Sulphur creek Stampede valley Genoa	1875 1966 Holocene
Source: Environmental Science Associates, Proposed Ach Landfill EIR, 1992.	

Ground Shaking

Although the County has felt ground shaking from earthquakes with epicenters located elsewhere, no major earthquakes or earthquake related damage has been recorded within the County. Notable regional earthquake events include those detailed below.

- A potential earthquake source is the Midland Fault Zone on the western side of Sacramento Valley, where in 1892 an earthquake centered between the cities of Vacaville and Winters caused minor damage in surrounding areas.
- An estimated 4.0+ Richter magnitude earthquake occurred between Auburn and Folsom in nearby Placer County in 1908 with an epicenter possibly associated with the Bear Mountain fault.
- To the east in Nevada, there are several faults associated with a series of earthquakes in 1954, especially the major (7.1 Richter magnitude) December 16,

1954 Fairview Peak event (about 100 miles east of Carson County). These events caused no damage in Reno, but there was some damage in Sacramento, probably because of the soft soil conditions.

- An active fault in the western Sierra Nevada foothills called the Cleveland Hills fault. This fault was the source of the 1975 Oroville earthquake (Richter Magnitude: 5.7), which was felt strongly in neighboring areas.
- According to the Hazard Mitigation Planning Committee (HMPC), the 1989 San Francisco earthquake was felt in the Sutter County Planning Area.

Based on historic data and known active or potentially active faults in the region, Sutter County has the potential to experience low to moderate ground shaking. The intensity of ground shaking at any specific site depends on the characteristics of the earthquake, the distance from the earthquake fault, and on the local geologic and soils conditions. Fault zone maps are used to identify where such hazards are more likely to occur based on analyses of faults, soils, topography, groundwater, and the potential for earthquake shaking sufficiently strong to trigger landslide and liquefaction.⁴

Liquefaction Potential

Liquefaction, which can occur in earthquakes with strong ground shaking, is mostly found in areas with sandy soil or fill and a high water table located 50 feet or less below the ground surface. Liquefaction can cause damage to property with the ground below structures liquefying making the structure unstable causing sinking or other major structural damage. Evidence of liquefaction may be observed in "sand boils," which are expulsions of sand and water from below the surface due to increased pressure below the surface.⁵

Liquefaction during an earthquake requires strong shaking and is not likely to occur in the county due to the relatively low occurrence of seismic activity in the area; however, the clean sandy layers paralleling the Sacramento River, Feather River, and Bear River have lower soil densities and high overall water table are potentially a higher risk area if major seismic activity were to occur. Areas of bedrock, including the Sutter Buttes have high density compacted soils and contain no liquefaction potential, although localized areas of valley fill alluvium can have moderate to high liquefaction potential.

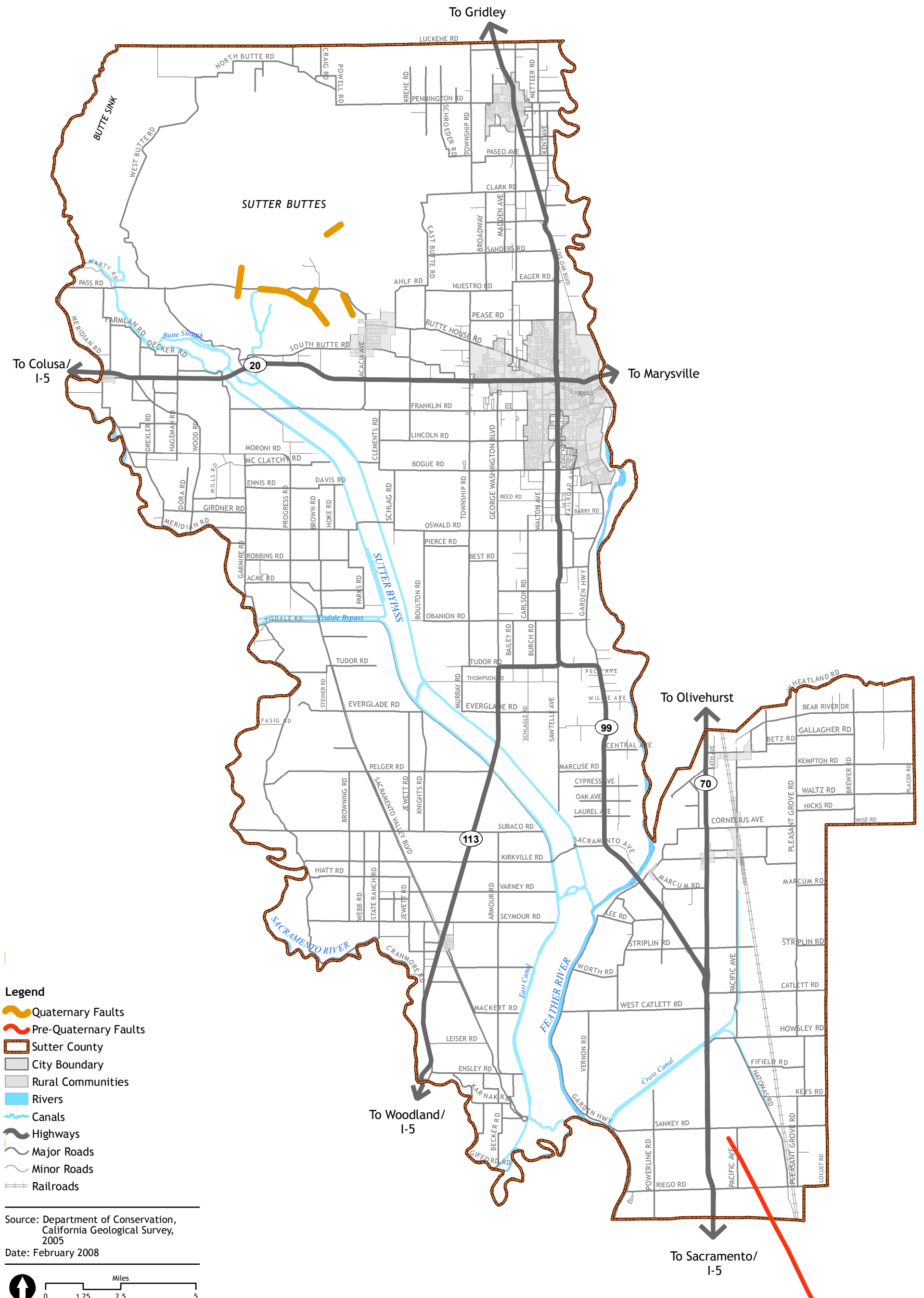
Landslides

Landslides are downward and outward movements of slope forming materials which may be rock, soil, artificial fill, or combinations of such materials. The size of landslides varies from those containing less than a cubic yard of material to massive ones containing millions of cubic yards. Large landslides may move down slope for hundreds of yards or even several miles. A landslide may move rapidly or so slow that a change of position can be noted only over a period of weeks or years. A similar, but much slower movement is called creep.

The susceptibility of a given area to landslides depends on a great many variables. However, the general characteristics which influence landslide hazards are well understood and thus it is possible to map areas in terms of general susceptibility to landslides. Among the important factors which govern the formation of landslides are:

4 Sutter County, Multi-Hazard Mitigation Plan, May 2007.

5 Sutter County, Multi-Hazard Mitigation Plan, May 2007.



- **Steepness of slope** - landslides usually occur on moderate to steep slopes.
- **Type of slope material** - loose, unconsolidated soils and soft, weak rocks are more hazardous than are firm, consolidated soils or hard bedrock.
- **Structure and physical properties of materials** - the orientation of layering and zones of weakness relative to slope direction strongly affect landslide potential.
- **Water content** - increasing water content increases landslide hazard because water decreases resistance to sliding and adds weight to the materials on a slope.
- **Amount of vegetation** - abundant vegetation with deep roots increases slope stability.
- **Proximity to areas undergoing rapid erosion or man-made cuts** - undercutting slopes may greatly increase landslide potential.
- **Earthquake ground motions** - strong ground motion may trigger landslides in marginally stable slopes or loosen slope materials and thus increase the risk of future landslides.

With the exception of the Sutter Buttes, Sutter County is located in a landslide-free zone due to the flat topography. The Sutter Buttes are considered to be in a low landslide hazard zone as shown in Bulletin 198 by the California Division of Mines and Geology.

Volcanic Hazards

The most probable centers of future volcanic eruptions generally lie along the eastern margin of California, with the greatest concentrations in northeastern California and along the eastern margin of the Sierra Nevada. There have been few losses in California from volcanic eruptions. Mount Lassen, an active volcano, is the southernmost volcano in the Cascade Range. There are numerous active volcanoes in the Cascades including Mount Shasta in California and several others in Oregon and Washington. Mount Lassen last erupted between 1914 and 1921; and included steam and ash eruptions as well as a small lava flow. Like the other volcanoes in the Cascades, Mount Lassen is considered dormant, or not currently erupting, but may erupt again in the future. Mount Lassen has erupted at least seven times within the past 1,200 years.

The Sutter Buttes are volcanic in origin. However, neither the Sutter Buttes nor Sutter County is identified as being located in an area of potential volcanic hazards by the State. The Buttes erupted between 1.60 and 1.35 million years ago. During their eruption, melted rock, or magma pushed its way upward beneath the flat valley layers of sandstone, shale, gravel beds, and marine deposits. The magma solidified into large lava domes of the Castellated Core of the Buttes. Sediments eroded over time, leaving only tiny remnants in the Castellated Core. As the lava domes breached the surface, they released great volumes of hot, pressurized volcanic gases and steam with explosive force. When the volcanic action stopped, the long process of erosion began to carve away the softer materials of the volcano.

There are four main hazards that may accompany volcanic eruptions: (1) ash and cinder falls, (2) explosive blasts, (3) lava flows, and (4) mud flows. Despite the general severity of volcanic hazards, potential volcanic hazards for Sutter County are unlikely. In historic times there are no records of significant ash falls, explosive effects, lava flows or mud flows in Sutter County. Further, impending volcanic eruptions generally give numerous advance warning signs and thus it is usually possible to evacuate residents in areas subject to volcanic hazards.

■ REGULATORY CONTEXT

State

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Special Studies Act was signed into law in 1972 (in 1994 it was renamed the Alquist-Priolo Earthquake Fault Zoning Act). The primary purpose of the Act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the trace of an active fault. This State law was passed in direct response to the 1971 San Fernando earthquake, which was associated with extensive surface fault ruptures that damaged numerous homes, commercial buildings, and other structures. Surface rupture is the most easily avoided seismic hazard. The Act requires the State Geologist to delineate “Earthquake Fault Zones” along faults that are “sufficiently active” and “well defined.” The Act dictates that cities and counties withhold development permits for sites within an Earthquake Fault Zone until geologic investigations demonstrate that the sites are not threatened by surface displacements from future faulting. No portion of Sutter County is within an Earthquake Fault Zone.

California Building Code (CBC)

All development within the State of California must comply with the provisions of the California Building Code at a minimum. The CBC provides minimum requirements for grading, building siting, development, and seismic design. Typically, most local jurisdictions adopt building standards that are at least as stringent, if not more stringent than the CBC.

California Code of Regulations (CCR), Title 24, Part 2, the California Building Code (CBC), provides minimum standards for building design. Local codes are permitted to be more restrictive than Title 24, but are required to be no less restrictive. Chapter 16 of the CBC deals with General Design Requirements, including (but not limited to) regulations governing seismically resistant construction. Chapter 18 deals with site demolition, excavations, foundations, retaining walls, and grading, including (but not limited to) requirements for seismically resistant design, foundation investigations, stable cut and fill slopes, and drainage and erosion control. Construction activities are subject to occupational safety standards for excavation, shoring, and trenching as specified in Cal-OSHA regulations (CCR, Title 8).

Among other things, the CBC defines different building regions in the State and ranks them according to their seismic hazard potential. The County is in Seismic Site Class D; accordingly, any future development would be required to comply with all design standards applicable to Seismic Site Class D.

Sutter County implements the CBC through the building permit process (County Code, Title 13, Building Safety Codes).

Seismic Hazards Map Act

Under the Seismic Hazards Mapping Act, seismic hazard zones are to be identified and mapped to assist local governments in land use planning. The intent of this publication is to protect the public from the effects of strong ground shaking, liquefaction, landslides, ground failure, or other hazards caused by earthquakes. In addition, CGS’s Special Publications 117, “Guidelines for Evaluating and Mitigating Seismic Hazards in California,” provides guidance for the evaluation and mitigation of earthquake-related hazards for projects within designated zones of required investigations. The Sutter County region has not been subject to any seismic hazards mapping by CGS.

Local

The California Building Code is used to regulate structural stability for the health and safety of persons in Sutter County.

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5.2 FIRE HAZARDS

■ INTRODUCTION

This section provides a general description of the urban and wildland fire hazards that exist within Sutter County. Information for this section is based on information provided by CALFIRE (formerly the California Department of Forestry (CDF) and Fire Protection) and the County's 2007 Multi-Hazard Mitigation Plan. Fire protection and emergency services are discussed in Chapter 3.0, Infrastructure and Community Services.

■ SUMMARY OF KEY FINDINGS

- The Sutter Buttes are the primary concern of wildland fire hazard, with their limited access, steep terrain, and remote location. The Sutter County Fire Department responded to 34 wildfires in the Sutter Buttes totaling 413 acres from 2002 to 2007.
- According to CALFIRE, from 1994 to 1999, over 90 percent of fires in California were attributed to human causes. Further, recent studies conclude that the greater the population density in an area, the greater the chance of an ignition. With population continuing to grow throughout Sutter County, the risk from wildland fire also continues to grow.

Overview

Wildfires are of concern throughout California with fires generally classified as either an urban fire or a wildland fire. The typical fire season starts in early spring and extends to late fall, brought on by a combination of hot weather, accumulated dry vegetation, and low moisture in the air. These conditions along with high winds and drought can increase the severity and likelihood of a major fire.

The U.S. Department of Forestry records show that wildland fires occur on a regular basis almost every year, while large fires occur fairly regularly every ten years. The occurrence of major wildfires in a particular region corresponds to the age of its vegetation. Often, renewed growth of vegetation after a major fire tends to pose a lesser risk during the first ten years of growth. However, as dead vegetation accumulates, the potential for a major wildfire increases as these materials are more susceptible to ignition and facilitate the spreading of flames. Therefore, the occurrence of wildland fires tends to be cyclical, where a decade will pass with few fires followed by a decade with several large fires. Additionally, the occurrence of the largest fires also corresponds to periods of extremely high wind conditions.

Factors such as fuel, topography, and weather are found to be the three major indicators of the areas potential to burn. Fuel feeds the fire and is classified by type and volume and can include everything from dead tree needles and leaves, twigs, and branches to dead standing trees, live trees, brush, cured grasses and man-made structures. The fuel source directly influences the behavior of wildfire. Light fuels such as grasses burn quickly and serve as a catalyst for fire spread. The volume of available fuel is described in terms of fuel loading. An area's terrain and land slopes, or topography, affect its susceptibility to wildfire spread. Fire intensities and rates of spread increase as slope increases due to the tendency of heat from a fire to rise. The natural arrangement of vegetation throughout a hillside can also contribute to increased fire activity on slopes. Weather components such as temperature, relative humidity, wind, and lightening also

affect the potential for wildfire. High temperatures and low relative humidity dry out the fuels that feed the wildfire. With high winds fire will move fast and have a greater intensity.

■ **EXISTING CONDITIONS**

Wildland Fires

Wildland fire is an ongoing concern for Sutter County. While urban fires are predominantly located within the incorporated areas of the County, fires can also occur in rural areas where urbanization meets natural areas that are not used for agricultural purposes. Wildland fires pose the greatest threat to the County with much of the natural vegetated areas located along river ways and in the mountains of the Sutter Buttes. Much of the County is heavily agricultural maintaining large areas of lower fire risk with the regular irrigation that prevents vegetation from drying.

The Sutter Buttes are the primary concern of wildland fire hazard, with their limited access, steep terrain and remote location. The Sutter County Fire Department responded to 34 wildfires in the Sutter Buttes totaling 413 acres from 2002 to 2007. In other areas, large concentrations of highly flammable brush located in flat open spaces and crops that require drying, such as safflower, are also quite susceptible to wildland fire. From 2004 to 2007, the Sutter County Fire Department responded to 15 river bottom fires in their jurisdiction for a total of 17 acres. The “river bottoms” are those areas along the Sacramento, Feather and Bear Rivers within the levee system, where much of the area inside these levees are left in a natural state, allowing combustible fuels to accumulate over long periods of time. The remainder of the wildland fires in the County were associated with open fields and agricultural land.

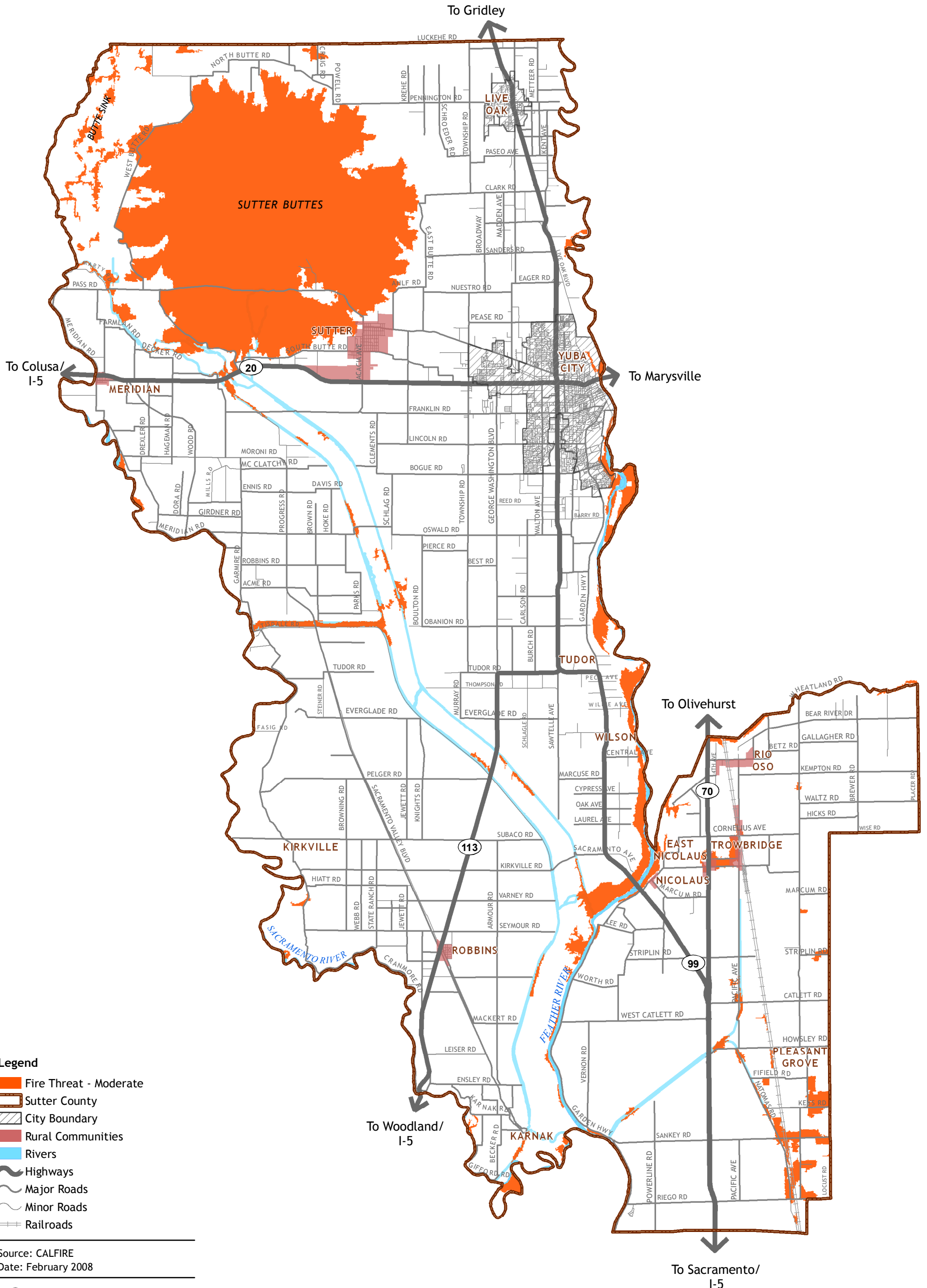
Figure 5.2-1 shows the fire threat as designated by CALFIRE in Sutter County. Areas around the Sutter Buttes, the Sacramento, Feather, and Bear Rivers, and the Sutter Bypass are categorized as a moderate fire threat. Fire threat is a combination of two factors: (1) fire frequency, or the likelihood of a given area burning; and (2) potential fire behavior or hazard. These two factors combine to create the four threat classes ranging from moderate to extreme fire threat.

According to CALFIRE, vegetation wildland fires occur within their jurisdiction on a regular basis; however, most are controlled and contained early with limited damages. For those that are not contained and become wildfires, damages can be extensive, with potential loss of human life, structures, cultural resource, natural elements, as well as economic impacts. Smoke and air pollution from wildfires can also be a severe health hazard. In addition, catastrophic wildfire can lead to secondary impacts or losses such as future flooding, landslides, and erosion during the rainy season.

There are many causes of wildfire from naturally caused lightning fires to human-caused fires linked to activities such as smoking, campfires, equipment use and arson. According to CALFIRE, from 1994 to 1999, over 90 percent of fires in California were attributed to human causes. Further, recent studies conclude that the greater the population density in an area, the greater the chance of an ignition. With population continuing to grow throughout California and Sutter County, the risk from wildland fire also continues to grow.

Urban Fire Hazard

Although fires can occur in any structure it is found that generally non-sprinkled or older structures are especially susceptible to fire hazard. Dwelling units in lower socio-economic areas also appear to be more susceptible to fires, due to the age of the structures, use of old fire codes, non-fire-resistive construction materials, and no internal sprinklers or other fire safety systems in place.



■ REGULATORY CONTEXT

State

California Fire Code (Title 24, Part 9, California Code of Regulations)

The California Fire Code is Part 9 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. The California Fire Code incorporates the Uniform Fire Code with necessary California amendments. This Code prescribes regulations consistent with nationally recognized good practice for the safeguarding to a reasonable degree of life and property from the hazards of fire explosion, and dangerous conditions arising from the storage, handling and use of hazardous materials and devices, and from conditions hazardous to life or property in the use or occupancy of buildings or premises and provisions to assist emergency response personnel.

Local

Local regulations abide by and enforce the California Fire Code.

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5.3 HAZARDOUS MATERIALS MANAGEMENT

■ INTRODUCTION

This section provides information on hazardous materials transportation, contaminated sites, and emergency response in Sutter County. Information is based upon information from agency databases, including as the U.S. Environmental Protection Agency's (U.S. EPA) Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database, the California Department of Toxic Substances Control's (DTSC) EnviroStor database, the Central Valley Regional Water Quality Control Board's (CVRWQCB) Spills, Leaks, and Investigations and Cleanup (SLIC) Program database, and the CVRWQCB's Leaking Underground Storage Tank (LUST) database. Websites for the U.S. EPA, DTSC, CVRWQCB, California Environmental Protection Agency (Cal/EPA), California Integrated Waste Management Board (CIWMB), as well as various Sutter County department websites containing information regarding hazardous materials use, wastes, and environmental contamination were also used to compile the following information.

Definitions

The term "hazardous materials" is defined in different ways for different regulatory programs. For purposes of this document, the definition of "hazardous materials" is that from the California Health and Safety Code, Section 25501, where "...because of their quantity, concentration, or physical or chemical characteristics, (they) pose a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment."

"Hazardous waste" is a subset of hazardous materials. For the purposes of this document, the definition of "hazardous waste" is that from the California Health and Safety Code, Sections 25117 and 25141, as well as the California Code of Regulations (CCR), Title 22, Section 66261.3, where "...because of their quantity, concentration, or physical, chemical, or infectious characteristics, (they) may either cause, or significantly contribute to, an increase in mortality or serious illness, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed."

■ FINDINGS

- The Environmental Health Division of the Sutter County Community Services Department enforces hazardous waste regulations and serves as the Certified Unified Program Agency (CUPA) for the County.
- There are three sites located within Sutter County that are listed on the U.S. EPA CERCLIS (Comprehensive Environment Response, Compensation and Liability Information System) database listing contaminated and potentially contaminated sites; however, none of them are on the National Priority List (NPL), which lists sites in need of remediation.
- There are 10 sites within the County listed on the Department of Toxic Substances Control's EnviroStor site cleanup database. Some sites require no further action.
- The Central Valley Regional Water Quality Control Board's Spills, Leaks, and Investigations and Cleanup Program database lists 21 sites in Sutter County. Each of the sites is in various stages of remediation.

- The Central Valley Regional Water Quality Control Board Leaking Underground Storage Tank database lists 107 sites in the County that are in various stages of remediation.
- According to the Sutter County Hazardous Waste Management Plan (HWMP), the total annual hazardous waste materials produced by the County annually including waste from current hazardous clean up is approximately 2,500 tons per year. Waste oil is the largest contributor accounting for almost 71 percent of the total coming from small generator sources.

■ EXISTING CONDITIONS

Hazardous Materials Use

Hazardous materials are routinely used, stored, and transported in the County in industrial and commercial/retail businesses as well as in educational facilities, hospitals, and households. Hazardous materials use and waste generators in the County include industries, businesses, public and private institutions, and households. Federal, State, and local agency databases maintain comprehensive lists of the locations of facilities that use or store large quantities of hazardous materials, as well as facilities that generate hazardous waste. Some of these facilities use certain classes of hazardous materials that require accidental release scenario modeling and risk management plans to protect surrounding land uses.

Hazardous materials / chemicals can be released into the environment through a number of means. Accidents can happen at railroads, highways and manufacturing plants. In the event of an emergency, the California Office of Emergency Services (OES) along with other public safety agencies will provide information to the public via radio or television emergency alert stations (EAS). The OES also prepares and maintains emergency plans and training programs to respond to emergencies if they arise.

Transportation of Hazardous Waste

The transport of hazardous materials through the County is regulated by the California Department of Transportation (Caltrans) and the California Highway Patrol (CHP). Transporters must receive a license from the CHP, comply with all federal and state regulations, and travel with a route map. In California, transporters of hazardous wastes must have a valid registration to do such issued by DTSC. According to DTSC, there are two registered hazardous waste transporters in Sutter County: Singh Trucking, located in Yuba City, and Holt of California, located in Pleasant Grove.¹ Although these are the only two companies located in the County to transport hazardous wastes, companies based in other counties may transport hazardous wastes through the County as long as they have a valid DTSC registration.

In Sutter County, the primary routes used for the transport of hazardous materials or wastes are synonymous with the major transportation corridors, including Highway 99, Highway 70, and State Route 20. In addition to highways, any major road may serve as a route for hazardous materials transport, as long as transporters comply with regulations, as described above. In addition to automobile transport, hazardous materials may be routinely transported through the County via the Union Pacific Railroad, located in the southern portion of the County. In most cases, the County is not notified of every shipment of hazardous materials or wastes within its jurisdiction. Compliance with all applicable laws and regulations is intended to minimize the risk of potential hazardous materials spills or releases.

1 California Department of Toxic Substances Control, Registered Hazardous Waste Transporter Database, http://www.dtsc.ca.gov/database/Transporters/trans_cnty.cfm, accessed 12/16/07.

Certified Unified Program Agency Evaluation (CUPA) Business Monitoring

The Environmental Health Division of the Sutter County Community Services Department is the Certified Unified Program Agency (CUPA) for Sutter County. The CUPA is responsible for the administration of the “Unified Hazardous Waste and Hazardous Materials Management Regulatory Program” (Unified Program) within its jurisdiction. Elements of this program include hazardous waste generators and hazardous waste on-site treatment, underground storage tanks, above-ground storage tanks, hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous materials management plans and inventories. These hazardous materials management plans and inventories are also known as business plans. While the Environmental Health Division is the CUPA for Sutter County, the County Agricultural Department serves as a Participating Agency (PA) for reviewing Hazardous Materials Business Plans for agricultural businesses, hazardous waste generators, and above ground storage tanks for agricultural users. The Agricultural Department also implements the underground storage tank (UST) program for all underground storage tank facilities in the County.

In 2006, the CUPA distributed business plan packages to all known hazardous materials handlers. As a result, the CUPA has obtained new business plans from a majority of their hazardous materials handlers. As of June 2007, the CUPA is following up on those few businesses that failed to submit the annual inventory to either bring into compliance or assist them in obtaining appropriate exemptions under the Unified Program.

Sites with Known Contamination

Business practices and the laws that regulate hazardous materials use and disposal have changed dramatically over the years. Many businesses through intentional action, lack of awareness or accidental occurrences, or those that pre-date current requirements, have caused contamination on and around their properties. The County contains properties that were once contaminated and are now clean as well as a few properties that are contaminated with a clean-up process underway. Federal and State agencies responsible for hazardous materials management maintain databases of such sites.

The information regarding sites included in the following discussion is based on databases current as of December 2007. These sites are those that are listed by one or more of the databases shown below. Sites may be actively investigated and/or remediated under the oversight of one or more agencies, while other sites may have completed remediation activities.

Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS)

The Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), is a regulatory or statute law developed to protect the water, air, and land resources from the risks created by past chemical disposal practices. Under CERCLA, the U.S. EPA maintains a list of all contaminated sites in the nation that are currently, or have in the past, undergoing clean-up activities. This list is known as the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS). CERCLIS contains information on hazardous waste sites, potential hazardous waste sites, and remedial activities, including sites that are on the NPL or being considered for the NPL (“Superfund”). The NPL identifies sites or other releases that appear to warrant remedial actions. The three sites within the County listed on the CERCLIS database are not listed on the NPL. According to the CERCLIS database, one of the sites is listed as having no further action planned. The other two sites, although not currently listed on the NPL, may be reassessed at a later time. All of the

sites are within incorporated areas of Yuba City and Live Oak. These sites are listed below in Table 5.3-1.

Table 5.3-1. U.S. EPA, Region IX - U.S. Superfund Sites, National Priority List

Site Name	City	NPL listed
905 Parcel	Yuba City	No
Bowles Flying Service Inc	Live Oak	No
Onstott Dusters Inc (1)	Yuba City	No

Source: United States Environmental Protection Agency. CERCLIS database, <http://cfpub.epa.gov/supercpad/cursites/srchrsit.cfm>, accessed 9/26/07.

California Department of Toxic Substances Control

The California Department of Toxic Substances Control (DTSC) maintains a database containing information on properties in California where hazardous substances have been released, or where the potential for a release exists. This database is known as EnviroStor and is one of a number of lists that comprise the “Cortese List” (a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5). EnviroStor provides a brief history of cleanup activities, contaminants of concern, and scheduled future cleanup activities. The Cal-Sites database also includes properties that have been remediated and certified by DTSC.

Table 5.3-2 below lists the 10 sites found on the EnviroStor database. As shown, remediation and cleanup activities are in different stages throughout the County. As noted above, sites are frequently listed and de-listed over time, so this list is subject to change.

Table 5.3-2. DTSC EnviroStor Site List

Site Name	Site Type	Cleanup Status	Address Description	City/County
Beale Titan Site 1b	State Response	Refer to: RWQCB	46.7 Acres; No Side Of The Sutter Buttes	Yuba City
Custom Chrome and Bumper Company	State Response	Certified	335 Garden Highway	Yuba City
Golden Gate Hop Ranch	State Response	Certified	12035 Garden Highway	Yuba City
H & B Machinery (1)	Voluntary Cleanup	No Further Action	1781 Colusa Hwy	Yuba City
Helena Chemical	State Response	Certified	921 N George Washington Blvd	Yuba City
Lomo Airstrip	State Response	* De-Listed	1111 Koch Lane	Live Oak
Sutter County Agricultural Commissioner	Haz Waste - Non-Operating	Inactive	142 Garden Highway	Yuba City
Sutter By-Pass	State Response	Certified	Near Junction Of Tisdale & Sutter Bypass	Sutter
UP Right of Way, Yuba City	Voluntary Cleanup	Active	Clark And Cooper Streets	Yuba City
Yuba City Steel Products Company	State Response	Refer: Rwgqcb	526 Stevens Ave	Yuba City

Source: Department of Toxic Substance Control. EnviroStor Site List. <http://www.envirostor.dtsc.ca.gov/public/search.asp>, accessed 12/16/07.

Regional Water Quality Control Board (RWQCB) Spills, Leaks, Investigation and Cleanup (SLIC) Program

The Central Valley Regional Water Quality Control Board (CVRWQCB) Spills, Leaks, Investigations and Cleanup (SLIC) Program was established by the State Board Water Resources Control Board (SWRCB) so that Regional Boards could oversee cleanup of illegal discharges, contaminated properties, and other unregulated releases adversely affecting the State's waters but not covered by another program. Sites managed within the SLIC Program include sites with pollution from recent or historic spills, subsurface releases (e.g., pipelines, sumps), complaint investigations, and all other unauthorized discharges that pollute or threaten to pollute surface and/or ground waters. Soil or groundwater contamination is typical of former industrial facilities and dry cleaners, where chlorinated solvents were spilled, or have leaked into the soil or groundwater, or in agricultural areas, where pesticide and herbicide use may have resulted in contamination. The SLIC database lists 21 sites in Sutter County, all spill sites, each in different phases of remediation and cleanup. These sites and the constituents requiring cleanup are listed below in Table 5.3-3.

Leaking Underground Storage Tanks

Leaking underground storage tanks (LUSTs) are one of the greatest environmental concerns of the past several decades. In California, regulations aimed at protecting against UST leaks have been in place since 1983, one year before the Federal Resource Conservation and Recovery Act (RCRA) was amended to add Subtitle I requiring UST systems to be installed in accordance with standards that address the prevention of future leaks. State law and regulations pertaining to LUST are found in the California Health and Safety Code, Chapter 6.7, and the California Code of Regulations (CCR) Title 23, commonly referred to as the "California Underground Storage Tank Regulations." Federal and State programs include leak reporting and investigation regulations, and standards for clean up and remediation. UST cleanup programs exist to fund the remediation and contaminated soil and groundwater caused by leaking tanks. California's program is more stringent than the federal program, requiring that all tanks be double walled, and prohibiting gasoline delivery to non-compliant tanks. The SWRCB has been designated the lead regulatory agency in the development of UST regulations and policy. The State of California now requires replacement of older tanks with new double-walled tanks, with flexible connections and monitoring systems. Many older tanks were single-walled steel tanks that have leaked as a result of corrosion and detached fittings. Extensive federal and State legislation addresses LUSTs, including replacement and cleanup. The California Regional Water Quality Control Board, in cooperation with the Office of Emergency Services, maintains an inventory of LUSTs in a statewide database.

The CVRWQCB maintains a listing of the known LUSTs and remediation actions occurring within the County. As of December 2007, there were 107 LUST cases in Sutter County. Table 5.3-4 provides a list of LUST sites in the County.

Hazardous Waste Stream

According to the California Integrated Waste Management Board Sutter County households produce 43 tons of hazardous wastes annually just in the unincorporated areas of Sutter County alone. Commercial hazardous waste accounts for 13 tons of the County's waste stream each year with paint being the number one contributor at 11 tons annually.² Sutter County's total

2 California Integrated Waste Management Board, Waste Stream Profiles, <http://www.ciwmb.ca.gov>, accessed October 22, 2007.

Table 5.3-3. CVRWQCB Site Cleanup List – Sutter County

Facility	Address	Status	Constituents
H&B Machinery (Former)**	1781 Colusa Highway, Yuba City	Preliminary Assessment	xylene, toluene, heavy metals
Helena Chemical Company	3056 Colusa Highway, Yuba City	Closed by RB (Remediation Complete)	Nitrate
Puregro (Unocal)/Robbins	4900 Del Monte Ave, Robbins	Remediation Underway	TPH, nitrate, ammonia, pesticides
Costa Property	1716 Elmer Rd, Yuba City	Remedial Investigation	PCE, TCE, DCE
Wellhead Electric Co. (Karnak Facility)	Ensely and Armour Rds, east of Knights Landing, Knights Landing	Remediation Underway	TPH
Slack's Wheel, Brake & Automotive	236 Garden Highway, Yuba City	Closed	N/A
Custom Chrome & Bumper Comp.	335 Garden Highway, Yuba City	Phase II Remedial Investigation	Metals
John Taylor Fertilizer-Yuba City	300 George Washington Blvd, N Yuba City	IRM	nitrate, ammonia, 1,2-DCP, 1,2,3-TCP
Hydraulic Equipment Specialty**	921 George Washington Blvd, N Yuba City	Closed (Remediation Complete)	TPH, PCE, dichloromethane
Harter Packing / Home Depot	Hooper Rd and Live Oak Blvd, Yuba City	Closed by RB (Remediation Complete)	arsenic
Lomo Airstrip	1111 Koch Ln, Live Oak	Closed (Remediation Complete)	pesticides
Property at Krehe Road	Krehe Road, Live Oak	Preliminary Assessment	TPH-d
Williams Tank Lines Gasoline Spill	Oswald Rd & Highway 99, Yuba City	Closed by RB (Remediation Complete)	TPH - g
HOLT of California (Formerly Tenco Tractor, Inc.)	7310 Pacific Ave, Pleasant Grove	Closed by RB (Remediation Complete)	Benzene
Beneto Tank Lines Tanker Spill	4444, 4454 Sawtelle Rd, Yuba City	Closed by RB (Remediation Complete)	TPH, BTEX
Yuba City Steel Products Company	526 Stevens Ave, Yuba City	Preliminary Assessment	VOCs, TPH, As, Ba, Cd, Cr, Co, Cu, Ni, Pb, Vn, Zn
Pacific Bell Yuba City Site	1301 Tharp Rd, Yuba City	Remediation Underway	TPH, Cd, Pb
H & B Machinery**	1501 Tharp Rd, Yuba City	Preliminary Assessment	N/A
Bowles Flying Service	10600 Township Rd, Live Oak	Phase I Remedial Investigation	pesticides
AAA Salvage Yard**	3094 Township Rd N Yuba City	Preliminary Assessment	TPH - mo, battery acid, Freon
Wagner Estate	1777 Tudor Rd, Yuba City	Closed by RB (Remediation Complete)	TPH - g, d, benzene

Source: Central Valley Regional Water Quality Control Board, Sacramento Office – Site Cleanup List, Sorted by County and Address, April 2005, http://www.waterboards.ca.gov/rwqcb5/water_issues/site_cleanup/index.html, accessed 12/16/07.

Table 5.3-4. Leaking Underground Storage Tanks in Sutter County

Facility	City/Community	Gasoline/Diesel	Case Type
TOMS SIERRA BULK PLANT	YUBA CITY	GASOLINE	A
GILL LEWIS	YUBA CITY	GASOLINE	W
PAUL YOUNG	YUBA CITY	GASOLINE	S
GASAMAT #952	YUBA CITY	GASOLINE	A
BEALE AIR FORCE BASE TITAN 1B SUTTER CO.	SUTTER BUTTES	UNKNOWN	UNKNOWN
SUTTER FOOD AND GAS	SUTTER	UNKNOWN	A
CA DWR SUTTER MAINTENANCE STN	SUTTER	GASOLINE	A
YUBA CITY CHEVERON-CASE #2	YUBA CITY	DIESEL	O
BIDEGAIN FARMSTEAD	LIVE OAK	UNKNOWN	A
MORE FOR LESS	LIVE OAK	GASOLINE	A
SIERRA GOLD NURSERY	YUBA CITY	DIESEL	S
EAST NICOLAUS MARKET	NICOLAUS	GASOLINE	A
CITY CORPORATION YARD	YUBA CITY	GASOLINE	A
NEWHALL LAND & FARM	MERIDIAN	GASOLINE	S
SUTTER MUTUAL WATER CO	ROBBINS	GASOLINE	A
ARCO #0489 (CASE # 2)	YUBA CITY	GASOLINE	A
BIRLA TIRES (FORMER MINI MART)	LIVE OAK	GASOLINE	A
VAN DYKE'S RICE DRYER	PLEASANT GROVE	GASOLINE	A
EXXON (A&R)	YUBA CITY	GASOLINE	A
SUTTER COUNTY CORP YARD	YUBA CITY	GASOLINE	A
MR PAUL'S MARKET	YUBA CITY	GASOLINE	S
SUTTER-YUBA MOSQUITO ABATEMENT	YUBA CITY	GASOLINE	A
DEL HEFFLEY CHEVRON	YUBA CITY	GASOLINE	S
WELLS FARGO BANK	YUBA CITY	GASOLINE	A
UNOCAL #3848	YUBA CITY	GASOLINE	S
SUTTER DIST 3 SHOP	NICOLAUS	GASOLINE	S
DHILLEN FARM	YUBA CITY	GASOLINE	A
HYDRAULIC EQUIPMENT	YUBA CITY	GASOLINE	S
BROWN'S ELEM. SCHOOL	RIO OSO	GASOLINE	S
TIFF'S MARKET	LIVE OAK	GASOLINE	A
QUESTION MARKET	YUBA CITY	GASOLINE	A
SHELL	YUBA CITY	GASOLINE	A
QUICK-N-SHOP	YUBA CITY	GASOLINE	A
ROUSE ESTATE	YUBA CITY	UNKNOWN	O
ROUSE ESTATE	YUBA CITY	GASOLINE	O
ARCO #6001	YUBA CITY	GASOLINE	A
SEARS AUTOMOTIVE CENTER	YUBA CITY	DIESEL	O
PEPSI COLA BOTTLING CO	YUBA CITY	GASOLINE	A
MARLENE BROCKER	YUBA CITY	DIESEL	S
FARM AIR FLYING SERVICE	PLEASANT GROVE	GASOLINE	A
1ST STOP	YUBA CITY	UNKNOWN	A
STANGHELLINI RANCH	ROBBINS	GASOLINE	A
C.J'S SERVICE CENTER	LIVE OAK	UNKNOWN	A
CHEVRON #9-8338	YUBA CITY	DIESEL	A
YUBA CITY TRUCK STOP	YUBA CITY	GASOLINE	A
ARCO #0489 (CASE # 1)	YUBA CITY	GASOLINE	A
ROY RIEGELS CHEM	ROBBINS	GASOLINE	S
ROTO ROOTER (FORMER)	YUBA CITY	GASOLINE	S
MECHANICS SHOP	YUBA CITY	DIESEL	S
MTL TERMINALS	YUBA CITY	GASOLINE	A
ROBBINS STATION	ROBBINS	GASOLINE	A
FORMER CHEVRON #9-4859	YUBA CITY	GASOLINE	A
SUTTER COUNTY SHERIFF'S DEPT	YUBA CITY	UNLEADED GASOLINE	A
VACANT (FORMERLY) MEYERS ROOFING	YUBA CITY	GASOLINE	A
R.G. TUCKER & SONS	ROBBINS	GASOLINE	A
PLEASANT GROVE FIRE	PLEASANT GROVE	GASOLINE	S
LAMON CONSTRUCTION	YUBA CITY	GASOLINE	S
WILLARD LEE FARM	LIVE OAK	DIESEL	S
RESIDENCE	YUBA CITY	DIESEL	S

Table 5.3-4. Leaking Underground Storage Tanks in Sutter County

Facility	City/Community	Gasoline/Diesel	Case Type
LAKEVIEW PETROLEUM CARDLOCK	YUBA CITY	GASOLINE	A
YUBA CITY CAR WASH	YUBA CITY	GASOLINE	A
LIVE OAK HIGH SCHOOL	LIVE OAK	GASOLINE	A
PG&E RIO OSO SUBST	RIO OSO	GASOLINE	S
LIBERTY TRACTOR	LIVE OAK	DIESEL	S
FORMER PALACE MEATS	YUBA CITY	DIESEL	U
FAR WEST HOMES	YUBA CITY	GASOLINE	S
SUNSWEET GROWERS	YUBA CITY	DIESEL	S
BIHLMAN PROPERTY	LIVE OAK	GASOLINE	S
POWER THRUST AUTO REPAIR (FORMER)	YUBA CITY	UNKNOWN	O
CONTINENTAL CABLEVISION	YUBA CITY	GASOLINE	A
SUTTER DIST SHOP 3	SUTTER	GASOLINE	S
YUBA CITY HS	YUBA CITY	UNLEADED GASOLINE	S
RAMOS OIL	YUBA CITY	UNKNOWN	O
PACIFIC BELL	YUBA CITY	DIESEL	S
JACK'S TACKS	YUBA CITY	GASOLINE	A
HOLT OF CALIFORNIA	PLEASANT GROVE	REGULAR GASOLINE	A
PUREGRO	ROBBINS	REGULAR GASOLINE	A
SHELL STATION	YUBA CITY	GASOLINE	W
HOLLY OAK GROCERY AND GAS	YUBA CITY	GASOLINE	S
EAST 99 SS (FORMER)	LIVE OAK	GASOLINE	A
#01156	YUBA CITY	GASOLINE	A
BOONE'S MINI MART	LIVE OAK	GASOLINE	A
ASSOCIATED TRANSPORT	YUBA CITY	GASOLINE	A
BILL HAMON TOYOTA	YUBA CITY	GASOLINE	S
MARLER'S SERVICE	YUBA CITY	GASOLINE	S
RECLAIM DISTRICT 1500	ROBBINS	GASOLINE	A
SOUTHERN PACIFIC - LIVE OAK	LIVE OAK	UNKNOWN	S
SBC	PLEASANT GROVE	UNKNOWN	O
VACANT COMMERCIAL BUILDING	YUBA CITY	GASOLINE	A
CHEVRON #9-4712	YUBA CITY	GASOLINE	A
MINTAN MINI MART	YUBA CITY	GASOLINE	A
CORNELL PROPERTY	SUTTER	GASOLINE	S
ROBBINS MERCHANTILE	YUBA CITY	GASOLINE	U
OSWALD MARKET	ROBBINS	GASOLINE	A
VERONA STORE	YUBA CITY	GASOLINE	S
ROBERT MOHAMMED	NICOLAUS	GASOLINE	S
YUBA CITY TOWN CENTER	YUBA CITY	GASOLINE	A
99 NORTH FOOD & GAS (FORMER)	YUBA CITY	DIESEL	A
MAGGIE'S RESTAURANT	NICOLAUS	GASOLINE	A
RAINBO THRIFT STORE/DEPOT	YUBA CITY	GASOLINE	S
ORR PROPERTY	YUBA CITY	DIESEL	A
GARNER PROPERTY	YUBA CITY	GASOLINE	A
BUCKLEY PROPERTY	ROBBINS	GASOLINE	A
B & D MARKET	KNIGHTS LANDING	GASOLINE	A
WAGNER AIRPORT	YUBA CITY	DIESEL	S
SUTTER FIRE DEPT	ROBBINS	GASOLINE	S
VACANT COMMERCIAL BUILDING	SUTTER	GASOLINE	S

Source: Central Valley Regional Water Quality Control Board, Leaking Underground Storage Tank Quarterly Report, October 2007.

W = Drinking water well impacted.
 A = Aquifer used for drinking water.
 S = Soil contamination only.

F = Surface water, lake, fish, etc.
 O = Other groundwater contamination.
 U = Undefined (test not available).

hazardous waste generated for the entire County including incorporated areas is estimated at 162 tons of household waste and 135 tons of commercial waste annually.³

Hazardous Waste Stream

According to the California Integrated Waste Management Board Sutter County households produce 43 tons of hazardous wastes annually just in the unincorporated areas of Sutter County alone. Commercial hazardous waste accounts for 13 tons of the County's waste stream each year with paint being the number one contributor at 11 tons annually.⁴ Sutter County's total hazardous waste generated for the entire County including incorporated areas is estimated at 162 tons of household waste and 135 tons of commercial waste annually.⁵

The 1990 Sutter County Hazardous Waste Management Plan (HWMP), in accordance with *California Health and Safety Code Section 25135 et seq.*, identifies hazardous waste generators within the County, amounts and types of waste produced, and projected waste generation. The primary goal of the HWMP is to reduce the need for new hazardous waste facilities by reducing waste at its source through recycling, reduced use of hazardous materials, and public education. According to the HWMP the total annual hazardous waste materials produced by the County annually including waste from current hazardous clean up is approximately 2,500 tons per year. Waste oil is the largest contributor accounting for almost 71% of the total coming from small generator sources.

Emergency Response

The release of a hazardous material to the environment could cause a multitude of problems to the environment, property, or human health, the significance of which is dependent on the type, location, and quantity of the material released. Although hazardous material incidents can happen almost anywhere, certain areas of the State are at higher risk. Sutter County is primarily agricultural in nature, with few areas that contain large quantities of hazardous materials, so the risk of major upset would be unlikely. In any case, the Sutter County Emergency Services Division is responsible for planning for and implementing response and recovery activities associated with both natural and man-made disasters and emergencies occurring in the County, including hazardous materials releases. Emergency response routes may be located on any major road within the County, and are subject to change, depending on the specific characteristics of an emergency or disaster. Media such as radio, television, and the internet may be used to ensure the most up-to-date and accurate information is conveyed to the public in the event that evacuation becomes necessary or advised.

■ REGULATORY CONTEXT

A number of federal, State, and local laws and regulations have been enacted to regulate the management of hazardous materials. For purposes of this report, the term "hazardous materials" refers to both hazardous substances and hazardous wastes.⁶ Implementation of

3 California Integrated Waste Management Board, Waste Stream Profiles, <http://www.ciwmb.ca.gov>, accessed October 22, 2007.

4 California Integrated Waste Management Board, Waste Stream Profiles, <http://www.ciwmb.ca.gov>, accessed October 22, 2007.

5 California Integrated Waste Management Board, Waste Stream Profiles, <http://www.ciwmb.ca.gov>, accessed October 22, 2007.

6 This report uses the definition stated in the California Health and Safety Code (CHSC) § 25501: "A hazardous material is any material that, because of its quantity, concentration, or physical, chemical characteristics poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment. 'Hazardous materials' include, but are not limited to, hazardous substances, hazardous waste, and any material which a handler or the administering

these laws and the management of hazardous materials are regulated independently of the CEQA process through programs administered by various agencies at the federal, State, and local levels. An overview of the key hazardous materials laws and regulations that apply to the Policy Area is provided below.

Federal

Several federal agencies regulate hazardous materials. These include the U.S. EPA, the Occupational Safety and Health Administration (OSHA), and the Department of Transportation (DOT). Applicable federal regulations are contained primarily in Titles 10, 29, 40, and 49 of the Code of Federal Regulations (CFR). The U.S. DOT has developed regulations pertaining to the transport of hazardous materials and hazardous wastes by all modes of transportation. The U.S. Postal Service (USPS) has developed additional regulations for the transport of hazardous materials by mail. DOT regulations specify packaging requirements for different types of materials. U.S. EPA has also promulgated regulations for the transport of hazardous wastes. These more stringent requirements include tracking shipments with manifests to ensure that wastes are delivered to their intended destinations.

State

California Environmental Protection Agency

The California Environmental Protection Agency (Cal/EPA) has broad jurisdiction over hazardous materials management in the State. Within Cal/EPA, the DTSC has primary regulatory responsibility for hazardous waste management and cleanup, while enforcement of regulations has been delegated to local jurisdictions, such as the Sutter County Department of Environmental Health. Along with the DTSC, the Regional Water Quality Control Board (RWQCB) is responsible for implementing regulations pertaining to management of soil and groundwater investigation and cleanup. RWQCB regulations are contained in Title 27 of the CCR. Additional State regulations applicable to hazardous materials are contained in Title 22 of the California Code of Regulations (CCR). Title 26 of the CCR is a compilation of those sections or titles of the CCR that are applicable to hazardous materials.

Hazardous Materials Management Plans

In 1994, Cal/EPA adopted regulations implementing a “Unified Hazardous Waste and Hazardous Materials Management Regulatory Program” (Unified Program). The six program elements of the Unified Program are hazardous waste generators and hazardous waste on-site treatment, underground storage tanks, above-ground storage tanks, hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous materials management plans and inventories.

The program is implemented at the local level by a local agency – the CUPA. The CUPA is responsible for consolidating the administration of the six program elements within its jurisdiction. On October 1, 2004, the Environmental Health Division of the Sutter County Community Services Department became certified as the CUPA by Cal/EPA. While the Environmental Health Division of the Sutter County Community Services Department is the CUPA for Sutter County, the County Agricultural Department serves as a Participating Agency (PA) for reviewing Hazardous Materials Business Plans for agricultural businesses, hazardous waste generators, and above ground storage tanks for agricultural users. The Agricultural Department also implements the underground storage tank (UST) program for all underground storage tank facilities in the County.

agency has a reasonable basis for believing that it would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.”

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

Department of Toxic Substances Control

The DTSC regulates hazardous waste in California primarily under the authority of the federal Resource Conservation and Recovery Act (RCRA) of 1976, and the California Health and Safety Code. Other laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning. In addition, DTSC reviews and monitors legislation to ensure that the position reflects the DTSC's goals. From these laws, DTSC's major program areas develop regulations and consistent program policies and procedures. The regulations spell out what those who handle hazardous waste must do to comply with the laws. Under RCRA, DTSC has the authority to implement permitting, inspection, compliance, and corrective action programs to ensure that people who manage hazardous waste follow State and federal requirements. As such, the management of hazardous waste in the County would be under regulation by the DTSC to ensure that State and federal requirements pertaining to hazardous waste are complied with. California law provides the general framework for regulation of hazardous wastes by the Hazardous Waste Control Law (HWCL) passed in 1972. DTSC is the State's lead agency in implementing the HWCL. The HWCL provides for State regulation of existing hazardous waste facilities, which include "any structure, other appurtenances, and improvements on the land, used for treatment, transfer, storage, resource recovery, disposal, or recycling of hazardous

Business Plan Act

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment. California's Hazardous Materials Release Response Plans and Inventory Law, sometimes called the "Business Plan Act," aims to minimize the potential for accidents involving hazardous materials and to facilitate an appropriate response to possible hazardous materials emergencies. The law requires businesses that use hazardous materials to provide inventories of those materials to designated emergency response agencies, to illustrate on a diagram where the materials are stored on site, to prepare an emergency response plan, and to train employees to use the materials safely.

The State of California requires the owner or operator of any business that handles hazardous materials in quantities equal to or greater than 55 gallons, 500 pounds, or 200 cubic feet of gas at standard temperature and pressure, to develop and submit a business plan. The State of California Office of Emergency Services (OES), acting pursuant to Health and Safety Code Section 25503.3, has developed a single comprehensive hazardous materials inventory form for businesses to use to submit their individual hazardous materials inventories. This form contains all state and federally required inventory information. Use of this form is mandatory.

California Accidental Release Prevention Program (CalARP)

The CalARP program (CCR Title 19, Division 2, Chapter 4.5) covers certain businesses that store or handle more than a certain volume of specific regulated substances at their facilities. The CalARP program regulations became effective on January 1, 1997, and include the

provisions of the federal Accidental Release Prevention program (Title 40, CFR Part 68) with certain additions specific to the State pursuant to Article 2, Chapter 6.95, of the Health and Safety Code.

The list of regulated substances is found in Article 8, Section 2770.5 of the CalARP program regulations. The businesses that use a regulated substance above the noted threshold quantity must implement an accidental release prevention program, and some may be required to complete a Risk Management Plan (RMP). An RMP is a detailed engineering analysis of the potential accident factors present at a business and the mitigation measures that can be implemented to reduce this accident potential. The purpose of a RMP is to decrease the risk of an off-site release of a regulated substance that might harm the surrounding environment and community. An RMP includes the following components: safety information, hazard review, operating procedures, training, maintenance, compliance audits, and incident investigation. The RMP must consider the proximity to sensitive populations located in schools, residential areas, general acute care hospitals, long-term health care facilities, and child day-care facilities, and must also consider external events such as seismic activity.

Worker and Workplace Hazardous Materials Safety

Occupational safety standards exist in federal and State laws to minimize worker safety risks from both physical and chemical hazards in the workplace. The California Division of Occupational Safety and Health (Cal/OSHA) is responsible for developing and enforcing workplace safety standards and assuring worker safety in the handling and use of hazardous materials. Among other requirements, Cal/OSHA obligates many businesses to prepare Injury and Illness Prevention Plans and Chemical Hygiene Plans. The Hazard Communication Standard requires that workers be informed of the hazards associated with the materials they handle. For example, manufacturers are to appropriately label containers, Material Safety Data Sheets are to be available in the workplace, and employers are to properly train workers.

Hazardous Materials Transportation

The California Highway Patrol (CHP) and Caltrans are the enforcement agencies for hazardous materials transportation regulations. Transporters of hazardous materials and waste are responsible for complying with all applicable packaging, labeling, and shipping regulations. The California Office of Emergency Services (OES) also provides emergency response services involving hazardous materials incidents. Both Yuba City and Sutter County Fire Departments respond to hazardous materials spills.

Investigation and Cleanup of Contaminated Sites

The oversight of hazardous materials release sites often involves several different agencies that may have overlapping authority and jurisdiction. The DTSC and RWQCB are the two primary State agencies responsible for issues pertaining to hazardous materials release sites. Air quality issues related to remediation and construction at contaminated sites are also subject to federal and State laws and regulations that are administered at the local level. Investigation and remediation activities that would involve potential disturbance or release of hazardous materials must comply with applicable federal, State, and local hazardous materials laws and regulations. DTSC has developed standards for the investigation of sites where hazardous materials contamination has been identified or could exist based on current or past uses. The standards identify approaches to determining if a release of hazardous wastes/substances exists at a site and delineating the general extent of contamination; estimating the potential threat to public health and/or the environment from the release and providing an indicator of relative risk; determining if an expedited response action is required to reduce an existing or potential threat; and completing preliminary project scoping activities to determine data gaps and identifying possible remedial action strategies to form the basis for development of a site strategy.

Siting of Schools

The California Education Code (Section 17210 et seq.) outlines the requirements of siting school facilities near or on known or suspected hazardous materials sites, or near facilities that emit hazardous air emissions, handle hazardous or acutely hazardous materials, substances, or waste. The code requires that, prior to commencing the acquisition of property for a new school site, an environmental site investigation be completed to determine the health and safety risks (if any) associated with a site. Recent legislation and changes to the Education Code identify DTSC's role in the assessment, investigation, and cleanup of proposed school sites. All proposed school sites that will receive State funding for acquisition and/or construction must go through a comprehensive investigation and cleanup process under DTSC oversight. DTSC is required to be involved in the environmental review process to ensure that selected properties are free of contamination, or if the property is contaminated, that it is cleaned up to a level that is protective of students and faculty who will occupy the new school. All proposed school sites must be suitable for residential land use, which is DTSC's most protective standard for children.

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5.4 NOISE

■ INTRODUCTION

This section describes the existing noise environment throughout Sutter County and the potential of the General Plan Update to significantly increase noise levels due to population growth and land use decisions. This section also describes the relevant scientific findings on noise effects and regulations applicable to environmental noise control, major findings on the implications of noise exposure and noise control regulations on development in the County, and existing ambient noise sources/levels throughout Sutter County. Information used in the preparation of this section was derived from consultation with County staff, literature review of research findings and regulations, and a field survey with measurements of noise affecting noise-sensitive land uses in the county.

The noise environment experienced by sensitive land uses is an important consideration for planning purposes. People who live, work, and visit Sutter County can be affected by excessive noise and vibration levels. Being sensitive to siting land uses next to noise generating stationary sources or roads with high traffic volumes can quell, not only annoyance levels experienced by sensitive users, but the health effects excessive noise and vibration can have on hearing.

■ SUMMARY OF KEY FINDINGS

- Following the guidance offered by the U.S. Environmental Protection Agency (EPA), Federal Transit Administration (FTA), Federal Aviation Administration (FAA), Federal Inter-Agency Committee on Noise (FICON), and the California Office of Planning and Research (OPR) while updating the County's General Plan Noise Element will assure that noise will not pose a significant threat to County residents' health and/or welfare.
- Ambient noise levels in rural residential and agricultural communities, such as in Meridian and Robbins, are well below the noise levels recommended by Federal and State regulations. These communities are not expected to experience much growth or new development; thus, noise due to an increase in traffic is not expected to occur. Agricultural operations are also expected to remain the same as they are at present. Current ambient noise levels would likely be similar to noise levels upon buildout of the Sutter County General Plan Update.
- Many existing residential and other noise-sensitive uses along the County's main surface transportation corridors are already exposed to noise levels that exceed the optimal recommendations of Federal and State environmental agencies. This includes the communities of Rio Oso and East Nicolaus along Highway 70, the community of Sutter along Highway 20, the unincorporated area outside of the City of Live Oak along Highway 99, and the unincorporated area outside of the City of Yuba City along Highway 20 and Highway 99. An increase in traffic due to future development could further increase noise levels currently experienced in these areas. Appropriate siting guidelines and/or acoustic insulation features can assure compatibility of proposed noise-sensitive uses in these areas.
- Proposed residential uses near the Sacramento International Airport (e.g., Sutter Pointe Specific Plan) could be located within the airport's 65 dBA Community Noise Equivalent Level (CNEL) contour. Single-event aircraft noise within this

contour can occasionally cause significant interference with outdoor activities (and indoor activities when windows are open) in quieter residential neighborhoods. In addition, there are existing residential uses near the Sutter County Airport that are located within the airport's 65 dBA CNEL contour. Any proposed residential, or other sensitive land uses, within these contours would require appropriate acoustic insulation features and/or ventilation systems that can assure compatibility of interior spaces of proposed noise-sensitive uses in this area.

- There are existing rural residential areas of the County that are located near noise-generating industrial uses. This includes residential uses near the Calpine Sutter Energy Center and residential uses south of the City of Live Oak where industrial uses also exist. Appropriate land use compatibility standards and/or acoustic insulation features can assure a safe and tranquil physical environment for proposed residential uses near/in industrial areas.

Characteristics of Sound, Noise, and Vibration

Sound

Sound is created when vibrating objects produce pressure variations that move rapidly outward into the surrounding air. The main characteristics of these air pressure waves are amplitude, which we experience as a sound's loudness, and frequency, which we experience as a sound's pitch. The standard unit of sound amplitude is the decibel (dB), which is a measure of the physical magnitude of the pressure variations relative to the human threshold of perception. The human ear's sensitivity to sound amplitude is frequency-dependent; it is more sensitive to sound with a frequency at or near 1000 cycles per second than to sound with much lower or higher frequencies.

Most "real world" sounds (e.g., a dog barking, a car passing, etc.) are complex mixtures of many different frequency components. When the average amplitude of such sounds is measured with a sound level meter, it is common for the instrument to apply different adjustment factors to each of the measured sound's frequency components. These factors account for the differences in perceived loudness of each of the sound's frequency components relative to those that the human ear is most sensitive to (i.e., those at or near 1000 cycles per second). This practice is called "A-weighting." The unit of A-weighted sound amplitude is also the decibel. However, when reporting measurements to which A-weighting has been applied, an "A" is appended to dB (i.e., dBA) to make this clear. Table 5.4-1 lists representative environmental sound levels.

Noise

Noise is the term generally given to the "unwanted" aspects of intrusive sound. Many factors influence how a sound is perceived and whether or not it is considered annoying to a listener. These include the physical characteristics of a sound (e.g., amplitude, frequency, duration, etc.), but also non-acoustic factors (e.g., the acuity of a listener's hearing ability, the activity of the listener during exposure, etc.) that can influence the judgment of listeners regarding the degree of "unwantedness" of a sound.

Table 5.4-1. Representative Environmental Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	—110—	Rock Band
Jet Fly-over at 100 feet		
	—100—	
Gas Lawnmower at 3 feet		
	—90—	
		Food Blender at 3 feet
Diesel Truck going 50 mph at 50 feet	—80—	Garbage Disposal at 3 feet
Noisy Urban Area during Daytime		
Gas Lawnmower at 100 feet	—70—	Vacuum Cleaner at 10 feet
Commercial Area		Normal Speech at 3 feet
Heavy Traffic at 300 feet	—60—	
		Large Business Office
Quiet Urban Area during Daytime	—50—	Dishwasher in Next Room
Quiet Urban Area during Nighttime	—40—	Theater, Large Conference Room (background)
Quiet Suburban Area during Nighttime		
	—30—	Library
		Bedroom at Night, Concert Hall (background)
Quiet Rural Area during Nighttime	—20—	
		Broadcast/Recording Studio
	—10—	
Lowest Threshold of Human Hearing	—0—	Lowest Threshold of Human Hearing

Source: California Department of Transportation, 1998.

All quantitative descriptors used to measure environmental noise exposure recognize the strong correlation between the high acoustical energy content of a sound (i.e., its loudness and duration) and the disruptive effect it is likely to have as noise. Because environmental noise fluctuates over time, most such descriptors average the sound level over the time of exposure, and some add “penalties” during the times of day when intrusive sounds would be more disruptive to listeners. The most commonly used descriptors are:

Equivalent Energy Noise Level (L_{eq}) is the constant noise level that would deliver the same acoustic energy to the ear of a listener as the actual time-varying noise over the same exposure time. No “penalties” are added to any noise levels during the exposure time; L_{eq} would be the same regardless of the time of day during which the noise occurs.

Day-Night Average Noise Level (L_{dn}) is a 24-hour average L_{eq} with a 10 dBA “penalty” added to noise levels during the hours of 10:00 p.m. to 7:00 a.m. to account for increased sensitivity that people tend to have to nighttime noise. Because of this penalty, the L_{dn} would always be higher than its corresponding 24-hour L_{eq} (e.g., a constant 60 dBA noise over 24 hours would have a 60 dBA L_{eq} , but a 66.4 dBA L_{dn}).

Community Noise Equivalent Level (CNEL) is an L_{dn} with an additional 5 dBA “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m.

L_{MAX} is the maximum instantaneous noise level experienced during a given period of time.

L_{MIN} is the minimum noise level experienced during a given period of time.

Community noise exposures are typically represented by 24-hour descriptors, such as a 24-hour L_{eq} or L_{dn} . One-hour and shorter-period descriptors are useful for characterizing noise caused by short-term activities, such as the operation of construction equipment.

Noise caused by natural sources and human activities is usually well represented by median noise levels during the day, night, or over a 24-hour period. Environmental noise levels are generally considered low when the L_{eq} is below 60 dBA, moderate in the 60 to 70 dBA range, and high above 70 dBA. Examples of settings with low daytime background noise levels are isolated, natural settings that can provide noise levels as low as 20 dBA and quiet, suburban, residential streets that can provide noise levels around 40 dBA. Noise levels above 45 dBA at night can potentially disrupt sleep. People may consider louder environments adverse, but most people living or working in urban residential or residential-commercial areas (60 to 75 dBA) or dense urban or industrial areas (65 to 80 dBA) accept the higher noise levels commonly associated with these land uses.

When evaluating changes in community noise levels, or L_{dn} , a difference of 3 dBA is a barely perceptible increase to most people. A 5 dBA increase is readily noticeable, while a difference of 10 dBA would be perceived as a doubling of loudness.

Noise levels from a particular source decline as distance to a receptor increases. The weather and even the makeup of intervening terrain can also help intensify or reduce noise levels at any given location. A commonly used rule of thumb for roadway noise is that for every doubling of distance from the source, the noise level is reduced by about 3 dBA at acoustically “hard” locations (i.e., the area between the noise source and the receptor is nearly complete asphalt, concrete, hard-packed soil, or other solid materials) and 4.5 dBA at acoustically “soft” locations (i.e., the area between the source and receptor is normal earth or has vegetation, including grass). Noise from stationary or point sources is reduced by about 6 to 7.5 dBA for every doubling of distance at acoustically hard and soft locations, respectively. Noise levels may also be reduced by intervening structures, such as a row of buildings, a solid wall, or a berm located between the receptor and the noise source. California homes built prior to 1970 generally provide an exterior-to-interior noise level reduction up to about 20 dB with closed windows. Homes built within the last 30 years generally provide an exterior-to-interior reduction up to about 30 dB with closed windows.

Fundamentals of Ground-borne Noise and Vibration

Vibrating objects in contact with the ground radiate energy. If a vibrating object is massive enough and/or close enough to an observer, its vibrations are perceptible. Vibration magnitude is measured in vibration decibels (VdB) relative to a reference level of 1 micro-inch per second, the human threshold of perception. The background vibration level in residential areas is usually 50 VdB or lower, well below the threshold of perception for humans, which is around 65 VdB. Most perceptible indoor vibration is caused by sources within buildings such as operation of mechanical equipment, movement of people, or slamming of doors. Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If the roadway is smooth, the vibration from traffic is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration velocity level, to 100 VdB, which is the general threshold where damage can occur in fragile buildings. Common vibration sources and the human and structural response to ground-borne vibration are illustrated in Table 5.4-2.

Table 5.4-2 Typical Sources and Responses to Ground-borne Vibration

Human/Structural Response	Velocity Level (VdB)	Typical Sources (50 feet from source)
Threshold, minor cosmetic damage to fragile buildings	—100—	Blasting from construction projects
	95	Bulldozers and other heavy tracked construction equipment
Difficulty with tasks such as reading a VDT screen	—90—	
	85	High speed rail, upper range
Residential annoyance, infrequent events (e.g. commuter rail)	—80—	Rapid transit, upper range
		High speed rail, typical
Residential annoyance, frequent events (e.g. rapid transit)		Bus or truck over bump
	—70—	
Limit for vibration sensitive equipment/ Approximate threshold for human perception of vibration		
		Bus or truck, typical
	—60—	
	55	Typical background vibration
	—50—	

Source: U.S. Department of Transportation Federal Railroad Administration, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, October 2005, pages 6-7.

Accurate estimates of ground-borne vibration are complicated due to the many factors that influence vibration levels at potential receivers. Main factors that have significant effects on levels of ground-borne vibration are:

Geology: Soil conditions are known to have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Experience has shown that vibration propagation is more efficient in clay soils as well as areas with shallow bedrock. The latter condition seems to channel or concentrate the vibration energy close to the surface, resulting in ground-borne vibration problems at large distances from the source. Factors such as layering of the soil and depth to water table can also have significant effects on the propagation of ground-borne vibration.

Receiving Building: Ground-borne vibration problems occur almost exclusively inside buildings. Therefore, the characteristics of the receiving building are a key component in the evaluation of ground-borne vibration. Vibration may be perceptible to people who are outdoors, but it is very rare for outdoor vibration to cause complaints. The vibration levels inside a building depend on the vibration energy that reaches the building foundation, the coupling of the building foundation to the soil, and the propagation of the vibration through the building structure. The general guideline is that the more massive a building is, the lower its response to incident vibration energy in the ground.¹

¹ U.S. Department of Transportation Federal Railroad Administration, *High-Speed Ground Transportation Noise and Vibration Impact Assessment*, October 2005, page 6-7.

■ EXISTING CONDITIONS

Sources of Noise

Land uses within the County include a range of residential, commercial, institutional, industrial, recreational, agricultural, and open space areas. Although there are many noise sources within Sutter County, the primary noise source is traffic. Significant noise also occurs from airplane traffic, railroads, and various stationary sources as described below. Existing noise contours in the County are shown on Figure 5.4-1.

Freeways and Highways

Motor vehicle noise commonly causes sustained noise levels in the vicinity of busy roadways or freeways. Several highways run through Sutter County. These include State Route (SR) 20, SR 70, SR 99, and SR 113. Sutter County also has many local roads that experience very high traffic volumes, particularly high truck traffic volumes that contribute to traffic noise. Many noise receptors throughout the County, such as older residences, are located near these high-traffic corridors and typically do not have a structure to help attenuate noise levels, such as a sound wall or barrier. However, newer residences built within or near incorporated cities such as Yuba City do have some level of noise attenuation through the construction of sound walls and through the advantages of modern construction techniques and insulation.

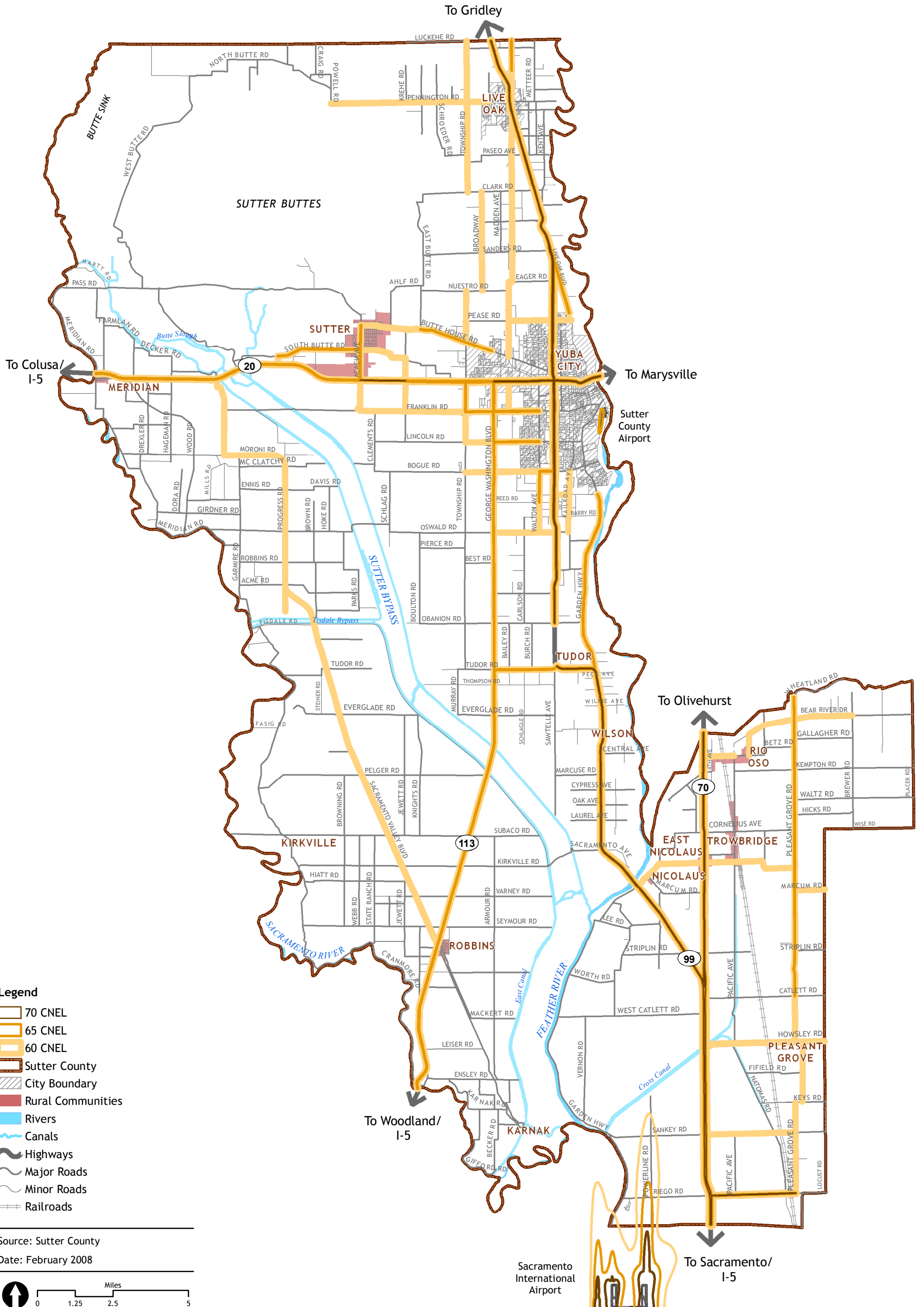
Noise levels affecting proposed new residences are reviewed on a project-by-project basis during the environmental review process. Residential projects that are proposed near major noise sources within the County are evaluated to determine whether they will be exposed to noise levels that will exceed applicable noise standards.

Aircraft Noise

Sutter County is served by one publicly owned and operated airport, the Sutter County Airport. The Sutter County Airport is located on approximately 170 acres of land with a single paved runway 3,040 feet long and 75 feet wide. The airport is operated by the Sutter County Public Works Department. A major portion of the airport operations are a result of agricultural aircraft involved in crop dusting activities. No commuter airlines utilize the Sutter County airport. Due to Sutter County's proximity to the Sacramento International Airport south of Sutter County, commercial service has not expanded into the County. The noise contour for the Sutter County Airport is shown on Figure 5.4-1.

Sacramento International Airport is located in the northwest corner of Sacramento County, less than a half mile from Sutter County. The airport has two parallel runways oriented in a north/south direction. The airport is owned and operated by Sacramento County. Because Sacramento International Airport accommodates the commercial air service demands of the greater Sacramento region, a number of commercial flights arrive and depart from the airport frequently. The noise contour for the Sacramento International Airport is shown on Figure 5.4-1.

There are a number of small privately owned landing strips and airports located throughout the County. Because flight activity at these private landing strips would be highly variable, particularly where landing strips are used for crop dusting, determining CNEL contours is not practical. Table 5.4-3 shows the typical sound levels of single and twin engine aircraft.



EXISTING ROADWAY AND AIRPORT NOISE CONTOURS
Figure 5.4-1

Table 5.4-3 Typical Sound Levels Generated by Small Aircraft (dBA)

Slant Distance (feet)	Single Engine		Twin Engine	
	Takeoff	Landing	Takeoff	Landing
500	74	66	80	72
1,000	71	63	77	69
2,000	67	59	73	65
4,000	63	55	69	61
8,000	58	50	64	56

Source: Sutter County General Plan Background Report, November 1996, Chapter 12 Noise, Table 12.1-3.

Railway Noise

There are two active rail lines that pass through Sutter County. One is a Union Pacific (UP) route that is generally oriented in the north/south direction and enters Sutter County from Sacramento County in the south, crosses through the communities of Trowbridge and Rio Oso, and exits into Yuba County in the north. The second route is a UP route (previously a Southern Pacific Transportation Company route) that is generally oriented in the north/south direction and enters Sutter County from Yuba County in the east near Yuba City, runs parallel to State Route 99, crosses through Live Oak, and exits into Butte County to the north. In addition to the noise generated by the trains themselves, noise is generated where trains intersect roadways by the warning bells used to alert motorists of a train's arrival.

Stationary Sources

A wide variety of stationary noise sources are present in Sutter County. Residential areas can generate noise through the use of heating and cooling equipment, and through landscape maintenance activities such as leaf-blowing and gasoline-powered lawnmowers. Commercial uses can also generate noise through the operation of rooftop heating and cooling equipment, and other operational activities. Daily activity of industrial uses can generate noise as well, especially those that utilize heavy equipment as part of normal operations such as shipping and loading facilities, concrete crushing facilities, and recycling centers. Other stationary sources of noise are natural gas extraction facilities which are located throughout the County. Although gas wells have the potential to affect nearby sensitive receptors, special noise-control measures may be required if a well is located within 500 feet of a residence.

Another stationary source in the County is the Calpine owned and operated Sutter Energy Center located southwest of Yuba City. The plant produces electricity using "combined-cycle" technology, integrating two combustion turbines and a single steam turbine. The Sutter Energy Center began operation in 2001 in response to the statewide energy shortages at that time. The center sells electricity to WECC Northern California.

Agricultural Operations

As incorporated cities such as Yuba City and Live Oak continue to grow, it is anticipated that conflicts between agricultural operations and urban development will continue. Active agricultural activities can generate elevated noise levels due to operation of large agricultural equipment. In addition, depending on the type of crop, certain harvest techniques often generate loud machine noise and require lighting for night work. For example, row crops often use large machines to harvest and work through the night. These activities can be a nuisance to adjacent urban uses.

Noise-Sensitive Receptors

Some land uses are more sensitive to noise than others. These sensitive uses are commonly referred to as “sensitive receptors,” and normally include residences, hospitals, churches, libraries, schools, and retirement homes. Noise sensitive land uses are typically given special attention because activities at these uses require relatively quiet environments.

Sensitive noise receptors typically include residences, schools, child care centers, hospitals, long-term health care facilities, convalescent centers, and retirement homes. Each of these land use types is present in the County.

In certain circumstances, jurisdictions may allow uses to be built in areas where applicable noise standards may be exceeded. In these cases, a jurisdiction may find “conditionally acceptable” noise levels to be appropriate, as long as other measures conditions are met. For example, a jurisdiction may accept conditionally acceptable exterior noise levels (usually measured at outdoor activity areas of a receptor) as long as an acoustic analysis is conducted showing that interior noise levels would be within the “acceptable” range. The acceptable noise level may differ depending on the type of receptor and its location. Residents living in very urban environments will usually accept a higher level of noise than residents in quieter suburban areas.

Various standards have been promulgated to address the compatibility of land uses and noise levels in Sutter County. The applicable standards are presented under the heading “Regulatory Context” below. Special emphasis is placed on land uses that are considered to be sensitive to high noise levels.

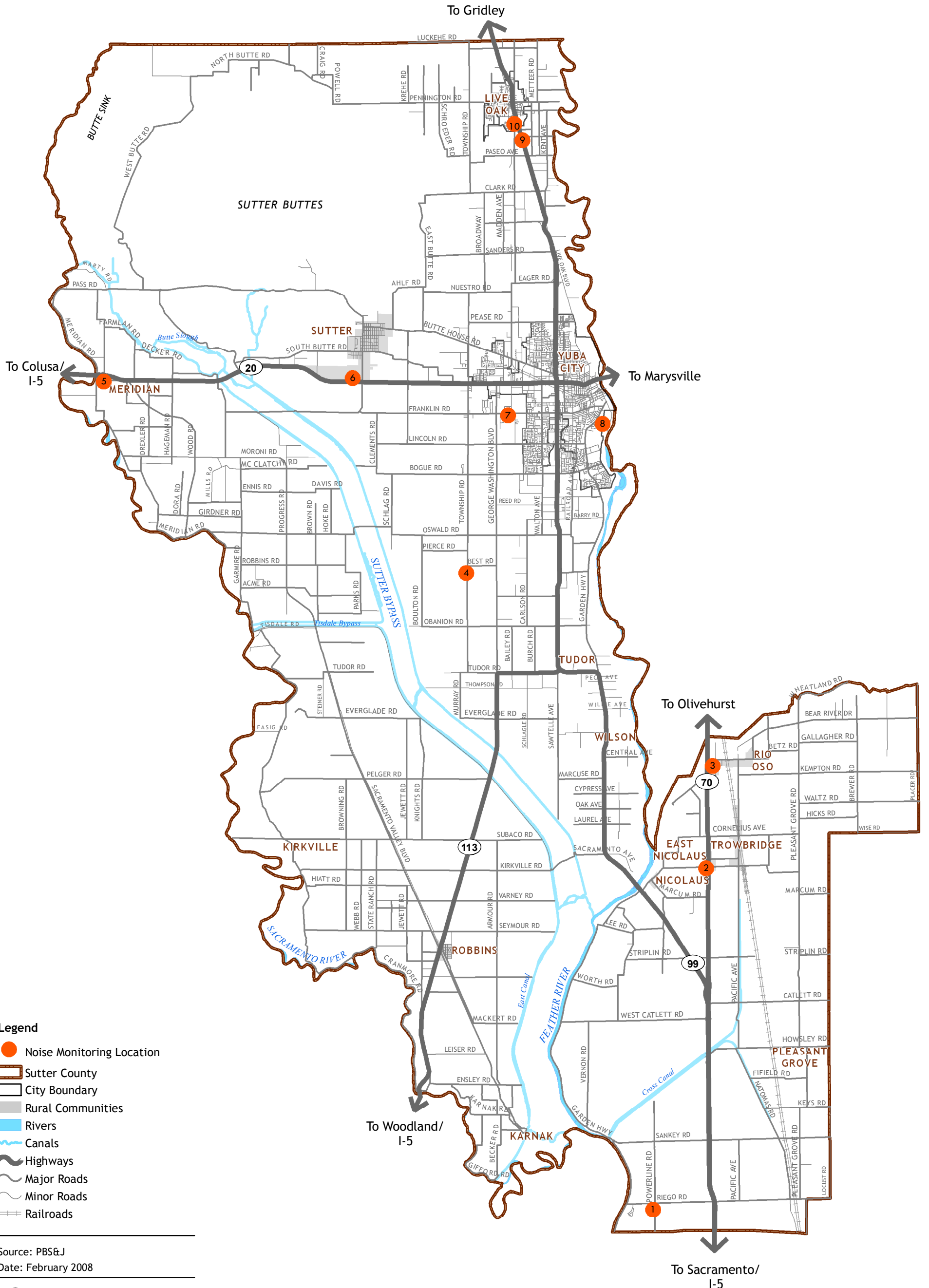
Existing Noise Levels

Monitored Daytime Noise Levels

Existing ambient daytime noise levels were measured at ten selected locations in order to determine representative noise levels for certain sources in various portions of Sutter County. These locations are shown on Figure 5.4-2.

The noise levels were monitored using a Larson-Davis Model 720 sound level meter, which satisfies the American National Standards Institute (ANSI) for general environmental noise measurement instrumentation. Measured noise levels for each location are identified in Table 5.4-4. Monitoring conditions and a more detailed description of each location can be found below:

Location 1 – Sacramento International Airport. Monitoring was conducted immediately north of the Sutter County/Sacramento County line, approximately one mile from the Sacramento International Airport on Power Line Road between Riego Road and Elverta Road. The measurement was taken for 20 minutes at 1 second intervals in order to show the relative occurrence of airplane flyovers compared with the ambient noise level in the area. Figure 5.4-3 (graph A) shows the L_{eq} at each second of the 20 minute reading. Table 5.4-4 also shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading. Because the reading was done in a primarily agricultural area, the ambient noise level was as low as 33 dBA with larger spikes (up to approximately 40 dBA due to agricultural operations in the distance on Riego Road. This can be seen in Figure 5.4-3 (graph A) where the baseline remains steadily at approximately 35 dBA. While certain peaks can be attributed to plane flyovers (four planes flew over during the reading), other peaks are attributed to the few vehicle trips on Power Line Road.



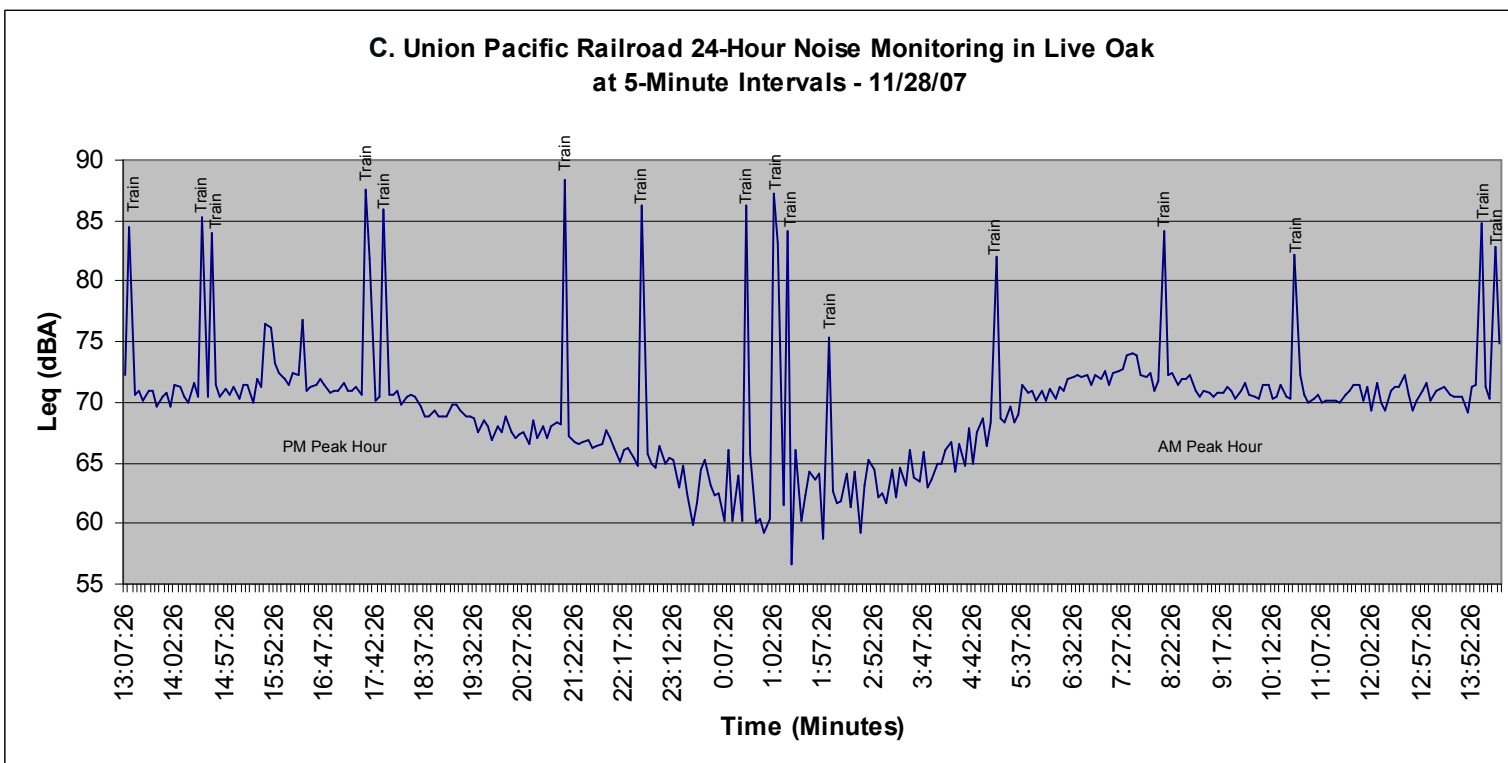
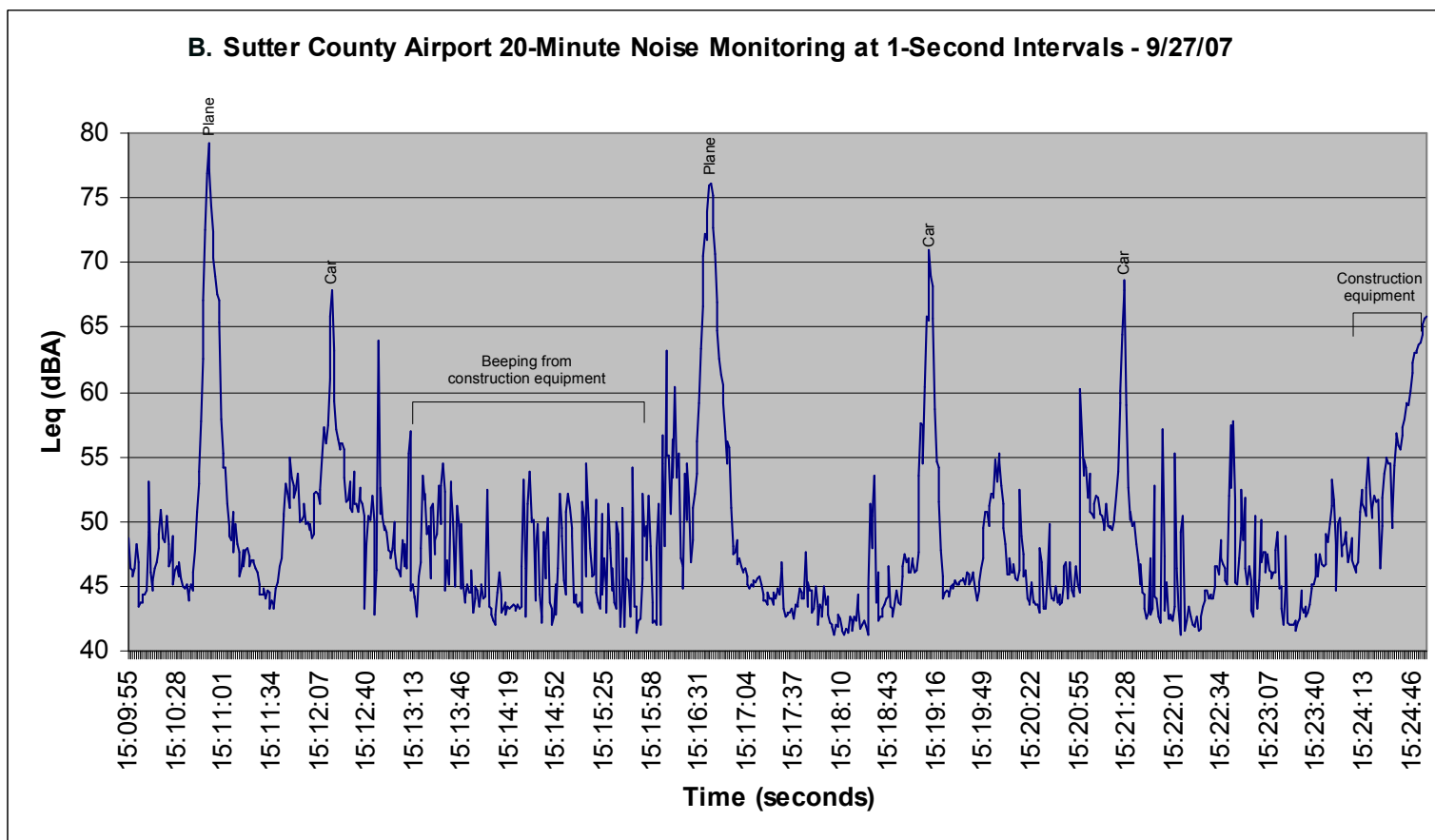
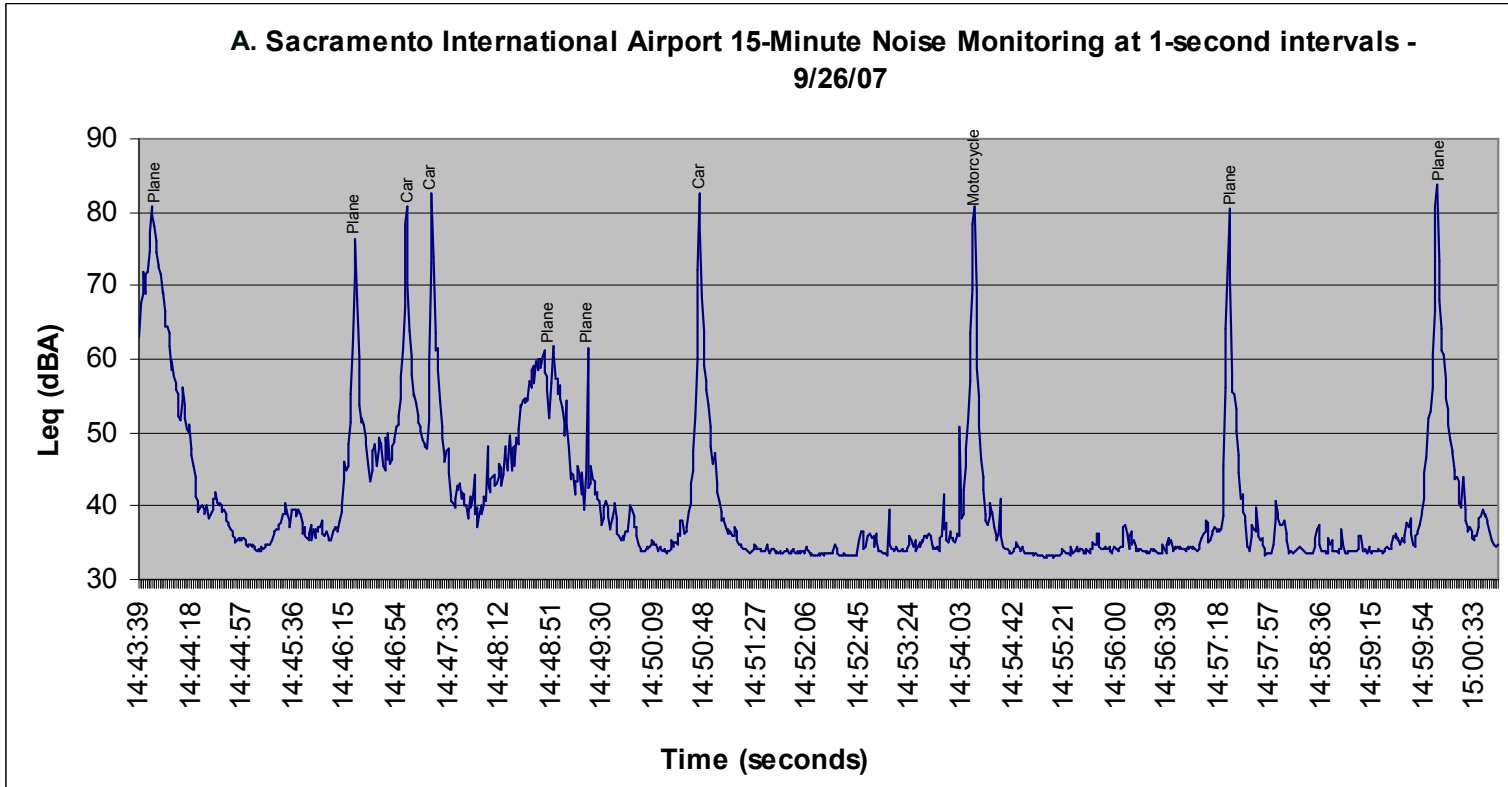


Table 5.4-4. Daytime Noise Measurements at Selected Locations in Sutter County¹

Noise Measurement Location/Time	Noise Sources	Noise Level Statistics ²		
		L _{eq}	L _{min}	L _{max}
#1 Sacramento International Airport. Start time: 2:43 pm on 9/26/07.	Primary: Airplane flyovers. Secondary: Vehicular traffic on Power Line Road.	40.9	32.7	87.3
#2 East Nicolaus on Nicolaus Avenue near residential uses. Start: 1:45 pm on 9/26/07.	Primary: Vehicular traffic on Nicolaus Avenue. Secondary: Vehicular traffic on Highway 70	69.3	42.7	94.0
#3 Rio Oso on Highway 70 near residential uses. Start: 12:45 pm on 9/26/07.	Moderate vehicular traffic on Highway 70 with a high percentage of vehicles being heavy trucks.	69.4	46.7	84.2
#4 Calpine Sutter Energy Center near rural residential uses. Start: 11:35 am on 9/26/07.	Primary: Industrial operations at the Calpine power-generating facility. Secondary: Vehicular traffic on South Township Road	63.0	51.5	87.3
#5 Meridian on 4 th Street near residential and agricultural uses. Start: 12:35 pm on 9/27/07.	Distant construction activities and traffic from Highway 20.	45.3	34.6	66.4
#6 Sutter on Highway 20 near residential uses. Start: 4:03 pm on 9/27/07.	Primary: Vehicular traffic on Highway 20. Secondary: Vehicular traffic on Acacia Avenue.	69.3	49.9	87.9
#7 Franklin Boulevard southwest of Yuba City. Start: 5:40 pm on 9/27/07.	Vehicular traffic on Franklin Boulevard.	70.4	44.6	86.8
#8 Sutter County Airport. Start: 2:40 pm on 9/27/07.	Primary: Airplane flyovers. Secondary: Vehicular traffic on Samuel Drive and construction noise in background.	48.7	79.9	40.4
#9 Live Oak on Highway 99 near residential uses. Start: 4:55 pm on 9/27/07.	Heavy vehicular traffic on Highway 99.	76.3	49.3	88.8
#10 Live Oak on UP Rail Line near residential uses. Start: 1:07 pm on 11/28/07.	Primary: Train pass-bys. Secondary: Vehicular traffic on Highway 99.	69.6	38.4	115.3

Source: PBS&J, 2007.

¹Measurements were made on September 26 and 27, 2007. Each measurement was 15 minutes in duration with the exception of Location 1 which was a 20-minute reading. Location 10 was a 24-hour reading starting on November 28, 2007.

²L_{eq} is the average noise level over the measurement period; L_{min} is the minimum instantaneous noise level during the measurement period; L_{max} is the maximum instantaneous noise level during the measurement period.

The airplane flyovers resulted in L_{eq}s ranging from approximately 62 dBA to 83 dBA depending on which direction the airplanes went after take-off. The location was set back from major roads (Elverta Road and Highway 99), so only five vehicles driving on Power Line Road influenced the reading. This area is slated for development of the Sutter Point Specific Plan which will contain a number of noise-sensitive residential uses.

Location 2 – Community of East Nicolaus – residential uses. Monitoring was conducted on Nicolaus Avenue approximately 24 feet from the centerline of the two-lane road. The major noise source was vehicle traffic traveling on Nicolaus Avenue and traffic at the intersection of Nicolaus Avenue and Highway 70 east of the monitoring location. Although the traffic on Nicolaus Avenue is not considered heavy, a high percentage of vehicles were heavy trucks. The heavy trucks likely contributed to the high L_{MAX} value shown in Table 5.4-4. The meter was

approximately 25 feet from a single-family home. The potential for an increase in traffic on Highway 70 due to growth in Yuba County could contribute to an increase in noise along smaller two-lane roads with residential neighborhoods off of the highway in Sutter County. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 3 – Community of Rio Oso – residential uses along Highway 70. Monitoring was conducted on Highway 70 in the community of Rio Oso. Major sources of noise were vehicular and truck traffic on Highway 70. The noise meter was placed approximately 93 feet from the centerline of the road, while the residential home was located an additional 55 feet away from the centerline. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 4 – Calpine Sutter Energy Center – rural residential uses. The Calpine Sutter Energy Center is located at the intersection of South Township Road and Best Road, southwest of Yuba City. Monitoring was conducted along South Township Road just outside of the main entrance to the facility. The major source of noise was from operations at the Calpine plant. Noise emitted from the plant was continuous, meaning that the noise level was constant and uninterrupted. Secondary sources of noise were from the few vehicles driving by on South Township Road. The area is primarily a rural residential and agricultural area, so traffic does not currently contribute to the ambient noise level in the area. The closest rural residential home to the plant is approximately 1,126 feet north. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 5 – Community of Meridian – residential and agricultural uses. Monitoring was conducted along 4th Street in the community of Meridian. This reading was taken to determine the ambient noise level of an existing agricultural community that is not expected to grow significantly over the course of the Sutter County General Plan Update horizon date. The reading was taken near single-family residential homes that are adjacent to agricultural fields and orchards. The major source of noise was from construction activities in the distance and from traffic on Highway 20. Obtaining the ambient noise level of an agricultural community like Meridian is indicative of other agricultural communities in the county such as Robbins in the southwestern portion of the county, and Nicolaus, which is west of the community of East Nicolaus. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 6 – Community of Sutter – residential uses along Highway 20. Noise monitoring was conducted along Highway 20 near its intersection with Acacia Avenue, the main entrance to the community of Sutter. The noise meter was located approximately 100 feet north of a residence facing Highway 20 while the centerline of the road was an additional 75 feet north of the meter. The major source of noise was from traffic on Highway 20. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 7 – Southwest of Yuba City – residential uses along Franklin Boulevard. Monitoring was conducted along Franklin Boulevard between El Margarita Road and Butte Road. Franklin Road is lined with single-family residential uses with the occasional rural residential lot that includes orchards. The noise meter was placed 24 feet south of the centerline of Franklin Boulevard. The primary noise source was from traffic along Franklin Boulevard. This area is within the Yuba City Urban Area, but is not within the city limits. In the future, Yuba City is likely to expand into areas southwest of the current city limits. Existing residential neighborhoods similar to this location will likely experience an increase in noise due to new development and increased traffic in the future. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

Location 8 – Sutter County Airport. Monitoring was conducted immediately west of the Sutter County Airport on Samuel Drive. This location is in a residential neighborhood with a combination of single- and multi-family residential units and a few commercial/warehouse uses. The closest single-family residential home is approximately 400 feet from the closest edge of the runway. Similar to the reading done for Location 1, this measurement was taken for 15 minutes at 1 second intervals in order to show the relative occurrence of airplane flyovers compared with the ambient noise level in the area. Figure 5.4-3 (graph B) shows the L_{eq} at each second of the 15 minute reading. Table 5.4-4 also shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading. As shown in Figure 5.4-3 (graph B), two planes took off from Sutter County Airport during the 15 minute reading. The first plane resulted in the L_{MAX} reading of 79.9 dBA. Various other spikes can be seen in the figure which can be attributed to vehicle traffic passing by the noise monitor on Samuel Drive. There was also construction activity nearby that contributed to the variable baseline ranging from as low as 40.4 dBA to approximately 60 dBA. This area was monitored because there is an existing compatibility issue between the airport and residential uses. Any increase in activity at the airport could result in an increase in noise experience by the nearby sensitive receptors.

Location 9 – South of the City of Live Oak – residential uses along Highway 99. Noise monitoring was conducted along Highway 99 south of the City of Live Oak near residential uses. The noise meter was placed approximately 75 feet north of a residential home located on the corner of Highway 99 and Bishop Avenue. At this point, Highway 99 is a two-lane highway with a middle lane for left turns onto Bishop Avenue. The primary noise source for this reading was vehicular traffic on Highway 99. The reading was taken over a 15 minute interval. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading. Because this area outside of the City of Live Oak has the potential to experience future development, increases to traffic, and thus, noise levels, would be expected and would affect existing sensitive noise uses, such as the single-family residential and rural residential uses currently along Highway 99. This area south of Live Oak is also designated as industrial land uses which could create compatibility issues between industrial operations and future residential development.

Location 10 – South of the City of Live Oak – residential uses along UP Railroad. Noise monitoring was conducted along the UP rail line which is generally oriented in the north/south direction and enters Sutter County from Yuba County in the east near Yuba City, runs parallel to Highway 99, crosses through Live Oak, and exits into Butte County to the north. The noise meter was placed approximately 50 feet east of the rail line. Because growth is expected to occur south of the City of Live Oak, train operations on the rail line are a concern for residential or other noise-sensitive receptors, which may be constructed near the railroad tracks. A 24-hour measurement was done for this location so that train activity, particularly at night, could be monitored to find the maximum noise level that could be experienced by a receptor. Figure 5.4-3 (graph C) shows the 24-hour measurement done at 5 minute intervals. The gradual rise and fall of the baseline noise levels represents the rise and fall of traffic during peak am and pm hours on Highway 99. The individual peaks on the figure represent trains passing by the noise monitor. Table 5.4-4 shows the average L_{eq} and L_{MIN}/L_{MAX} for the reading.

■ REGULATORY CONTEXT

The purpose of the section is to briefly summarize any regulations that are applicable to the topical area.

Federal

Noise Control Act

The federal Noise Control Act (1972) addressed the issue of noise as a threat to human health and welfare, particularly in urban areas. In response to the Noise Control Act, the U.S. Environmental Protection Agency (EPA) published *Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (Levels)*. Table 5.4-5 summarizes U.S. EPA recommendations for residential and other noise-sensitive land uses. Essentially, the yearly average L_{eq} should not exceed 70 dBA to prevent measurable hearing loss over a lifetime, and the L_{dn} should not exceed 55 dBA outdoors and 45 dBA indoors to prevent significant activity interference and annoyance in noise-sensitive areas. The U.S. EPA did not promote these findings as universal standards or regulatory goals with mandatory applicability to all communities, but rather as advisory exposure levels below which there would be no reason to suspect that people would be at risk from any of the identified health or welfare effects of noise. The U.S. EPA *Levels* report also identified a 5 dBA increment as an adequate margin of safety relative to a baseline noise exposure level of 55 dBA L_{dn} before a noticeable increase in adverse community reaction would be expected.

Table 5.4-5. Summary of Noise Levels Identified as Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety¹

Effect	Level	Area
Hearing	$L_{eq}(24 \text{ hr.}) < 70 \text{ dBA}$	All areas.
Outdoor activity interference and annoyance	$L_{dn} < 55 \text{ dBA}$	Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use.
Outdoor activity interference and annoyance	$L_{eq}(24 \text{ hr}) < 55 \text{ dBA}$	Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc.
Indoor activity interference and annoyance	$L_{dn} < 45 \text{ dBA}$	Indoor residential areas.
Indoor activity interference and annoyance	$L_{eq}(24 \text{ hr}) < 45 \text{ dBA}$	Other indoor areas with human activities such as schools, etc.

Source: U.S. Environmental Protection Agency, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, March 1974.

¹Yearly average equivalent sound levels in decibels; the exposure period which results in hearing loss at the identified level is a period of forty years.

The FTA has developed an extensive methodology and significance criteria to evaluate noise impacts from surface transportation modes (i.e., private motor vehicles, trucks, buses, and rail), as presented in *Transit Noise Impact and Vibration Assessment* (May 2006). The scientific rationale for FTA’s criteria is clearly explained and is widely accepted by acoustic scientists. The FTA incremental noise impact criteria are presented in Table 5.4-6. These criteria are based on the U.S. EPA findings (as presented in *Levels* and summarized in Table 5.4-5) and subsequent studies of annoyance in communities affected by transportation noise. Starting from the U.S. EPA’s definition of minimal noise impact as a 5 dBA change from a “safe” ambient level of 50 dBA (L_{dn} or peak hour L_{eq} , depending on the FTA’s Land Use Category), the FTA extended the incremental impact criteria to higher baseline ambient levels by requiring that increased adverse community reaction be kept below a defined minimal level (i.e., a 2 percent increase in the number of residents reporting a “high” level of annoyance, as measured by survey). As baseline ambient levels increase, it takes a smaller and smaller increment to

produce the same increase in annoyance (e. g., in residential areas with a baseline ambient noise level of 50 dBA L_{dn} , a 5 dBA increase in noise levels would be expected to increase community annoyance by 2 percent, but at a baseline ambient noise level of 70 dBA L_{dn} , a 1 dBA increase in noise levels would be expected to have the same effect on community annoyance levels).

Table 5.4-6: FTA Impact Criteria for Noise-Sensitive Uses (dBA)

Existing Noise Level	Land Use Categories 1 & 2			Land Use Category 3		
	Project Impact Threshold	Combined Noise Level	Allowable Noise Increment	Project Impact Threshold	Combined Noise Level	Allowable Noise Increment
45	52	53	8	57	57	12
50	53	55	5	58	59	9
55	55	58	3	60	61	6
60	58	62	2	63	65	5
65	61	66	1	66	68	3
70	64	71	1	69	73	3
75	65	75	0	70	76	1
80	65	80	0	70	80	0

Source: Federal Transit Administration, *Transit Noise Impact and Vibration Assessment*, May 2006.

Notes:

Impact criteria are L_{dn} or L_{eq} (peak hour) depending on Land Use Category given below:

Land Use Category 1: Tracts of land where quiet is an essential element in their intended purposes. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor uses. Also included are recording studios and concert halls. The noise metric for Category 1 is the outdoor L_{eq} during the noisiest hour of activity.

Land Use Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance. The noise metric for Category 2 is the outdoor L_{dn} .

Land Use Category 3: Institutional land uses with primarily daytime and evening uses. This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities can also be considered in this category. Certain historical sites and parks are also included. The noise metric for Category 3 is the outdoor L_{eq} during the noisiest hour of activity.

Federal Aviation Regulations Part 150

Federal Aviation Regulations Part 150, Airport Noise Compatibility Planning, prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving these programs. Part 150 also prescribes a system for measuring airport noise impacts and presents guidelines for identifying incompatible land uses. The noise exposure maps are to be depicted in terms of average annual L_{dn} or CNEL contours around the airport. For the purposes of federal regulations, all land uses are considered compatible with noise levels less than 65 dB L_{dn} . At higher noise exposures, increasing restrictions are applied depending upon the nature of the use and the degree of structural noise attenuation expected to be achieved in their interior spaces.

The effect of aviation noise on sleep is a long-recognized concern of those interested in addressing the impacts of noise on people. Based on substantial field research carried out on sleep disturbance, the Federal Interagency Committee on Aviation Noise (FICAN) has recommended the adoption of a dose-response curve based on single event noise levels (i.e.,

SEL) for predicting the maximum percent of an exposed population (not including children) expected to be awakened in long-term residential settings. In order to reduce potential aviation-related sleep disruption to acceptable levels in areas near airports, it may be necessary to install additional acoustic insulation above that required to maintain interior L_{dn} or CNEL at the generally accepted 45 dBA interior standard.

State

California General Plan Guidelines

The State of California *General Plan Guidelines 2003 (Guidelines)* promotes use of L_{dn} or CNEL for evaluating noise compatibility of various land uses with the expected degree of noise exposure, as illustrated by Table 5.4-7. The designation of a level of noise exposure as “normally acceptable” for a given land use category implies that the expected interior noise would be acceptable to the occupants without the need for any special structural acoustic treatment. The *Guidelines* identify the suitability of various types of construction relative to the range of customary outdoor noise exposures. The *Guidelines* provide each local community some leeway in setting local noise standards that allow for the variability in individual perceptions of noise in that community. Findings presented in the U.S. EPA’s document, *Levels* (see discussion above under “Noise Control Act”), have had an obvious influence on the recommendations of the State *Guidelines*, most importantly in the latter’s choice of noise exposure metrics (i.e., L_{dn} or CNEL) and in the upper limits for the “normally acceptable” exposure of noise-sensitive uses (i.e., no higher than 60 dBA L_{dn} or CNEL for low-density residential, which is just at the upper limit of the 5 dBA “margin of safety” define by the U.S. EPA for noise-sensitive land use categories).

California Noise Insulation Standards











The California Noise Insulation Standards (California Code of Regulations, Title 24) codifies Sound Transmission Control requirements, which establishes uniform minimum noise insulation performance standards for new hotels, motels, dormitories, apartment houses, and dwellings other than detached single-family dwellings. Specifically, Title 24 states that interior noise levels attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room of new dwellings. Acoustical studies must be prepared for proposed multiple unit residential and hotel/motel structures where L_{dn} or CNEL is 60 dBA or greater. The studies must demonstrate that the design of the building will reduce interior noise to 45 dBA L_{dn} or CNEL, or lower. Dwellings are to be designed so that interior noise levels will meet this standard for at least ten years from the time of building permit application. Interior noise levels can be reduced through the use of noise insulating windows, and by using sound isolation materials when constructing walls and ceilings. The primary means to achieve this standard is through the use of noise insulating windows, and/or sound isolation materials when constructing walls and ceilings.

Local

Sutter County General Plan

Goal 8.A To protect County residents from the harmful effects of exposure to excessive noise.

Table 5.4-7. State of California Noise Compatibility Guidelines

Community Noise Exposure L _{dn} or CNEL (dB)							
Land Use Category	55	60	65	70	75	80	INTERPRETATION:
Residential – Low Density Single Family, Duplex, Mobile Homes							 Normally Acceptable Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
Residential – Multi-Family							 Conditionally Acceptable New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional constructions, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
Transient Lodging – Motels, Hotels							 Normally Unacceptable New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
Schools, Libraries, Churches, Hospitals, Nursing Homes							 Clearly Unacceptable New construction or development should generally not be undertaken.
Auditoriums, Concert Halls, Amphitheaters							 Clearly Unacceptable New construction or development should generally not be undertaken.
Sports Arena, Outdoor Spectator Sports							 Clearly Unacceptable New construction or development should generally not be undertaken.
Playgrounds, Neighborhood Parks							 Clearly Unacceptable New construction or development should generally not be undertaken.
Golf Course, Riding Stables, Water Recreation, Cemeteries							 Clearly Unacceptable New construction or development should generally not be undertaken.
Office Buildings, Business Commercial and Professional							 Clearly Unacceptable New construction or development should generally not be undertaken.
Industrial, Manufacturing, Utilities, Agriculture							 Clearly Unacceptable New construction or development should generally not be undertaken.

Source: Governor's Office of Planning and Research, *State of California General Plan Guidelines 2003*, October 2003.

Policies

8.A-1 The County shall not allow development of new noise-sensitive land uses where the noise level due to non-transportation noise sources will exceed the noise level standards shown on Table 7 at the property line of the new noise sensitive land use unless noise mitigation measures have been incorporated into the project design to achieve the required standard.

Table 7 – Noise Level Standards New Non-Transportation Sources		
Noise Level Descriptor	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly Leq, dB	50	45
Maximum level, dB	70	65

8.A-2 The County shall require that new non-transportation noise sources be mitigated to the noise level standards shown in Table 7.

8.A-3 The feasibility of proposed development project with respect to existing and future transportation noise levels shall be evaluated against the noise guidelines in Table 8.

Table 8 – Land Use Compatibility Guidelines for Development								
Land Use Category		Community Noise Exposure Ldn or CNEL, dB						
		55	60	65	70	75	80	
Residential, Theaters, Meeting Halls, Churches, Auditoriums	A.	■	■					
	C.A.			■	■			
	U.					■	■	■
Transient Lodging, Motels, Hotels	A.	■	■					
	C.A.			■	■			
	U.					■	■	■
Schools, Libraries, Hospitals, Child Care, Museums	A.	■	■					
	C.A.			■	■			
	U.					■	■	■
Playgrounds, Neighborhood Parks, Amphitheaters	A.	■	■					
	C.A.			■	■			
	U.					■	■	■
Office Buildings, Business, Commercial and Professional	A.	■	■					
	C.A.			■	■			
	U.					■	■	■
Industrial, Utilities, Manufacturing, Agriculture	A.	■	■					
	C.A.			■	■			
	U.					■	■	■
Golf Courses, Riding Stables, Outdoor Spectator Sports	A.	■	■					
	C.A.			■	■			
	U.					■	■	■
Notes: A. Acceptable C.A. Conditionally Acceptable U. Unacceptable								

8.A-4 New development of noise-sensitive land uses shall not be permitted in areas exposed to noise levels from transportation noise sources which exceed the levels specified in Table 9, unless

the project design includes noise mitigation to achieve the required standard.

- 8.A-5 Noise created by new transportation noise sources, including roadway improvement project, should be mitigated so as not to exceed the levels specified in Table 9.

Table 9 – Maximum Allowable Noise Exposure Transportation Noise Sources

Land Use	Outdoor Activity Areas ¹	Interior Spaces	
	Ldn/CNEL, dB	Ldn/CNEL, dB	Leq, dB ²
Residential	60 ³	45	--
Transient Lodging	60 ³	45	--
Hospitals, Nursing Homes	60 ³	45	--
Theaters, Auditoriums	--	--	35
Churches, Meeting Halls	60 ³	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--

Notes:

1. Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.
2. As determined for a typical worst-case hour during periods of use.
3. Where it is not possible to reduce noise in the outdoor activity areas to 60 dB Ldn/CNEL or less using a practical application of the best available noise reduction measures, an exterior noise level of up to 62.5 dB Ldn/CNEL may be allowed provided that available exterior noise reduction measures have been implemented and interior noise levels are in compliance with this table.

Sutter County Code

Currently, Sutter County does not have a noise ordinance contained in its Code. The General Plan standards listed above are the only regulations pertaining to noise in the county.

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5.5 FLOOD HAZARDS

■ INTRODUCTION

This section describes the risk of flooding in Sutter County and the flood control measures in place that provide flood protection from the major waterways in the county. Information for this section was obtained from applicable reports and studies prepared by Sutter County, the Federal Emergency Management Agency, and the U.S. Army Corps of Engineers. See Section 3.1.5, Levees and Flood Control, for additional information.

■ SUMMARY OF KEY FINDINGS

- There are approximately 280 miles of levees within the county that provide flood protection to the area. Failure of any of these levees could cause major flooding in the county.
- Recent and on-going studies have found that some levees within the county do not meet, or have not been certified as meeting, the current levee design criteria. As a result, much of the county is considered vulnerable to flooding due to levee failure.
- FEMA is planning to map large portions of the county into the 100-year floodplain.
- SAFCA has a levee improvement project underway that is designed to provide 100-year flood protection to the Natomas Basin by 2010 and 200-year flood protection by 2012.
- It is anticipated that the Sutter County Feasibility Study being performed by the Army Corps of Engineers will produce a plan to provide 100-year flood protection to the major urban areas within the county. It will be several years before this study is complete; however, the non-federal sponsor's planning objective is to achieve 200-year flood protection and to obtain FEMA levee certification.¹

■ OVERVIEW

Flooding in Sutter County can occur from two sources:

1. rainfall and runoff from inside the levee systems (see Section 3.1.4, Stormwater Drainage), and
2. flooding from failure of a levee or dam.

The primary method of flood protection provided in the County is via a system of levees or earthen embankments along the Sacramento and Feather Rivers that contain high river flows within these constructed channels.² When the capacity of the river levee system is exceeded, the bypass system accommodates the additional flows to take the load off the primary levee system during critical peak flow periods.

1 Sutter County California Feasibility Study, October 2004, Feasibility Scoping Meeting (F3 Milestone) Report.

2 Sutter County, *Sutter County General Plan 2015: Background Report*, November 1, 1996.

Failure of any one of the levee systems in surrounding Sutter County could cause major flooding of areas within the County. Similarly, failure of a dam on the Feather River, Sacramento River, or their tributary rivers could lead to flows that exceed the capacity of the river/bypass/levee system and thereby cause major flooding of Sutter County. Sutter County is actively working with several other agencies to ensure that the levee system that protects the County has adequate capacity, that the structural integrity of the levees is thoroughly evaluated, and that required repairs and maintenance are performed.

■ **EXISTING CONDITIONS**

There are approximately 280 miles of levees protecting Sutter County lands from flooding (see Figure 3.1-15, Section 3.1.4, Stormwater Drainage). These levees provide the County with protection against flooding from the Sacramento River, Feather River, Sutter Bypass, Tisdale Bypass, Wadsworth Canal, Bear River, Yankee Slough, Natomas Cross Canal, East Side Canal, and the Pleasant Grove Canal.

Current flood maps published by the Federal Emergency Management Agency (FEMA) show that the levee systems, with some exceptions, protect the county from flooding during a 100-year storm event; however, most of these flood maps were published in 1988 with a few in 1998 and they do not necessarily reflect the most recent flood studies. When FEMA first produced flood maps for the county, most of the levees were assumed to provide adequate protection based on studies prepared by the U.S. Army Corps of Engineers in the 1960's. However, these levees have not been certified as meeting current levee protection criteria. This is a significant issue because FEMA, as a part of its Map Modernization Program, now requires that all levees be certified before the protection they provide will be recognized and reflected on new or updated flood maps. This is true for all levees, even those that were recognized as providing protection on previous maps. To obtain certification, a levee owner must provide FEMA with engineering data that demonstrates compliance with all of the appropriate levee criteria. These requirements include evaluations of freeboard, closure structures, embankment protection, embankment and foundation stability, settlement potential, interior drainage, operations and maintenance, and as-built conditions.

Currently there are draft FEMA floodplain maps that show much of Sutter County within the 100-year floodplain. These maps are expected to be adopted by FEMA around December 2008.

Areas that are currently mapped by FEMA within the 100-year flood zones are based on Q3 data, which is digitized FEMA Flood Insurance Rate Map information used for GIS mapping (see Figure 3.1-15, Section 3.1.4, Stormwater Drainage). As described below, a number of studies have been completed or are in progress that will affect the flood protection and FEMA flood mapping within the county.

Lower Feather River Floodplain Mapping Study

DWR commissioned a study by the U.S. Army Corps of Engineers to map the floodplain along the Lower Feather River. The DWR forwarded the study to FEMA and requested that new flood maps be issued for the study area. Draft flood maps were published by FEMA in August 2006 that showed large portions of the study area within the 100-year floodplain. The proposed floodplain covers the area roughly south of Stewart Road between the Feather River and the Sutter Bypass, the area between the Feather River, the Natomas Cross Canal and Highway 70, and also large portions of the area east of Highway 70. Revised draft maps have been released with final maps expected to be released around December 2008. Development within these floodplain areas will be significantly restricted upon adoption of the new maps.

Upper Feather River Floodplain Mapping Study

At the request of DWR, the U.S. Army Corps of Engineers is also currently performing a study to define the floodplain along the upper portions of the Feather River. This study has not been completed, but it is expected to be complete in the near future. It is anticipated that the study will show large portions of northern Sutter County within the 100-year floodplain. A FEMA representative has indicated that they will begin working on the draft floodplain maps in 2009. The schedule for the completion of draft flood maps is uncertain.

Natomas Basin Project

The Natomas Basin is located at the southern end of the county and is bounded by the Sacramento River on the west, the Natomas Cross Canal on the north, Pleasant Grove Canal on the east, and the county line on the south. This area is currently shown on FEMA flood maps as having protection from the 100-year flood. In 2006, the U.S. Army Corps of Engineers determined that the levees protecting the Natomas Basin do not meet the current levee underseepage criteria and, as a result, FEMA intends to update the floodplain maps for the basin, with draft floodplain maps anticipated early in 2008. In September 2007, FEMA denied a request by Sutter County and other affected agencies to give the Natomas Basin an A99 designation and instead suggested that they apply for an AR designation. An A99 designation would not have resulted in severe restrictions on development, while an AR designation would only allow infill development if structures are raised 3 feet above the existing ground.

The Sacramento Area Flood Control Agency (SAFCA) in conjunction with the U.S. Army Corps of Engineers and the State of California have developed a levee improvement project that is planned to restore 100-year flood protection to the basin by 2010 and increase the protection to a 200-year level by 2012.

Sutter County Feasibility Study

The U.S. Army Corps of Engineers initiated a feasibility level study to determine the Federal Government's level of interest in achieving the federal flood protection requirements. This study will help develop preliminary flood protection measures for Sutter County. Sutter County and the State Reclamation Board are sharing the local cost share for the study. The study began in 2000 and is partially complete. The results from a geotechnical analysis indicate that approximately 15 percent of the Sacramento River Flood Control Project levees have a high probability of failure. Failure is expected mostly as a result of excessive seepage or embankment instability rather than overtopping. The remainder of the study is expected to take several years to complete, and it is the non-federal sponsor's planning objective to achieve 200-year flood protection and to obtain FEMA levee certification.

California Department of Water Resources Levee Evaluation Program

The California Department of Water Resources has initiated a program to evaluate and upgrade the levees along the Sacramento and San Joaquin River Valleys and the Delta. DWR has begun evaluation of 300 miles of high priority levees protecting urban areas in the valleys. Included in the high priority categories are levees within Sutter County along the Feather River and the east side of the Sutter Bypass. The levee evaluations are being conducted over a two-to three-year period. During that time, DWR is reviewing existing levee historical data; mapping near-surface geology; conducting field explorations; performing engineering, stability and seepage analyses; and preparing preliminary design and construction estimates for repairing and upgrading the levees, where needed.

Potential for Flood Due to Dam Failure

In addition to levee failure or overtopping of the levees, there is a potential for flooding as a result of a dam failure.

There is currently only one dam located within Sutter County that is under the jurisdiction of the California Department of Water Resources' Division of Safety of Dams (DSOD). The Steidlmayer #3 Dam is located in the northwest interior of the Sutter Buttes. It is relatively small in size and any failure of this dam would result in minimal property damage. There are, however, 10 larger dams outside the county listed in Table 5.5-1, all under the jurisdiction of the DSOD, that have the potential to cause significant flooding in Sutter County if any were to fail. These dams are operated under a variety of goals and regulations including flood control, water supply, fisheries, and other beneficial uses.

Table 5.5-1. Dams Under State Jurisdiction with Potential to Flood Sutter County

Dam Name	Owner	Stream	Type	Capacity (Acre Feet)
Oroville Dam	State DWR	Feather River	Earth	3,537,577
New Bullards Bar	Yuba County Water Agency	Yuba River	Variable Radius Arch	969,600
Camp Far West Dam	South Sutter Water District	Bear River	Earth and Rock	103,000
Lake Almanor	Pacific Gas & Electric	North Fork Feather River	Hydraulic Fill	1,308,000
Thermalito Afterbay Dam	State DWR	Feather River	Earth	57,041
Thermalito Forebay Dam	State DWR	Feather River	Earth	11,768
Shasta Dam	US Bureau of Reclamation	Sacramento River	Gravity	4,552,000
Whiskeytown Dam	US Bureau of Reclamation	Clear Creek (Sacramento River)	Gravity	241,100
Folsom Dam	US Bureau of Reclamation	American River	Gravity	1,010,000
Englebright Dam	Corps of Engineers	Yuba River Radius Arch	Variable	70,000

Source: Sutter County General Plan, Background Report, November 1996.

■ REGULATORY CONTEXT

This section summarizes regulations that are relevant to levees and flooding.

Federal

The National Flood Insurance Act of 1968 made federally subsidized flood insurance available to property owners in communities that participate in the National Flood Insurance Program (NFIP). Sutter County participates in the NFIP and is subject to its regulations. The NFIP is administered by FEMA.

State

California Code of Regulations Title 23 establishes regulations related to the State Plan of Flood Control and State adopted floodways. These regulations are applicable to the levee systems included in the Sacramento River Flood Control Project.

In October 2007, the State of California enacted several relevant bills, as summarized below:

Senate Bill 5 - This bill requires:

- The State must develop 100-year and 200-year flood maps for the Central Valley by July 1, 2008.
- The State must establish a Central Valley flood protection plan by 2012.
- Within 2 years after the adoption of a flood protection plan by the Central Valley Flood Protection Board (formerly the Reclamation Board), communities within the Sacramento-San Joaquin Valley must amend their general plans to include the data and analysis contained in the plan, goals and policies for the protection of lives and property from flooding, and related feasible implementation measures. Within 1 year of the general plan adoption, zoning ordinance amendments must be enacted to maintain consistency with the general plan.
- By 2015, for areas with a population of 10,000 or greater, local governments cannot approve new developments unless the land under review has 200-year flood protection or efforts are in place to provide that level of protection. For areas with a population of less than 10,000, new developments cannot be approved unless the area has 100-year flood protection.
- Requires counties to collaborate with cities within its jurisdiction to develop flood emergency plans.

Senate Bill 17 - Renames the Reclamation Board to the Central Valley Flood Protection Board, sets new criteria for members of the Board, and establishes Senate confirmation for Board members nominated by the Governor.

Assembly Bill 70 - Beginning in 2008, local governments could be held financially liable if they unreasonably approve new developments that are susceptible to flood damage.

Assembly Bill 162 - Requires local governments to consider flood risks in their general plans (after January 1, 2009), including:

- Annually review areas covered by the general plan that are subject to flooding as identified by FEMA or the State Department of Water Resources.
- The Safety Element of the general plan must include flood hazards and set goals, policies and objectives for the protection of the community.
- For communities/counties within the Central Valley, the Safety Element must be submitted to and reviewed by the State Central Valley Flood Protection Board (Formerly the Reclamation Board).
- Allows flood risk to be considered in evaluating the available land suitable for urban development if the flood protection infrastructure required for development would be impractical due to cost or other considerations.

- There is no reimbursement from the State to the local communities for implementing the requirements of this bill.

Assembly Bill 156 - Requires the state to prepare flood maps for areas in the Central Valley that are protected by state levees and to annually notify owners of property behind those levees of their flood risks, starting in 2010.

Local

As a participant in the NFIP, Sutter County is required to adopt and enforce a floodplain management ordinance that minimizes future flood risks to new or existing construction. The County adopted a flood damage prevention ordinance in 1993 and updated it in 2000. It is anticipated that the ordinance will be updated again in 2008. Sutter County's flood damage prevention ordinance is intended to promote public health and safety and minimize losses due to flooding. The ordinance seeks to accomplish these goals by:

- Restricting land-use in flood prone areas;
- Requiring flood protection measures at the time of initial construction for uses that are vulnerable to floods;
- Controls the alteration of natural floodplains;
- Controls activities that may increase flood damage; and
- Prevents or regulates unnatural diversions of floodwaters that could increase flood hazards in other areas.