Chapter 4 ENVIRONMENTAL RESOURCES

Sutter County is committed to the protection of its environmental resources. It recognizes that the health of its natural resources, its plant and wildlife communities, agricultural resources, water, air, scenic amenities, and cultural resources are inseparably related to the health and well-being of current residents and the sustainability of future generations. This chapter describes the existing natural, visual, and historic resources in the county and highlights the key regulatory requirements necessary for their protection and conservation.

The Environmental Resources chapter is divided into the following sections:

4.1 Biological Resources

4.2 Agriculture, Soils, and Mineral Resources

4.3 Hydrology and Water Quality

4.4 Air Quality

4.5 Visual Resources

4.6 Prehistoric and Historic Resources

4.1 BIOLOGICAL RESOURCES

INTRODUCTION

This section identifies major plant and animal resources within Sutter County. Significant biological resources in the County include species listed as or proposed for listing as threatened or endangered, proposed for listing as threatened or endangered, or any species identified as a candidate, sensitive or special status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game (CDFG) or U.S. Fish and Wildlife Service (USFWS). Additionally, sensitive habitats, habitat, and/or designated critical habitats for any of the species described above, and wetlands or other waters under the jurisdiction of the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act are considered significant biological resources.

Information for this section is based on data obtained from the California Department of Fish and Game's Natural Diversity Database (CNDDB), the California Native Plant Society's (CNPS) Electronic Inventory, the USFWS Special-Status Species Database website,[1] and USFWS[2] and CDFG[3] species information websites.

1 http://www.fws.gov/pacific/sacramento/es/spp_lists/auto_list_form.cfm.

2 http://ecos.fws.gov/tess_public/TESSWebpageNonlisted?listings=0&type=C.

3 http://www.dfg.ca.gov/hcpb/species/search_species.shtml.

FINDINGS

- The proposed Yuba-Sutter Natural Community Conservation Plan/Habitat Conservation Plan (NCCP/HCP) is currently under development, and is likely to become adopted within the lifetime of this General Plan update. Future development within the HCP/NCCP planning area would be required to be consistent with the final policies described in this document.
- Development within the portion of southern Sutter County that lies within the boundaries of the Natomas Basin Habitat Conservation Plan (NBHCP) must comply with the provisions described in the HCP and pay a mitigation fee sufficient to cover the costs of acquiring, restoring and managing one-half acre of habitat for every acre of land developed. Habitat lands would be acquired and managed by the Natomas Basin Conservancy.
- Undeveloped grasslands in the County have a high probability of supporting vernal pools or other seasonal wetlands and the listed plant and wildlife species associated with them. These grasslands are most common on and adjacent to the Sutter Buttes, and in the Natomas Basin. However, undeveloped lots within otherwise developed areas are capable of supporting these resources as well.
- Wetlands subject to U.S. Army Corps of Engineers jurisdiction within the County are primarily associated with the Sacramento, Feather and Bear Rivers, the Sutter Bypass and their tributaries, and/or their floodplains. However, riparian forest, riparian scrub, freshwater marsh, vernal pools, seasonal wetlands and isolated ponds are present in the Sutter Buttes and other undeveloped portions of the County.
- Grasslands, which are most abundant in the Sutter Buttes, and agricultural fields in the County also support foraging habitat for a number of raptor species including Swainson's hawk, white-tailed kite and burrowing owl, and potentially support nesting habitat for burrowing owl.
- Potential habitat for many of the special-status plant and wildlife species occur throughout the County. Specific habitat parameters vary by species, but in general these areas are located in the Sutter Buttes, along the Sacramento, Feather, and Bear Rivers and their tributaries, the Butte Sink, and other undeveloped habitats in the County. Although special-status species habitat will be located primarily outside of current urban limits, undeveloped lots within otherwise developed areas are capable of supporting these resources as well.
- A wide variety of non-listed birds use vegetation communities in the County, particularly riparian and oak woodlands, for nesting and shelter. Though these species are not listed as threatened or endangered, they are afforded protection through the Migratory Bird Treaty Act (MBTA) and sections of the Fish and Game Code.
- Riparian areas and older urban areas may contain roosting habitat for special-status bats known to occur in the region. This habitat will primarily be located in the Sutter Buttes, along the Sacramento, Feather and Bear Rivers, and in older, possibly abandoned buildings, and in cavities in large old trees in urban areas such as Live Oak and Yuba City.
- The waterways including the Sacramento, Feather and Bear Rivers, the Sutter Bypass, and their tributaries are significant to regional wildlife movement

because they offer linear movement corridors in an area that is dominated by agricultural lands, urban development, and highways that are generally considered to be of low value for native wildlife species.

EXISTING CONDITIONS

Habitats

The County encompasses approximately 388,358 acres. Historically, the natural habitats within the County included perennial grasslands, riparian woodlands, oak woodlands, and a variety of wetlands including vernal pools, seasonal wetlands, freshwater marshes, ponds, streams and rivers. Over the last 150 years, development for agriculture, irrigation, flood control and urbanization has resulted in the alteration or loss of much of the natural habitat within the County. One exception to this is the Sutter Buttes which contain the largest expanses of relatively undisturbed habitat in the County. The Sutter Buttes is a volcanic formation in northern central Sutter County that is over 2,000 feet in elevation, and covers approximately 40,000 acres. Although almost entirely under private ownership and used for livestock grazing, the Sutter Buttes support a high diversity of vegetation communities including oak woodland, chaparral, non-native grassland, with vernal pools and other seasonal wetlands. Plant and wildlife species found here are also diverse, and include some endemic, and/or special-status species such as the Marysville kangaroo rat, the San Francisco campion, and rose mallow.

County wide, as with most of the rest of the state, non-native annual grasses have replaced the native perennial grasslands. Many natural streams in the County have been channelized, much of the riparian and oak woodlands have been cleared, and most of the marshes have been drained and converted to agricultural or urban uses. However, due to the scarcity of urban development relative to many nearby counties, valuable plant and wildlife habitat still exists. These habitats are located primarily along the Sacramento River, Feather River, Bear River, and Sutter Bypass, but also in a number of undeveloped parcels distributed throughout the County. These habitats include annual grasslands, riparian woodlands, oak woodlands, oak savanna, riverine (rivers and streams), ponds, freshwater marshes, seasonal wetlands and vernal pools (Figure 4.1-1). Each habitat, their general location within the County, and special status plant and wildlife species found within each habitat type are discussed below.

Agricultural Land

Agricultural land is the most abundant habitat type in the County. Several agricultural types are present, but rice fields are by far the single most common, covering approximately 92,984 acres of the County. Row and field crops (approximately 124,000 acres), and orchards (approximately 50,603 acres consisting primarily of walnut, almond and peach) are the next most common types, but alfalfa, vineyards and irrigated pasture are also found in relatively small areas distributed throughout the County. Due to the level of disturbance related to crop management, agricultural lands are of limited use to wildlife, and are typically devoid of native plant species. However, certain agricultural types do provide foraging habitat for native wildlife species, including some special-status species. Rice fields and their associated drainage canals are well known to support the federally listed as threatened giant garter snake (*Thamnophis gigas*), and provide foraging habitat for herons, egrets, cranes and other waterfowl. Alfalfa, low growing row crops, and irrigated pastures provide foraging habitat for the Swainson's hawk (*Buteo swainsoni*), State listed as threatened, white-tailed kite (*Elanus caeruleus*), northern harrier (*Circus cyaneus*), and other raptors, as well as the tricolored blackbird (*Agelaius tricolor*). Irrigated pastures and the edges of other low growing crop types may also provide nesting and foraging habitat for burrowing owl (*Athene cunicularia*).

Annual Grassland

Annual grassland habitat occurs in undeveloped portions of the County, primarily as a distinct vegetation community, but also as an understory to oak and riparian woodland habitats. Annual grassland in the County has largely been replaced by agriculture. Approximately 11,000 acres remain in the County that occurs in small patches adjacent to water courses, and the vicinity of the Sutter Buttes. Where it occurs, this habitat occupies (and has largely replaced through competition) what was once native perennial bunch grass habitat. Annual grassland species commonly observed in the County include ripgut brome (*Bromus diandrus*), soft chess (*Bromus mollis*), wild oat (*Avena fatua*), Italian rye (*Lolium multiflorum*), Mediterranean barley (*Hordeum marinum* spp. *gussoneanum*), foxtail barley (*Hordeum murinum* spp. *leporinum*), hairgrass (*Aira caryophylla)* and medusahead grass (*Taeniatherum caput-medusae*). Common forbs found in these annual grasslands include cranesbill (*Geranium dissectum*), red stem filaree (*Erodium botrys*), clover (*Trifolium* spp.), bur clover (*Medicago polymorpha*), fiddle-neck (*Amsinckia menziesii*), curly dock (*Rumex crispus*), wild radish (*Raphanus sativa*), wild mustard (*Brassica* spp.), star thistle (*Centaurea solstitialis*), milk thistle (*Silybum marianum*), bull thistle (*Circium vulgare*), blue dicks (*Dichelostemma capitatum*), spikeweed (*Hemizonia fitchii*), and vinegar weed (*Trichostema lanceolatum*).

Annual grasslands are important habitats to a variety of wildlife, including small rodents such as deer mice (*Peromyscus maniculatus*) and California voles (*Microtus californicus*) that feed on the abundance of grass seeds that this habitat provides. Other small mammals that use this habitat include species such as Botta's pocket gopher (*Thomomys bottae*), cottontail (*Sylvilagus audubonii*), black-tail hare (*Lepus californicus*) and California ground squirrel (*Spermophilus beecheyi*). These small mammals in turn provide food for a variety of predators including mammals such as the coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), bobcat (*Lynx rufus*) and birds such as the red-tailed hawk (*Buteo jamaicensis*), red-shouldered hawk (*Buteo lineatus*), barn owl (*Tyto alba*), American crow (*Corvus brachyrhyncos*) and loggerhead shrike (*Lanius ludovicianus*). Other bird species that may occur in this habitat include the prairie falcon (*Falco mexicanus*), meadowlark (*Sturnella neglecta*), scrub jay (*Aphelocoma coerulescens*) and western bluebird (*Sialia mexicana*). Frequently encountered reptile species in annual grasslands include the western yellow-bellied racer (*Coluber constrictor mormon*), northern Pacific rattlesnake (*Crotalus oreganus oreganus*), Pacific gopher snake (*Pituophis catenifer catenifer*), California kingsnake (*Lampropeltis getulua californiae*), western terrestrial garter snake (*Thamnophis elegans*), western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinatus*) and Gilbert's skink (*Eumeces gilberti*). Annual grasslands also frequently support seasonal wetlands and vernal pools that provide important breeding sites for the Pacific tree frog (*Pseudacris regilla*) and western toad (*Bufo boreas*).

Special-status species that use annual grasslands for foraging and/or nesting include the "state listed as threatened" Swainson's hawk and "state species of concern" burrowing owl and white-tailed kite. Where vernal pools or seasonal wetlands are a component, grasslands provide habitat for special-status species such as the federally listed as threatened vernal pool fairy shrimp (*Branchinecta lynchi*), the federally listed as endangered vernal pool tadpole shrimp (*Lepidurus packardi*) and a variety of special-status plants.

Riparian

Riparian woodland and scrub habitats are generally associated with rivers, low gradient streams, floodplains and occasionally ponds and canals. The composition of species in riparian woodland communities is highly variable and dependent on geographic location, elevation, substrate, and amount of flow in the watercourse. Approximately 9,500 acres of this habitat occurs in the County (consisting of riparian forest and riparian scrub), and can be found along

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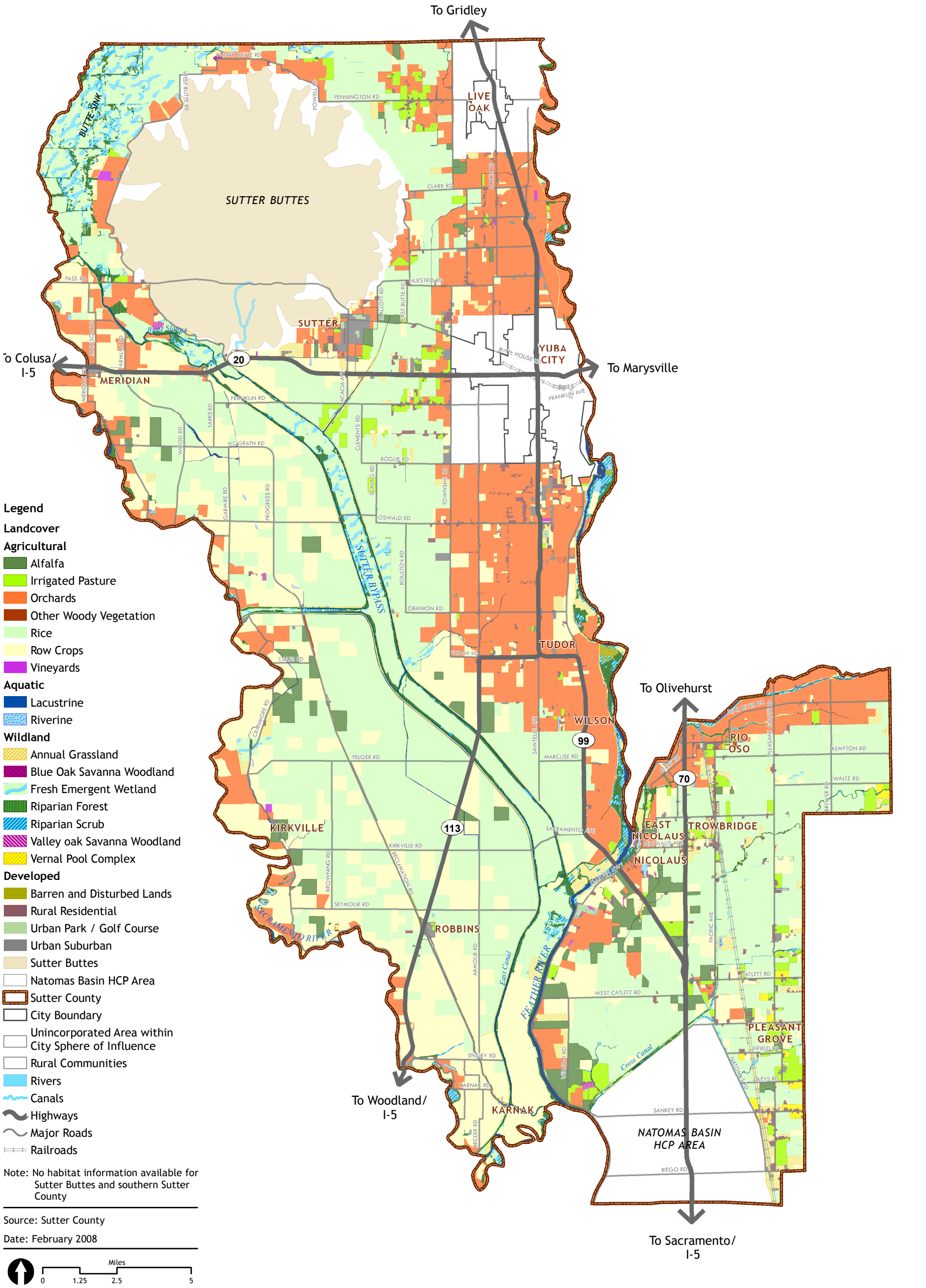

Legend

Landcover

Agricultural
- Alfalfa
- Irrigated Pasture
- Orchards
- Other Woody Vegetation
- Rice
- Row Crops
- Vineyards

Aquatic
- Lacustrine
- Riverine

Wildland
- Annual Grassland
- Blue Oak Savanna Woodland
- Fresh Emergent Wetland
- Riparian Forest
- Riparian Scrub
- Valley oak Savanna Woodland
- Vernal Pool Complex

Developed
- Barren and Disturbed Lands
- Rural Residential
- Urban Park / Golf Course
- Urban Suburban
- Sutter Buttes
- Natomas Basin HCP Area
- Sutter County
- City Boundary
- Unincorporated Area within City Sphere of Influence
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Railroads

Note: No habitat information available for Sutter Buttes and southern Sutter County

Source: Sutter County

Date: February 2008

Miles
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HABITATS
Figure 4.1-1

many of the perennial and ephemeral drainages and other waterways. The largest expanses of riparian vegetation occur along the Sacramento, Feather and Bear Rivers, the Sutter Bypass, with smaller patches along the numerous tributaries to these waters. The vegetation of the riparian woodland habitat is variable and often structurally diverse, and species characteristics of the County include valley oak (*Quercus lobata*), Fremont cottonwood (*Populus fremontii*), California black walnut (*Juglans californica*), white alder (*Alnus rhombifolia*), willow (*Salix* spp.) and Oregon ash (*Fraxinus latifolia*). Typical understory includes box elder (*Acer negundo*), button willow (*Cephalanthus occidentalis*), California buckeye (*Aesculus californicus*), coyote brush (*Baccharis pilularis*), California grape (*Vitis californicus*), Himalayan blackberry (*Rubus discolor*), and poison oak (*Toxicodendron diversilobum*). The herbaceous species occurring in the understory includes seashore vervain (*Verbena litoralis*), bedstraw (*Galium* spp.), sedges (*Carex* spp.), umbrella sedges (*Cyperus* spp.), rushes (*Juncus* spp.), spike rush (*Eleocharis macrostachya*), and a variety of annual grasses.

Riparian habitats provide abundant food, cover, and breeding sites for wildlife in close proximity to water. These factors and the structural diversity of riparian woodland are largely responsible for the high productivity of this habitat type. Characteristic bird species in this habitat include the California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), Nuttall's woodpecker (*Picoides nuttallii*), black phoebe (*Sayornis nigricans*), western wood-pewee (*Contopus sordidulus*), California towhee (*Pipilo crissalis*), and song sparrow (*Melospiza melodia*). A number of these species nest or roost in riparian woodlands and feed in adjacent habitat types, such as annual grassland and agricultural fields. Riparian woodlands also provide important feeding, resting, and nesting habitat for neotropical migrant songbirds such as warblers, vireos, grosbeaks, and flycatchers. Mammals found within riparian habitat may include the raccoon (*Procyon lotor*), deer mouse, broad-footed mole (*Scapanus latimanus*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginianus*), and gray fox. Amphibians and reptiles likely to occur in this community include the western toad (*Bufo boreas*), Pacific tree frog, common king snake, valley garter snake (*Thamnophis sirtalis fitchii*), and Gilbert's skink. Special-status species that forage and/or nest in riparian habitats include the Swainson's hawk, Cooper's hawk (*Accipiter cooperii*), yellow warbler (*Dendroica petechia*), white-tailed kite, and yellow-breasted chat (*Icteria virens*).

Oak Woodlands

Oak woodlands, including Blue Oak Savanna Woodland and Valley Oak Savanna Woodland, are very limited in the County, covering only an approximate 270 acres. The largest concentration of oak woodland occurs around the south western base of the Sutter Buttes, and along the Sacramento, Feather and Bear Rivers, adjacent to riparian vegetation. Plant species composition in this habitat can be variable, but is typically dominated by an overstory of blue oaks (*Quercus douglasi*), valley oaks, and/or interior live oaks (*Quercus wislizenii*), with California buckeye, and California black walnut also commonly found. Understory plant species include poison oak, toyon (*Heteromeles arbutifolia*), coyote brush, Himalayan blackberries, and a variety of annual grasses such as wild oats, wild rye and foxtail barley.

Oak woodlands provide a diversity of wildlife habitat. Acorns are an essential food resource for many wildlife species including the western gray squirrel (*Sciurus griseus*), California ground squirrel, black-tailed deer (*Odocoileus hemionus*), deer mouse, dusky-footed woodrat (*Neotoma fuscipes),* acorn woodpecker (*Melanerpes formicivorus*), band-tailed pigeon (*Columba fasciata*), northern flicker (*Colaptes auratus*), and western scrub jay. The abundant insect life found in the bark and foliage of oaks provide food for bird species such as the white-breasted nuthatch (*Sitta carolinensis*), bushtit (*Psaltriparus minimus*), plain titmouse (*Parus inornatus*), and ash-throated flycatcher (*Myiarchus cinerascens*). Avian predators that nest and forage in oak woodland

habitat include the great horned owl (*Bubo virginianus*), western screech-owl (*Otus kennicotti*), red-tailed hawk, and red-shouldered hawk (*Buteo lineatus*).

Common mammals in this habitat within the County include the raccoon, striped skunk, cottontail, and gray fox. A variety of woodpecker species nest in the cavities of oak trees, as well as house wrens (*Troglodytes aedon*), western bluebirds (*Sialia mexicana*), and American kestrels (*Falco sparverius*) that use abandoned woodpecker cavities. Typical amphibian and reptile species found in this habitat include the California newt (*Taricha torosa*), ensatina (*Ensatina eschscholtzi*), California slender salamander (*Batrachoceps attenuatus*), sharp-tailed snake (*Contia tenuis*), ringneck snake (*Diadophis punctatus*), Pacific tree frog, western terrestrial garter snake (*Thamnophis elegans*), Gilbert's skink, western fence lizard, and southern alligator lizard. Special-status species using oak woodlands for foraging and/or nesting include Cooper's hawk (*Accipiter cooperii*), white-tailed kite, and loggerhead shrike.

Wetlands

Rivers, Creeks, and Canals

The County is bounded on the west by the Sacramento River, by the Feather River on the east, and is bisected on its north/south axis by the Sutter Bypass. These rivers, their tributaries (such as the Bear River and Butte Slough) and other waterways cover approximately 5,000 acres in the County, and are important to local wildlife, not only for the habitat they provide, but for the connectivity they create between otherwise isolated areas of wildlife habitat, acting as corridors through which wildlife species can migrate. Other major waterways include the Butte Slough, and the Cross Canal, but numerous tributaries and canals are present in the County as well. Special-status species that use rivers, creeks and canals in the County include Swainson's hawk, giant garter snake (*Thamnophis gigas*), herons and egrets, steelhead (*Oncorhynchus mykiss*), Chinook salmon (*Oncorhynchus tshawytscha*), Sacramento perch (*Archoplites interruptus*), and green sturgeon (*Acipenser medirostris*).

Freshwater Marsh

Freshwater marsh (or freshwater emergent wetland) habitat is typically associated with the margins of rivers, streams or ponds, but can form anywhere shallow, slow moving perennial water is present. Approximately 14,000 acres of this habitat occurs in the County, with the largest concentration occurring in the Butte Sink northwest of the Sutter Buttes. Additional extensive freshwater marsh areas occur along the Sutter Bypass, with many smaller areas along the Sacramento, Feather and Bear Rivers, and along the many canals associated with rice farming. Plant species common to freshwater marsh habitats in the County include cattails (*Typha latifolia*), tule (*Scirpus californicus*), sedges and umbrella sedges, rushes, water primrose (*Ludwigia peploides*), water smartweed (*Polygonum amphibium*), parrot feather (*Myriophyllum aquaticum*), pennyroyal (*Mentha pulegium*), verbena (*Verbena litoralis*), common yellow monkey flower (*Mimulus guttatus*) and smooth cocklebur (*Xanthium strumarium*). Freshwater marshes provide important breeding and foraging habitat for a wide variety of local wildlife such as herons and egrets, muskrats (*Ondatra zibethicus*), raccoon, red-winged blackbirds (*Agelaius phoenicus*) and a wide variety of waterfowl. Special-status species that use freshwater marsh habitats in the County include giant garter snake, northern harrier (*Circus cyaneus*), tricolor blackbird (*Agelaius tricolor*), Sanford's arrowhead (*Sagittaria sanfordii*) and rose mallow (*Hibiscus lasiocarpus*).

Vernal Pools and Seasonal Wetlands

Grasslands throughout much of the County had historically supported vernal pools and seasonal wetlands. However, much of this habitat has been lost with conversion of grasslands to agriculture and urban development. Approximately 680 acres of this habitat remain in the County. The greatest remaining concentration of vernal pool and seasonal wetland habitat is in the vicinity of the Sutter Buttes, and in upland areas near the Sacramento and Feather Rivers.

Vernal pools are ephemeral wetlands that form in shallow depressions underlain by a substrate near the surface that restricts the percolation of water. These depressions fill with rainwater during the fall and winter and can remain inundated until spring or early summer, sometimes filling and emptying numerous times during the rainy season. A flowering community, dominated by characteristic wetland plants, differentiates vernal pools from other seasonal wetlands. Vernal pool plant species likely to occur within the County include the winged water-starwort (*Callitriche marginata*), annual hairgrass (*Deschampsia danthonioides*), horned downingia (*Downingia ornatissima*), coyote thistle (*Eryngium vaseyi*), bractless hedge-hyssop (*Gratiola ebracteata*), slender popcorn flower (*Plagiobothrys stipitatus*), spine-fruit butter-cup (*Ranunculus bonariensis*), and purslane speedwell (*Veronica peregrina*).

Seasonal wetlands are distinguished from vernal pools in that they may not be inundated for as long as vernal pools and generally contain a greater abundance of facultative plant species usually found in wetlands, (but that can frequently be found in uplands) and grassy species, and few, if any vernal pool endemic species (i.e., species found only in vernal pools). The distinction between the two types is often unclear; the final determination of the type of wetland can often be dependent upon the verification of the U.S. Army Corps of Engineers (Corps). The extent to which special-status plant and animal species can use these habitats also varies, but, conservatively, any species present in vernal pools could also be present in seasonal wetlands. Both vernal pools and seasonal wetlands provide habitat for a number of plant and animal species listed as threatened or endangered, or that have other special status that requires their protection. The most well known are the vernal pool crustaceans, such as vernal pool fairy shrimp (*Branchinecta lynchi*) and vernal pool tadpole shrimp (*Lepidurus packardi*), along with a variety of plant species characteristically occurring in vernal pools.

Special-Status Species

The following special-status species are known to occur within the natural habitats most likely to be present within the County boundaries, based upon queries of the CNDDB and the USFWS special-status species database (Figure 4.1-2). These and other species potentially occurring in the County can be found in Table 4.1-1.

Sanford's arrowhead

Sanford's arrowhead (*Sagittaria sanfordii*) is a tuberous rooted, perennial herb that occurs in marshes, swamps and shallow margins of other waters throughout the Central Valley and North Coast Range,[4,5] Sanford's arrowhead is a CNPS List 1B species, but has no State or federal status. This species is known to occur in the County north of the Sutter Buttes, but could also occur elsewhere in areas of suitable habitat.

4 CNPS Electronic Inventory.

5 Hickman, J.E. (ed). *The Jepson Manual.* University of California Press, Berkeley, 1400 pps. p. 848, 1993.

Rose Mallow

The rose mallow is a perennial herb that grows from three to six feet in height (sometimes prostrate forms can be found) and has white or rose-colored flowers. This CNPS List 2 species has no federal or state protected status. The rose-mallow is associated with wet banks and marshes at elevations less than 40 meters above mean sea level throughout the central and southern portions of the Central Valley and Delta regions. This species in known to occur in the Butte Sink, but could also occur elsewhere in the County in areas of suitable habitat.

Vernal Pool Plants

Vernal pool plant species known from the County include the legenere (*Legenere limosa*), dwarf downingia (*Downingia pusilla*), Boggs Lake hedge hyssop (*Gratiola heterosepala*) among others. These plants typically occur in vernal pools, vernal swales, and occasionally other seasonal wetlands and have become restricted in their distribution as a result of habitat conversion and associated disturbance (e.g. degradation of wetland hydrology through plowing, grading, or grazing). Habitat for vernal pool plant species occurs primarily in the southeast portion of the County.

Northern California Black Walnut

Extensive stands of northern California black walnut trees once occurred in riparian woodlands and forests through much of the lower-elevation portions of the State, but have since been cleared for agriculture and development. Native stands are now only known to occur in Napa and Contra Costa Counties. However, because the species was widely used as rootstock for the English walnut (with which it readily hybridizes), the northern California black walnut has become widely re-established throughout riparian zones in the County.

Valley Elderberry Longhorn Beetle

The valley elderberry longhorn beetle (VELB) occurs throughout the year in riparian woodlands and other Central Valley habitats containing elderberry shrubs (*Sambucus* spp.), upon which the VELB are completely dependent for all stages of their life cycle. The females lay their eggs in crevices in the bark. After hatching, the larvae burrow into the stems of the tree where they feed on the interior wood for the next one to two years until they form pupae, from which the adults emerge. The adults bore their way out of the stems, leaving a distinctive oval-shaped hole. As the larvae and adults are rarely seen, these borer holes are often the only evidence of this species' presence. After emergence from the stems, the adults remain in association with the elderberries, where they will feed on the elderberry foliage and eventually reproduce. All elderberry shrubs within the known range of the VELB that have one or more stems with diameters of one inch or greater at ground level, are considered potential habitat for this species. This potential habitat (i.e., elderberry shrubs) occurs primarily along the Sacramento and Feather Rivers, though elderberry shrubs bearing VELB exit holes can be found in other undeveloped portions of the County.

Vernal pool crustaceans

Vernal pool crustaceans occurring within the County include vernal pool fairy shrimp *(Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*) and California linderiella (*Linderiella occidentalis*). These small crustaceans are adapted to survive the annual flooding and drying of vernal pools and other seasonal wetlands in valley or foothill grasslands by hatching from encysted eggs embedded in the soil in the bottom of the pools when the pools fill with rainwater. After reaching maturity, they breed, lay their eggs on the silty bottom of the pool, and die as the vernal pool dries up. The dormant eggs are protected by thick outer coverings

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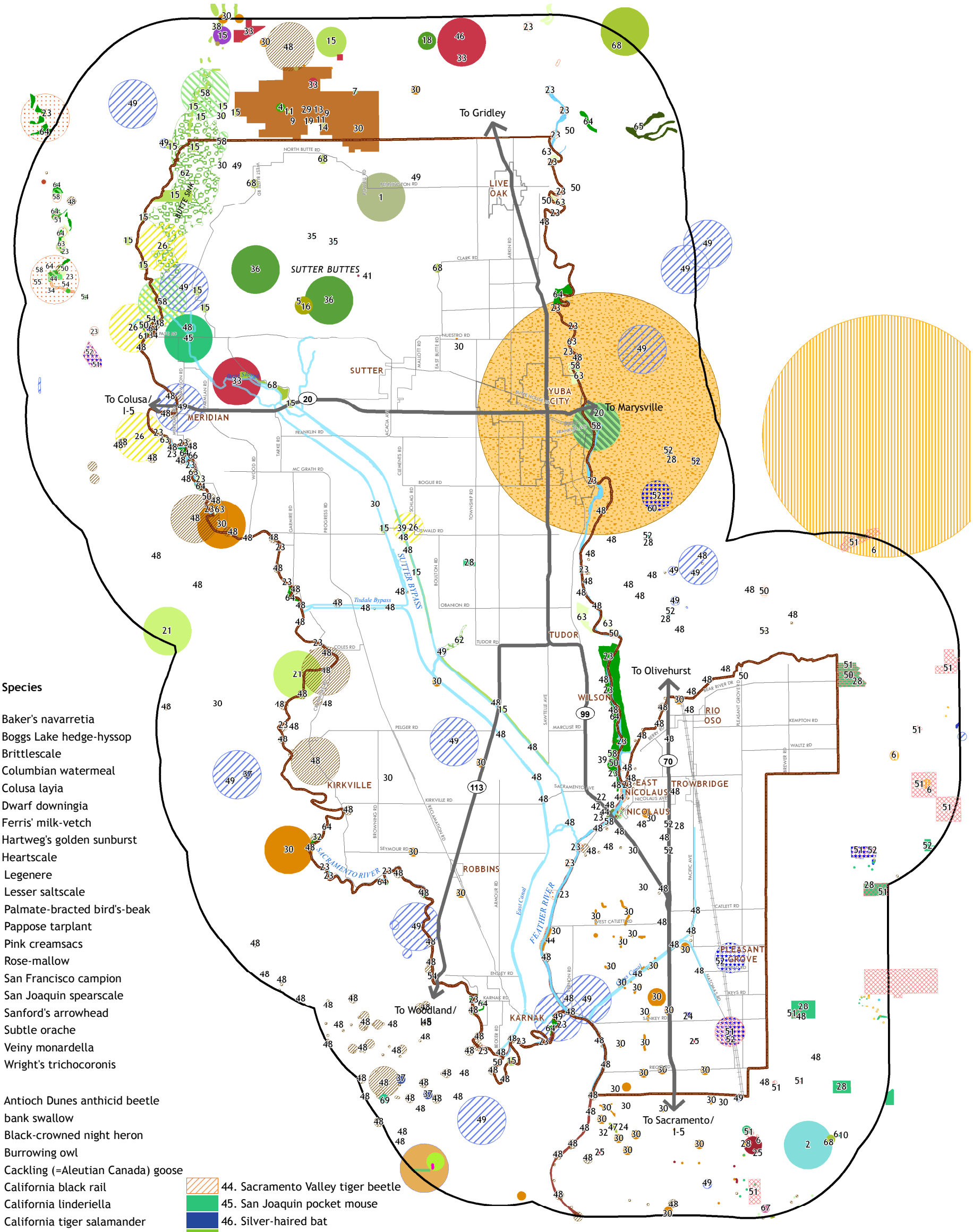

Sensitive Species

Plant

1. Baker's navarretia
2. Boggs Lake hedge-hyssop
3. Brittlescale
4. Columbian watermeal
5. Colusa layia
6. Dwarf downingia
7. Ferris' milk-vetch
8. Hartweg's golden sunburst
9. Heartscale
10. Legenere
11. Lesser saltscale
12. Palmate-bracted bird's-beak
13. Pappose tarplant
14. Pink creamsacs
15. Rose-mallow
16. San Francisco campion
17. San Joaquin spearscale
18. Sanford's arrowhead
19. Subtle orache
20. Veiny monardella
21. Wright's trichocoronis

Animal

22. Antioch Dunes anthicid beetle
23. bank swallow
24. Black-crowned night heron
25. Burrowing owl
26. Cackling (=Aleutian Canada) goose
27. California black rail
28. California linderiella
29. California tiger salamander
30. Giant garter snake
31. Great blue heron
32. Great egret
33. Greater sandhill crane
34. Hoary bat
35. Lawrence's goldfinch
36. Marysville California kangaroo rat
37. Mountain plover
38. Northern harrier
39. Northwestern pond turtle
40. Osprey
41. Pallid bat
42. Sacramento anthicid beetle
43. Sacramento splittail
44. Sacramento Valley tiger beetle
45. San Joaquin pocket mouse
46. Silver-haired bat
47. Snowy egret
48. Swainson's hawk
49. Tricolored blackbird
50. Valley elderberry longhorn beetle
51. Vernal pool fairy shrimp
52. Vernal pool tadpole shrimp
53. Western pond turtle
54. Western red bat
55. Western small-footed myotis
56. Western snowy plover
57. Western spadefoot
58. Western yellow-billed cuckoo
59. White-faced ibis
60. White-tailed kite

Terrestrial

61. Yuma myotis
62. Coastal and Valley Freshwater Marsh
63. Great Valley Cottonwood Riparian Forest
64. Great Valley Mixed Riparian Forest
65. Great Valley Valley Oak Riparian Forest
66. Great Valley Willow Scrub
67. Northern Claypan Vernal Pool
68. Northern Hardpan Vernal Pool
69. Valley Oak Woodland

Source: CA Dept. of Fish and Game, CNDDB, January 2008

Date: February 2008

Miles
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SPECIAL-STATUS SPECIES
Figure 4.1-2

that resist cold, heat, and desiccation. Vernal pool crustaceans are known to occur in the eastern and southeastern portions of the County, but these species have been observed in a number of places within urban areas as well, such as along railroad right-of-ways.

Sacramento perch

The Sacramento perch (*Archoplites interruptus*) is the only freshwater perch native to California. It once occurred throughout the Central Valley and other lower elevation portions of the State, but due to severe alterations to the State's waterways for flood control and agriculture and the introduction of non-native perch (e.g., bluegill [*Lepomis macrochirus*] and other sunfish), crappie (*Pomoxis* spp.) and bass (*Micropterus* spp.), the species has been eliminated from the majority of its former range. True native populations (as opposed to re-introduced populations) now only exist at Clear Lake in Lake County and portions of Alameda Creek in Alameda County. Despite the serious decline in native Sacramento Perch populations, it is not endangered, as the species is doing quite well in several locations outside its natural range. Due to its ability to withstand high alkalinity, it has been introduced into several alkaline lakes in Nevada, Colorado, Nebraska, and North and South Dakota, and is flourishing where most other centrarchid species cannot survive and reproduce. It has also become established in several California reservoirs where it has been introduced, or where young fish were transported through the California aqueduct system into holding reservoirs, such as San Luis Reservoir and O'Neill Forebay. The California Department of Fish & Game has also promoted the Sacramento Perch for introduction into Central Valley farm ponds. This species is present in the Sacramento and Feather Rivers and their tributaries.

Western Pond Turtle

The western pond turtle (*Actinemys marmorata*) is an aquatic turtle that ranges throughout much of the state - from the Sierra Nevada foothills to the coast - and in coastal drainages from the Oregon border to Baja California.[6] It occurs in suitable habitat throughout the County in ponds, slow moving streams and rivers, irrigation ditches, and reservoirs that have abundant emergent and/or riparian vegetation. The turtle requires adjacent (i.e. within 200-400 meters of water) uplands for nesting and egg-laying - typically in soils with high clay or silt component on unshaded, south-facing slopes. The western pond turtle is a federal and California Species of Concern and is fairly common along the Sacramento and Feather Rivers, the Sutter Bypass, and in many tributaries and canals, but could occur in any of the creeks, streams or ponds in the County.

Giant Garter Snake

The giant garter snake (*Thamnophis gigas*) is both a federally- and state-threatened species. It is a highly aquatic snake that historically ranged from Butte County, south through the Central Valley to Buena Vista and Tulare Lakes in Tulare and Kern counties. Having disappeared from much of its former range due to habitat loss (particularly in the southern part of its range), the current stronghold for this species is in the Sacramento-American River Basin of Sutter and Sacramento counties, which provides some of the species' most important remaining habitat.[7,8] Numerous

6 Stebbins, 1985. Stebbins, Robert C. A Field Guide to Western Reptiles and Amphibians, Second Edition, Revised. Houghton Mifflin Company, 1985.

7 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.

8 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.

occurrence records for giant garter snake occur within the County, with most records in the Butte Sink, and south of the Bear River and east of the Feather River, though they may be present in suitable habitat throughout the County. Giant garter snakes historically occurred in cattail and tule marshes, and in open riparian woodlands on the valley floor.[9,10] Although much of their historic habitat has been lost due to channelization of waterways, flood control, and the conversion of marshlands to agriculture, this species has adapted to occupy certain man-made waterways.[11,12] The irrigation systems associated with rice farming in Sutter, Sacramento, Yolo, and Colusa counties are of particular value. Potential habitat for giant garter snakes will typically include all, or at least most of the following features: relatively deep, perennial water (or at least adequate water during the snake's active season [early-spring through mid-fall]); presence of abundant emergent vegetation such as cattails and bulrushes for escape cover and foraging habitat during the active season; grassy banks and openings in waterside vegetation for basking; and higher elevation uplands adjacent to their aquatic habitat for cover and refuge from flood waters during the snake's dormant season in the winter.[13,14] Aquatic habitat must also support prey species such as fish and amphibians.

Swainson's hawk

The Swainson's hawk (*Buteo swainsoni*) occurs in open country, foraging in grasslands and agricultural fields, especially after disking or harvest. They use tall riparian trees (typically oaks or cottonwoods) for nesting, but will occasionally nest in large eucalyptus or other large ornamental trees if there is suitable foraging habitat nearby. The species has lost much of its former nesting habitat as a result of the significant reduction in riparian woodland and forest habitat throughout the County and state over the last 100 years, and is increasingly losing foraging habitat to urban development. Swainson's hawks can forage as far as 20 miles from the nest, but nests are generally more successful if sufficient foraging habitat is present within an approximate 10-mile radius. When forced to travel greater distances from the nest, the adults must expend much more time and energy gathering food, leaving the eggs and young in the nests much more vulnerable to predation and the elements. Numerous nesting records for Swainson's hawks within the County occur along the Sacramento, Feather and Bear Rivers, and along the Sutter Bypass.

Burrowing Owl

Burrowing owls (*Athene cunicularia*) are yearlong residents in generally flat, open, dry grasslands, pastures, deserts, and shrub lands, and in grass, forbs and open-shrub stages of pinyon-juniper and ponderosa pine habitats. They use communal ground squirrel and other small mammal burrows for nesting and cover, as well as artificial structures such as roadside embankments, levees, and berms. They prefer open, dry, nearly-level grassland or prairie habitat and can exhibit high site fidelity, often reusing burrows year after year. Occupancy of suitable burrowing owl habitat can be verified at a site by observation of a pair of burrowing owls

9 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.
10 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.
11 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.
12 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.
13 U.S. Fish and Wildlife Service (USFWS), 2002, URL; http://sacramento.fws.gov/es/animal_spp_acct/giant_garter_snake.htm.
14 California Department of Fish and Game (CDFG), 2002, URL; http://www.dfg.ca.gov/hcpb/species/jsp/ssc_result.jsp?specy=reptiles&query=Thamnophis%20gigas.

during their breeding season (March to August) or, alternatively, by the presence of molted feathers, cast pellets, prey remains (rodents, small reptiles, and large insects), eggshell fragments, or whitewash (guano), at or near a burrow. Burrowing owls are fairly tolerant of human activity near their nest burrows as long as suitable foraging habitat exists nearby. Known burrowing owl colonies are present in the southeast portion of the County, but could occur in suitable habitat throughout the County.

White-tailed Kite

The white-tailed Kite (*Elanus leucurus*) is a "fully protected" raptor under the California Fish and Game code. White-tailed kites feed on rodents, small reptiles, and large insects in fresh emergent wetlands, annual grasslands, pastures, and ruderal vegetation. They breed between February and October. Although like other raptors kites typically build solitary nests, they often roost and occasionally nest communally. Therefore, disturbance of a relatively small roost or nesting area could affect a large number of birds. The white-tailed kite can commonly be observed foraging in open grasslands throughout the County, but breeding sites are primarily located near riparian corridors along the Sacramento, Feather and Bear Rivers.

Herons and Egrets

The great blue heron (*Ardea herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*) and black-crowned night heron (*Nycticorax nycticorax*) have similar life histories, and are all fairly common in the County. These species are typically associated with waterways, marshes, ponds and other wetlands where they forage for prey, but also use grasslands and agricultural fields for this purpose. These species are all colonial nesters in rookeries they create in the tops of groves of large trees in riparian areas or other woodlands adjacent to suitable foraging habitat. Due to this strategy, nesting sites for these species are vulnerable, as the loss of even one rookery can affect a large number of birds. Heron and egret rookeries are rare in the County, but do occur within extensive riparian areas along the Sacramento, Feather and Bear Rivers.

Bank Swallow

The bank swallow (*Riparia riparia*) is the smallest North American swallow, with a body length of about 4.75 inches. It nests in colonies and creates nests by burrowing into vertical bluffs and riverbanks with fine-textured soils. Bank swallows breed in California from April to August and spend the winter months in South America. Most of California's remaining populations nest along the upper Sacramento River, where it still meanders in a somewhat natural manner. In this alluvial plain, the river system provides suitable soil types and erosion needed for prime nesting habitat. It is estimated that the range of bank swallows in California has been reduced by 50 percent since 1900. Seventy-five percent of the State's population is concentrated on the banks of Central Valley streams, including several colonies on the Sacramento River.

Cooper's Hawk

The Cooper's hawk (*Accipiter cooperii*) is a breeding resident throughout most of the wooded portion of the state. This species ranges from sea level to above 2700 m (0-9000 ft) and nests in dense stands of live oak, riparian deciduous, or other forest habitats, typically near water. Seldom found in areas without dense tree stands, or patchy woodland habitat, this species is known to occur in the more extensive riparian forests along the Sacramento, Feather and Bear Rivers.

Purple Martin

The purple martin (*Progne subis*) can be found throughout nearly the entire United States east of the Rocky Mountains. Although declining in many western states, it is also found in isolated areas of Canada, Oregon, Washington, California, Utah, Colorado, Arizona, New Mexico and Mexico. It is an early spring migrant from its wintering grounds in South America. Generally, purple martins inhabit open areas with an open water source nearby. Martins adapt well in and around people, but are out-competed by starlings and sparrows in urban areas. Purple martins are colonial cavity nesters in abandoned woodpecker holes, human-made nest boxes, or cavities in other structures such as bridges and overpasses. Once established at a nest location, martins usually come back to the same site every year. Within the County, the purple martin can be expected to occur in riparian areas along the Sacramento, Feather and Bear Rivers.

Tricolored Blackbird

The tricolor blackbird *(Agelaius tricolor*) is a California Species of Special Concern and federal Species of Concern that occurs in suitable habitat throughout much of the Central Valley of California and along the Coast - from approximately Mendocino County to northern Baja California, Mexico. This colonial species is a year-round resident in marshes, wet meadows, rice fields, and rangelands. Tricolor blackbirds require large tracts of tules, cattails, or blackberries for their nesting colonies. Much of the historic habitat for this species has been eliminated due to conversion of marshes to agriculture and urban development. This species is known from a few occurrences along the Sacramento River and in agricultural fields, but could occur in suitable habitat throughout the County

Special-status bats

Special-status bat species with the potential to occur within the County include: the pallid bat (*Antrozous pallida*), pale big eared bat (*Corynorhinus townsendii townsendii*), silver-haired bat (*Lasionycteris noctivagans*), western red bat (*Lasiurus blossevillii*), hoary bat (*Lasiurus cinereus*), small-footed myotis (*Myotis ciliolabrum*), long-legged myotis (*Myotis volans*) and Yuma myotis (*Myotis yumanensis*). With the exception of the hoary bat and western red bat (which are foliage roosters), these species use hollow trees, caves, and rock crevices for roosting, but also use man-made structures such as mines, old buildings, and bridges if suitable structure and seclusion are available. Several of these species are known to occur at various locations in the County, but all have potential to occur there in areas of suitable habitat.

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Plants			
Astragalus tener var. *ferrisiae*	Ferris' milk-vetch	--/--/1B	Found on subalkaline flats in vernally mesic meadows and seeps, and Valley and foothill grasslands.
Centromadia parryi ssp. *rudis*	Parry's red tarplant	--/--/4	Occurs in alkaline, vernally mesic, seeps and vernal pools in valley and foothill grassland Occasionally found along roadsides.
Hesperevax caulescens	Hogwallow starfish	--/--/4	Shallow vernal pools in valley and foothill grassland, usually on mesic, clay soils.
Hibiscus lasiocarpus	Rose mallow	--/--/2	Freshwater marshes and swamps in the Central Valley.

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Layia septentrionalis	Colusa layia	--/--/1B	Chaparral, Cismontane woodland, valley and foothill grassland, usually on sandy, serpentinite soils.
Microseris sylvatica	Sylvan microseris	--/--/4	Occurs in chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, and valley and foothill grassland. Usually on serpentinite soils.
Navarretia cotulifolia	Cotula navarretia	--/--/4	Occurs in chaparral, cismontane woodland, valley and foothill grassland, frequently on adobe soils.
Navarretia leucocephala ssp. *bakeri*	Baker's navarretia	--/--/4	Occurs in vernal pools in cismontane woodland, lower montane coniferous forest, meadows and seeps, and mesic valley and foothill grassland.
Navarretia nigelliformis ssp. *nigelliformis*	Adobe navarretia	--/--/1B	Occurs in vernal pools in vernally mesic valley and foothill grasslands. Occasionally associated with either clay or serpentinite soils.
Sagittaria sanfordii	Sanford's arrowhead	--/--/1B	Marshes and swamps (assorted shallow fresh water)
Silene verecunda ssp. *verecunda*	San Francisco campion	--/--/1B	On sandy soils in coastal bluff scrub, chaparral, coastal prairie, coastal scrub, and valley and foothill grasslands.
Invertebrates			
Branchinecta lynchi	Vernal pool fairy shrimp	T/--	Vernal pools and seasonal wetlands in grassland habitats.
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	T/--	Elderberry shrubs, typically in or near riparian areas.
Lepidurus packardi	Vernal pool tadpole shrimp	E/--	Vernal pools and seasonal wetlands in grassland habitats.
Linderiella occidentalis	California linderiella	FSC/--	Vernal pools and seasonal wetlands in grassland habitats.
Fish			
Acipenser medirostris	Green sturgeon	(T) (NMFS)	Pacific Ocean, and large rivers from San Francisco Bay north.
Archoplites interruptus	Sacramento Perch	--/CSC	Remnant native populations may occur in the Sacramento, Feather and Bear Rivers. More abundant in areas where the species has been stocked in farm ponds and other water bodies free of introduced fishes.
Oncorhynchus mykiss	Central Valley steelhead Critical habitat, Central Valley steelhead	(T) (NMFS) (NMFS)	Includes all naturally spawning populations of steelhead in the Sacramento and San Joaquin Rivers and their tributaries. Spawns in relatively silt free gravel beds in upstream portions of rivers.
Oncorhynchus tshawytscha	Central Valley spring-run Chinook salmon Critical Habitat, Central Valley spring-run Chinook Winter-run Chinook salmon, Sacramento River Critical habitat, winter-run Chinook salmon	(T) (NMFS) (NMFS) (NMFS) (E) (NMFS)	Migrate to spawning habitats (relatively silt free gravel beds) in upstream portions of the Sacramento and San Joaquin rivers from October through April, with peak migration occurring in December.

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Amphibians			
Ambystoma californiense	California tiger salamander, central population (T)	FT/CSC/none	Valley and foothill grasslands and adjacent oak woodlands; shelters in rodent burrows and breeds in seasonal wetlands such as vernal pools.
Rana aurora draytonii	California red-legged frog (T)	FT/CSC/none	Creeks and streams with deep pools and dense bank vegetation; presence of adjacent woodlands and grasslands important.
Spea hammondii	Western spadefoot	--/CSC	Breeds in seasonal wetlands and large vernal pools, spends most of the year underground in adjacent upland areas.
Reptiles			
Actinemys marmorata	Western pond turtle	FSC/CSC	Ponds, streams, rivers, marshes and canals with suitable basking sites and vegetative cover. Nests and aestivates (i.e., hibernate) in adjacent uplands.
Phrynosoma coronatum frontale	California horned lizard	FSC/CSC/none	Annual grassland, chaparral, saltbush scrub, alkali flats, oak woodland, riparian woodland, and coniferous forest; open habitats with loose fine (often sandy) soils
Thamnophis gigas	Giant garter snake	T/T/--	Historically occurred in cattail and tule marshes on the Central Valley floor. Has since adapted to a variety of artificial drainages, particularly those associated with rice farming. Requires open water supporting fish and/or amphibian prey, with vegetative cover in the water and on the banks. Also requires adjacent uplands for aestivation (i.e., hibernate). Does not occur in major rivers.
Birds			
Accipiter cooperii	Cooper's hawk	--/CSC (Nesting)	Nests and forages in woodland habitats.
Accipiter striatus	Sharp-shinned hawk	--/CSC (Nesting)	Nests in forests; forages in wooded habitats.
Agelaius tricolor	Tricolor blackbird	FSC/CSC	Nests in dense stands of cattails, thickets of willows, blackberries, or tall herbs adjacent to open grasslands.
Aquila chrysaetos	*Golden eagle*	FP/CSC	Nests on cliffs and very large trees. Forages primarily in grasslands and chaparral, but also woodlands and other relatively open habitats.
Asio otus	Long-eared owl	--/CSC (Nesting)	Nests and forages in oak and riparian woodlands
Athene cunicularia	Burrowing owl	--/CSC (Nesting)	Grassland, deserts and other open habitats. Requires ground squirrel or other small mammal burrows for nesting.
Buteo regalis	Ferruginous hawk	FSC/CSC	Forages in open grasslands and chaparral. Not known to nest in California
Buteo swainsoni	Swainson's hawk	--/T	Nests in riparian trees; forages in open grasslands and agricultural fields
Circus cyaneus	Northern harrier	--/CSC	Nests in freshwater marsh and agricultural fields; forages in marshes, grasslands and agricultural fields

Table 4.1-1. Special-status Species Potentially Occurring in Sutter County

Scientific Name	Common Name	Status[1] Fed/State/Other	Habitat
Coccyzus americanus occidentalis	Western yellow-billed cuckoo	FC/CSC/none	Occurs in extensive riparian woodlands with clearings and a dense shrub layer. Often found in woodlands near streams, rivers or lakes.
Elanus leucurus	White-tailed kite	CSC (Nesting)	Nests colonially in large trees adjacent to open grasslands for foraging.
Eremophila alpestris	Horned lark	--/CSC	Forages and nests in open grasslands
Lanius ludovicianus	Loggerhead shrike	--/CSC	Nests in woodlands adjacent to grassland foraging habitat
Mammals			
Antrozous pallida	Pallid bat	FSC/CSC/ none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages on or near the ground in a wide variety of open habitats.
Corynorhinus townsendii townsendii	Pacific western big eared bat	FSC/CSC/none	Roosts in the open in large caves, abandoned mines and buildings. Very sensitive to roost disturbance
Myotis ciliolabrum	Small-footed myotis bat	FSC/CSC/none	Occurs in most of California except the coastal redwood region; roosts in buildings, trees, and crevices in cliffs
Myotis volans	Long-legged myotis bat	FSC/CSC/ none	Roosts in crevices in caves, mines, large rock outcrops, under bridges and in abandoned buildings. Forages in a wide variety of open habitats, frequently over water.
Myotis yumanensis	Yuma myotis bat	FSC/CSC/none	Common along wooded canyon bottoms throughout California; roosts in buildings, large trees with hollows, and crevices in cliffs
Perognathus inornatus	San Joaquin pocket mouse	FSC/CSC/none	Open grasslands, preferably (but not restricted to) areas with friable soils.

[1]Status of species relative to the Federal and California State Endangered Species Acts and Fish and Game Code of California.

California Native Plant Society (CNPS).

1B = Defined as plants that are rare, threatened or endangered in California and elsewhere.

2 = Defined as plants that are rare, threatened or endangered in California, but are more common elsewhere.

4 = Plants of Limited Distribution - A Watch List.

Fed = Federal status.
- E = Federally listed as endangered.
- T = Federally listed as threatened.
- PE = Proposed endangered.
- PT = Proposed threatened.
- FC = Federal candidate for listing as threatened or endangered.
- FSC = Federal species of concern.

CA = California status.
- E = Endangered; Species whose continued existence in California is jeopardized.
- T = Threatened; Species that although not presently threatened in California with extinction, is likely to become endangered in the foreseeable future.
- CSC = California Department of Fish and Game "Species of Special Concern". Species with declining populations in California.
- FP = Fully protected against take pursuant to the Fish and Game Code Section 3503.5.
- -- = No California or federal status.

Sources: California Department of Fish and Game, *California Natural Diversity Database*, 2008 and California Department of Fish and Game, *Special Animals*, July 2000.

REGULATORY CONTEXT

Federal

Endangered Species Act (FESA)

The Federal Endangered Species Act (FESA) of 1973 provides legal protection for threatened and endangered plant and animal species and requires definitions of critical habitat and development of recovery plans for specific species. Section 7 of the FESA requires federal agencies to make a finding on the potential to jeopardize the continued existence of any listed species potentially impacted by all federal actions, including the approval of a public or private action, such as the issuance of a permit pursuant to Sections 10 and 404 of the U.S. Clean Water Act (CWA). Section 9 of the FESA prohibits the take of any member of an endangered species. Take is defined by the FESA as *"...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct*." Section 10(a) of the FESA permits the incidental take of listed species if the take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Projects adversely affecting federally-listed threatened or endangered species are required to obtain take permission from the USFWS prior to project implementation. If a federal agency is involved (i.e., if a wetlands permit is required, project has federal funding, etc.), take permission can be obtained through FESA Section 7 consultation with the USFWS. Consultation will determine whether the project would adversely impact a protected species or designated critical habitat and identify mitigation measures that would be required to avoid or reduce impacts on the species or its habitat. Following this consultation, the USFWS issues a Biological Opinion (BO), which dictates the conditions of take that are allowed for the project. If no federal agency is involved, project applicants are required to obtain an Incidental Take Permit through Section 10 of the FESA, which requires preparation of a Habitat Conservation Plan (HCP) and results in the issuance of an Incidental Take Permit.

Federal Clean Water Act (CWA)

Section 404

The objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Section 401 prohibits the discharge of any pollutant into the Nation's waters without a permit, and Section 402 establishes the permit program. Section 404 of the CWA regulates activities that result in discharge of dredged or fill material into waters of the United States. The Corps is responsible for permitting certain types of activities affecting wetlands and "other waters of the United States. Under Section 404 of the CWA, the Corps has the authority to regulate activity that could discharge fill or dredge material or otherwise adversely modify wetlands or other waters of the U.S. The Corps implements the federal policy embodied in Executive Order 11990, which, when implemented, is intended to result in no net loss of wetland values or acres.

Section 401

The State Water Resources Control Board (SWRCB) has authority over wetlands through Section 401 of the CWA, as well as the Porter-Cologne Act, California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredged or fill material into waters of the United States) first obtain a certificate from the appropriate state agency stating that the fill is consistent with the State's water quality standards and criteria. In California, the authority to either grant

certification or waive the requirement for permits is delegated by the SWRCB to the nine regional boards. A request for certification is submitted to the regional board at the same time that an application is filed with the Corps. The regional board has 60 days to review the application and act on it. Because no Corps permit is valid under the CWA unless "certified" by the state, these boards may effectively veto or add conditions to any Corps permit.

State

California Endangered Species Act (CESA)

The CDFG administers a number of laws and programs designed to protect fish and wildlife resources. Principal among these is the California Endangered Species Act of 1984 (CESA - Fish and Game Code, Section 2050), which regulates the listing and take of state-endangered and state-threatened species. The CESA declares that deserving species will be given protection by the state because they are of ecological, educational, historical, recreational, aesthetic, economic, and scientific value to the people of the state. The CESA established that it is state policy to conserve, protect, restore, and enhance endangered species and their habitats.

Species listed under the CESA cannot be "taken" without adequate mitigation and compensation. The definition of take under CESA is the same as described above for the FESA. However, based on findings of the California Attorney General's Office, take under CESA does not prohibit indirect harm by way of habitat modification. Typically, the CDFG implements endangered species protection and take determinations by entering into management agreements (California Fish and Game Code, Section 2081 Management Agreements) with project applicants.

CDFG Lake and Streambed Alteration Agreements

Under Sections 1600-1616 of the California Fish and Game Code, the CDFG regulates activities that would alter the flow, bed, channel, or bank of streams and lakes. The limits of CDFG's jurisdiction are defined in the code as the *"… bed, channel or bank of any river, stream, or lake designated by the department in which there is at any time an existing fish or wildlife resource or from which these resources derive benefit ...*" (Section 1601). In practice, the CDFG usually marks its jurisdictional limit at the top of the stream or bank, or at the outer edge of the riparian vegetation, whichever is wider.

California Environmental Quality Act (CEQA)

Although threatened and endangered species are protected by specific Federal and State statutes, Section 15380(b) of the CEQA Guidelines provides that a species not listed on the Federal or State list of protected species may be considered rare or endangered if the species can be shown to meet certain specified criteria. These criteria have been modeled after definitions in the FESA and the section of the California Fish and Game Code dealing with rare or endangered plants and animals. Section 15380(b) requires public agencies to undertake reviews to determine if projects would result in significant effects on species that are not listed by either the USFWS or CDFG (i.e., candidate species). Thus, CEQA provides an agency with the ability to protect a species from a project's potential impacts until the respective government agencies have an opportunity to designate the species as protected, if warranted.

Local

Yuba-Sutter NCCP/HCP

Portions of the County are within the boundaries of the proposed Yuba-Sutter NCCP/HCP (Natural Community Conservation Plan/Habitat Conservation Plan). The Yuba-Sutter NCCP/HCP is a cooperative planning effort initiated by Yuba and Sutter counties in connection with improvements to Highways 99 and 70 and future development in the area surrounding those highways. The NCCP/HCP is being developed to facilitate ways to:

- continue economic growth and community development;
- retain the economic vitality of the agricultural community;
- maintain recreation, hunting, fishing, and other public uses of open space in the NCCP/HCP area;
- simplify and expedite land use and conservation planning in the NCCP/HCP area; and
- protect threatened and endangered species; and preserve plant and wildlife communities.

Preparation and approval of the NCCP/HCP is expected to take between 3 and 5 years, depending on the complexity of the planning process. Until the NCCP/HCP is approved, there is no requirement for compliance. However, it is prudent for longer term projects, or recently initiated smaller projects within the NCCP/HCP boundaries to give consideration to this planning document.

Natomas Basin Habitat Conservation Plan (NBHCP)

Portions of the County are within the Natomas Basin - a low-lying portion of the County east of the Sacramento River and north of the American River. The Natomas Basin contains incorporated and unincorporated areas within the jurisdictions of Sutter County and Sacramento County. Historically the basin was primarily in agricultural production. The existing water conveyance systems within the Natomas Basin were created for water conveyance and drainage. They provide nesting, feeding, and migration corridor habitat for a variety of species in the basin.

The Natomas Basin contains a variety of habitat types, open water aquatic habitat (including ditches and drains), emergent marsh, riparian forest, riparian scrub-shrub, grassland, vernal pools, and agriculture. A number of special-status species (wildlife and plant), as determined by the California Department of Fish and Game (CDFG) or the U.S. Fish and Wildlife Service (USFWS), inhabit or forage within the Natomas Basin.

The 1994 North Natomas Community Plan required the development and implementation of a Habitat Conservation Plan as mitigation for development in North Natomas. The NBHCP is a conservation plan supporting application for incidental take permits (ITPs) under Section 10(a)(1)(B) of the Endangered Species Act and under Section 2081 of the California Fish and Game Code. The purpose of the NBHCP is to promote biological conservation in conjunction with economic and urban development within the Permit Areas of the Natomas Basin. The NBHCP establishes a multi-species conservation program to minimize and mitigate the expected loss of habitat values and incidental take of Covered Species that would result from urban development, operation of irrigation and drainage systems, and certain activities associated with The Natomas Basin Conservancy's (TNBC) management of its system of

reserves established under the NBHCP. The goal of the NBHCP is to minimize incidental take of the Covered Species in the Permit Areas and to provide mitigation for the impacts of Covered Activities on the Covered Species and their habitat. The NBHCP applies to the 53,537-acre area interior to the toe of the levees surrounding the Natomas Basin.

In 1997, the NBHCP was approved by Sutter County and ITPs were issued to the City of Sacramento, by USFWS and CDFG. Subsequently, the 1997 NBHCP was challenged and on August 15, 2000, the U.S. District Court, Eastern District, ruled that the USFWS ITP was invalid and an EIS was required. On May 15, 2001, in a federal court ruling, a Settlement Agreement was attained which granted a motion modifying the Order to allow incidental take protection for limited development within Sutter County with the provision of mitigation land in specific areas of the Natomas Basin. Development of 1,068 acres of land in both North and South Natomas would be allowed to proceed if it is in compliance with mitigation requirements of the Settlement Agreement.

Sutter County, Sacramento County, and the USFWS prepared a revised NBHCP and an EIR/EIS that were approved on May 13, 2003 by Sacramento County Board of Supervisors. On June 27, 2003, the USFWS issued ITPs to Sutter County, Sacramento County and The Natomas Basin Conservancy. CDFG issued an amended ITP on July 10, 2003.

The NBHCP mitigation requirements include:

- Payment of HCP fees or dedication of land at a ratio of 0.5 to 1.
- Reconnaissance-level surveys to determine what habitats are present on a proposed development site. (Reconnaissance surveys are submitted with the developer's application.)
- Pre-construction surveys for potential special status species not less than 30 days or more than 6 months prior to construction activities.
- Species-specific mitigation, as required, per USFWS and CDFG protocol.
- Grading permit issued and habitat removed.

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4.2 AGRICULTURE, SOILS, AND MINERAL RESOURCES

INTRODUCTION

This section describes Sutter County's agricultural, soil, and mineral resources. The primary sources used to prepare this section include information from the US Department of Agriculture (USDA) Census of Agriculture, California Geological Survey (CGS), California Department of Conservation (CDC) Division of Gas and Geothermal Resources, CDC Farmland Monitoring Mapping Program (FMMP), and the Sutter County Agricultural Commissioner.

As a major economic asset to the county, agricultural activities play a huge role in Sutter County and have helped to shape and guide development in the county. However, despite the vital role agriculture plays, this resource can be vulnerable to different interests. Therefore, the protection of agricultural resources is major concern for the county as it plans for future growth.

SUMMARY OF KEY FINDINGS

- Approximately 83 percent of the county's total land acreage is currently being used for agricultural purposes.[1]
- Approximately 13 percent of farms in Sutter County are 500 acres or larger, but they control over 68 percent of the total farm acres in the County.
- As of December 31, 2007, the County has 64,302 acres protected as agricultural land under the Williamson Act.
- The predominant soil series in the county are the Capay, Clear Lake, Conejo, Oswald, and Olashes soils, which account for over 60 percent of the total land area.
- According to the 2000 Farmland Mitigation Monitoring Program (FMMP) report, Sutter County contains 387,603 acres of agricultural land, of which 169,749 acres or approximately 44 percent are designated as prime agricultural land with the highest-productivity soils.
- Construction aggregate, consisting primarily of sand, gravel, and crushed stone, is currently the County's main mining resource.
- There are currently three active mining operations in the County. Two are in the vicinity of the Sutter Buttes (South Butte Quarry and Bihlman Pit/Butte Rock), while the third (Reclamation District 1001) in the southeast portion of the County south of the community of Trowbridge.

EXISTING CONDITIONS

Agricultural Production

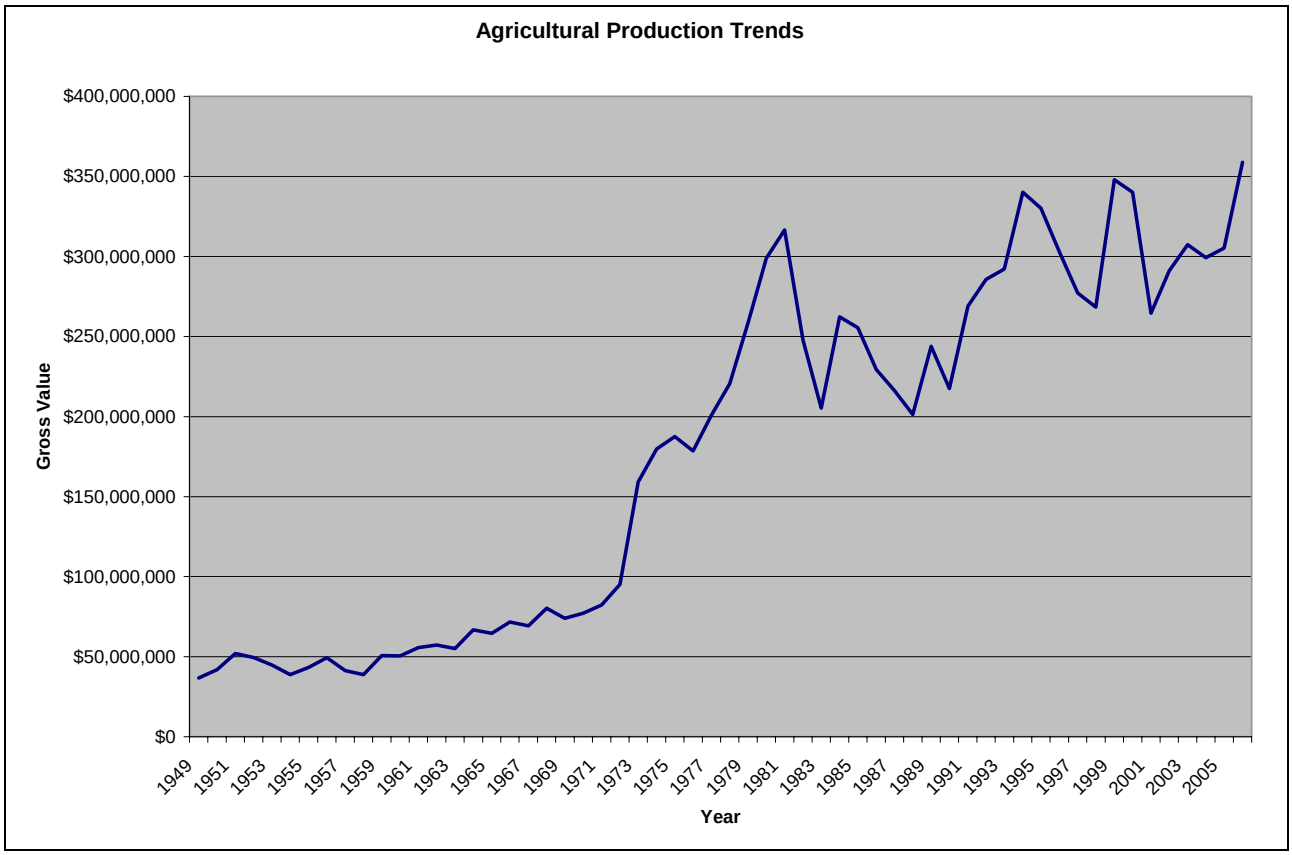
Sutter County is located within the northern portion of California's Central Valley in the area known as the Sacramento Valley. It contains some of the richest soils in the State. These soils,

1 Chapter 2, Section 2.1, Land Use, of this General Plan Technical Background Report.

combined with abundant surface and subsurface water supplies and a long, warm growing season, make the County's agricultural resources very productive.

Sutter County is one of California's leading agricultural counties, with 83 percent of the county's total land acreage currently being used for agricultural purposes. The County has continued to stay predominantly agricultural, unlike other historically agricultural counties such as Fresno, Tulare, Monterey, and Kern. Agricultural use in those counties has dramatically decreased. Even though agricultural production is dependent on weather and economic market fluctuations, local agricultural market revenues continue to rise in Sutter County, as illustrated on Figure 4.2-1.

Figure 4.2-1. Sutter County Agricultural Production Trends



Source: Sutter County Agricultural Report, 2006.

Approximately 13 percent of the farms in the county are 500 acres or larger; however, this small percentage of farms controls over 68 percent of the total farm acres in the county. While the total number of smaller farms up to 100 acres in size is greater than the number of the larger farms, these small farms only control approximately six percent of the farming acreage in the county. Table 4.2-1 gives the complete breakdown of farms according to size and approximate acreage controlled.

Agricultural activities in the county can generally be placed into one of two classes; either intensive agriculture, which includes field crops, seed crops, vegetable crops, fruit and nut crops, nursery stock and apiary products (bee keeping), or extensive agriculture, which involves animal husbandry forms of agriculture.

Table 4.2-1. 2002 Farm Size By Acreage

Acreage Range	Number of Farms	Percentage	Total Acres	Percentage
1 to 9	212	15.2%	904	0.24%
10 to 49	413	29.7%	9,863	2.65%
50 to 69	90	6.5%	5,301	1.43%
70 to 99	90	6.5%	7,368	1.98%
100 to 139	71	5.1%	8,351	2.25%
140 to 179	72	5.2%	11,307	3.04%
180 to 219	67	4.8%	13,306	3.58%
220 to 259	58	4.2%	13,663	3.67%
260 to 499	146	10.5%	51,789	13.92%
500 to 999	91	6.5%	61,761	16.60%
1,000 to 1,999	54	3.9%	74,523	20.04%
2,000 or more	27	1.9%	113,828	30.60%
Total	**1,391**	**100.0%**	**371,964**	**100%**

Source: 2002 Census of Agriculture.

Intensive Agriculture is the primary form of agricultural use in Sutter County, with 1,241 farms in 2002 designated under harvested cropland. In 2006, fruit and nut crops were the top agricultural product for the county, followed by field crops, seed crops, and vegetable crops. The leading crops according to value for 2006 were rice, dried plums (prunes), walnuts, and peaches. Figure 4.2-2 depicts agricultural production areas.

Extensive agriculture is associated with livestock production and includes lands for grazing and housing various types of livestock. In 2002, 91 farms were designated under the extensive agricultural use, accounting for 29,917 acres of land. In 2006, the top extensive agricultural use was for cattle and calves, followed by sheep and lambs.

Table 4.2-2 summarizes the value of agricultural production by production groups in 2005 and 2006.

Table 4.2-2. Summary Farm Value of Agricultural Production

2005		2006	
Fruit & Nut Crops[1]	$123,834,400	Fruit & Nut Crops	$158,918,900
Field Crops[1]	$116,674,300	Field Crops	$130,626,000
Seed Crops	$14,368,790	Seed Crops	$14,951,900
Vegetable Crops	$19,788,600	Vegetable Crops	$21,564,300
Nursery Products	$11,058,300	Nursery Products	$12,736,500
Apiary Products	$3,497,900	Apiary Products	$3,973,400
Livestock Products	$15,967,900	Livestock Products	$16,074,200
Total[1]	**$305,190,190**	**Total**	**$358,845,200**

Source: Sutter County, California, Crop, Livestock and Annual Department Report, 2006.
[1]Revised.

Table 4.2-3 provides a 1997 and 2002 breakdown for cropland in Sutter County according to its use.

Table 4.2-3. Cropland According to Use

	1997		2002	
	acres	farms	acres	farms
Harvested Cropland	274,218	1,368	267,891	1241
Cropland only used as pasture or grazing	10,853	107	29,917	91
Other land in farms[1]	74,999	39	74,156	59
Total Cropland	**360,070**	**1,514**	**371,964**	**1,391**

Source: 2002 Census of Agriculture.
[1]Includes, greenhouse, nursery, floriculture, milk production, poultry and egg production.

Williamson Act Contracts

Federal programs continue to preserve important and valuable agricultural land in Sutter County through the Williamson Act. As of December 31, 2007, the County had 64,302 acres protected as agricultural land under the Williamson Act. This program gives agricultural producers tax incentives to place the land in 10-year contracts to prevent development during the term of the contract. Sutter County also has 36 Organic Registered Producers that cover both intensive and extensive agriculture uses. See Figure 4.2-3 for the locations of Williamson Act lands within the County.

Soils

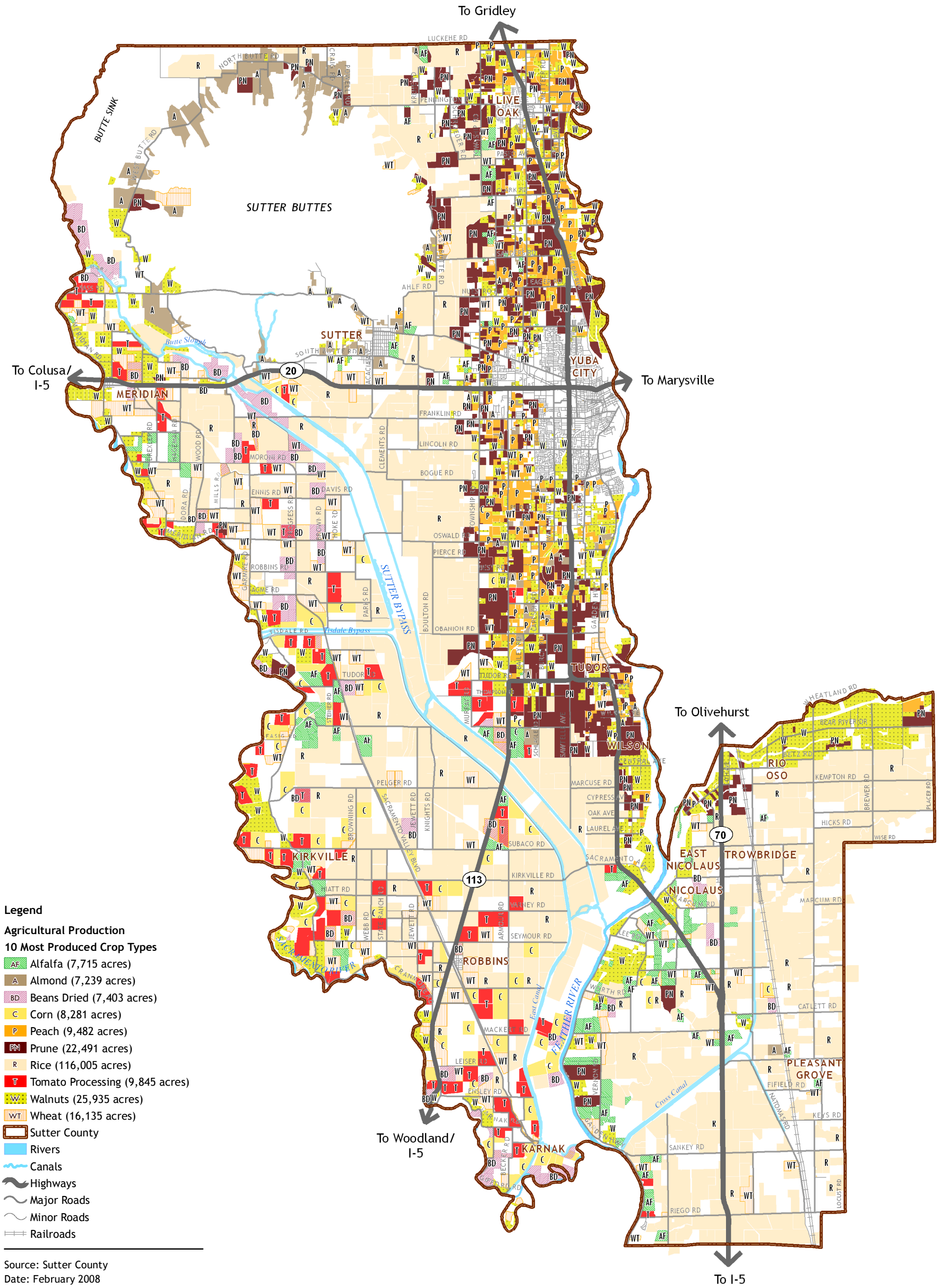
The Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service) has mapped over 40 individual soil units in the county (Figure 4.2-4).

The predominant soil series in the county are the Capay, Clear Lake, Conejo, Oswald, and Olashes soils, which account for over 60 percent of the total land area. The remaining soil units each account for smaller percentages the total land area. The Capay and Clear Lake soils are generally present in the western and southern parts of the county. The Conejo soils occur in the eastern part closer to the incorporated areas of the county. Oswald and Olashes soils are located in the central portion of the county extending north to south, with scattered areas along the southeastern edge of the county.

Soil descriptions for the principal soil units in the county are provided below. These descriptions, which were developed by the NRCS, are for native, undisturbed soils and are primarily associated with agricultural suitability. Soil characteristics may vary considerably from the mapped locations and descriptions due to development and other uses. Geotechnical studies are required to identify actual engineering properties of soils at specific locations to determine whether there are specific soil characteristics that could affect foundations, drainage, infrastructure, or other structural features.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



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Agricultural Production

10 Most Produced Crop Types

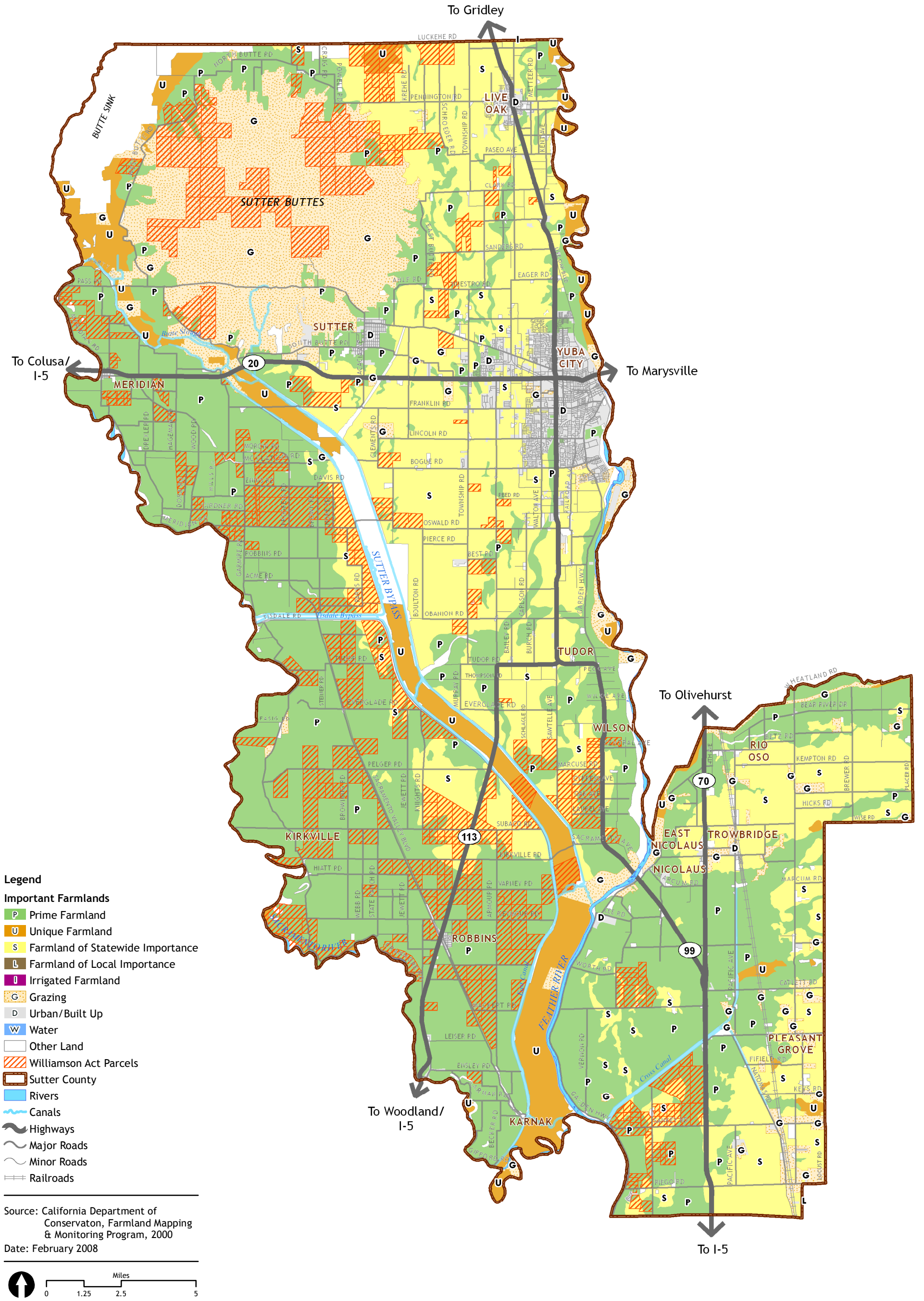
- AF Alfalfa (7,715 acres)
- A Almond (7,239 acres)
- BD Beans Dried (7,403 acres)
- C Corn (8,281 acres)
- P Peach (9,482 acres)
- PN Prune (22,491 acres)
- R Rice (116,005 acres)
- T Tomato Processing (9,845 acres)
- W Walnuts (25,935 acres)
- WT Wheat (16,135 acres)
- Sutter County
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County
Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

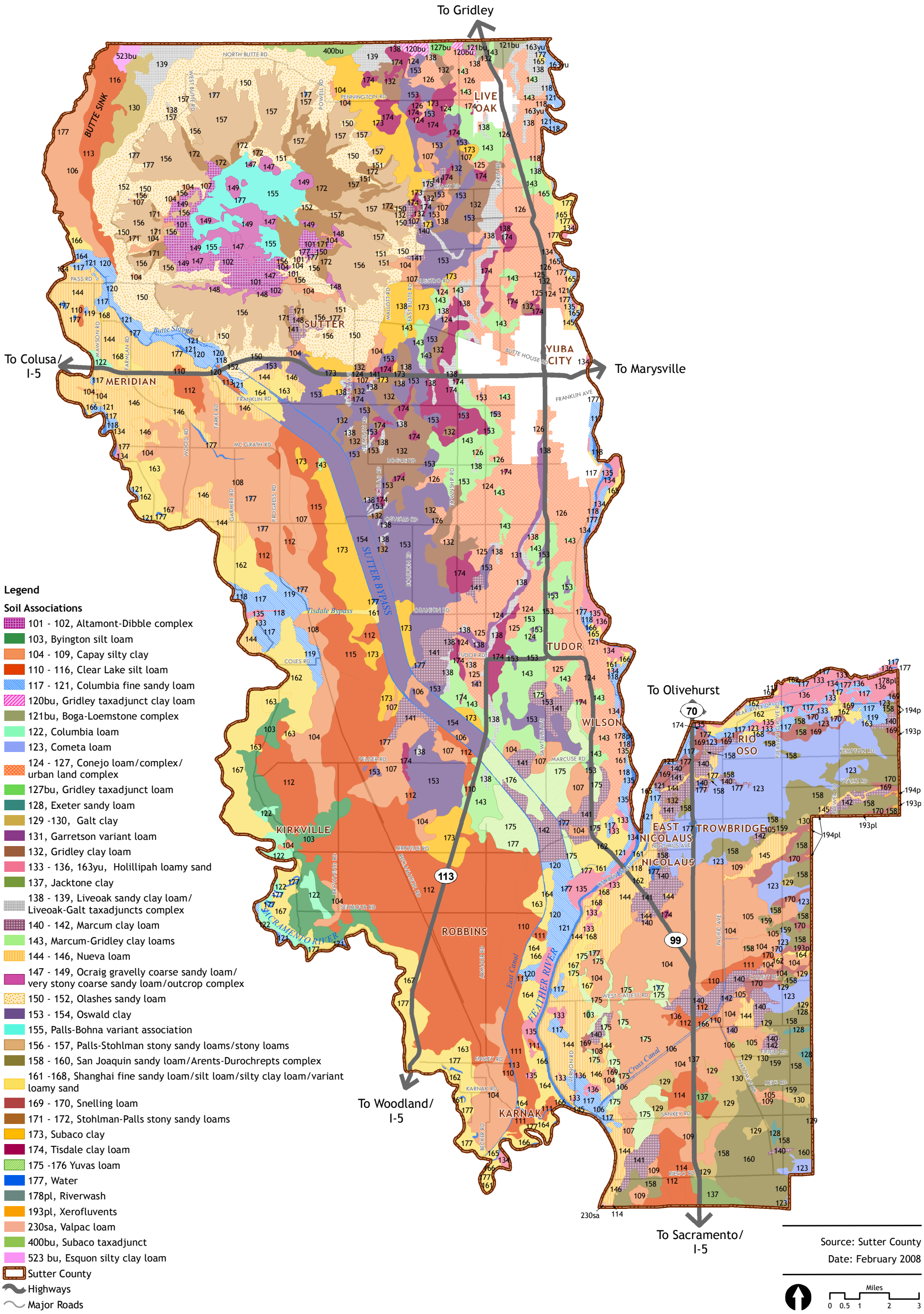
AGRICULTURAL PRODUCTION
Figure 4.2-2



IMPORTANT FARMLANDS AND WILLIAMSON ACT LANDS
Figure 4.2-3

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

Soil Associations

- 101 - 102, Altamont-Dibble complex
- 103, Byington silt loam
- 104 - 109, Capay silty clay
- 110 - 116, Clear Lake silt loam
- 117 - 121, Columbia fine sandy loam
- 120bu, Gridley taxadjunct clay loam
- 121bu, Boga-Loemstone complex
- 122, Columbia loam
- 123, Cometa loam
- 124 - 127, Conejo loam/complex/ urban land complex
- 127bu, Gridley taxadjunct loam
- 128, Exeter sandy loam
- 129 -130, Galt clay
- 131, Garretson variant loam
- 132, Gridley clay loam
- 133 - 136, 163yu, Holillipah loamy sand
- 137, Jacktone clay
- 138 - 139, Liveoak sandy clay loam/ Liveoak-Galt taxadjuncts complex
- 140 - 142, Marcum clay loam
- 143, Marcum-Gridley clay loams
- 144 - 146, Nueva loam
- 147 - 149, Ocraig gravelly coarse sandy loam/ very stony coarse sandy loam/outcrop complex
- 150 - 152, Olashes sandy loam
- 153 - 154, Oswald clay
- 155, Palls-Bohna variant association
- 156 - 157, Palls-Stohlman stony sandy loams/stony loams
- 158 - 160, San Joaquin sandy loam/Arents-Durochrepts complex
- 161 -168, Shanghai fine sandy loam/silt loam/silty clay loam/variant loamy sand
- 169 - 170, Snelling loam
- 171 - 172, Stohlman-Palls stony sandy loams
- 173, Subaco clay
- 174, Tisdale clay loam
- 175 -176 Yuvas loam
- 177, Water
- 178pl, Riverwash
- 193pl, Xerofluvents
- 230sa, Valpac loam
- 400bu, Subaco taxadjunct
- 523 bu, Esquon silty clay loam
- Sutter County
- Highways
- Major Roads

Source: Sutter County
Date: February 2008

PBS&J

SOIL CLASSIFICATIONS
Figure 4.2-4

Capay

Formed in moderately fine and fine textured alluvium derived from mostly sandstone and shale, the Capay series consists of very deep moderately well drained soils. Capay soils are primarily found on alluvial fans, alluvial flats, interfan basins and basin rims, at elevations below 1,200 feet with no greater than a nine percent slope and are used for growing irrigated crops such as tomatoes, sugar beets, beans or grain sorghum, dry farmed to small grains, and irrigated and dry land pasture. Native vegetation for this soil type consists of dense stand of annual grasses and forbs.

Clear Lake

The Clear Lake series consists of very deep poorly drained soils that formed in fine textured alluvium derived from sandstone and shale. Clear Lake soils are mainly located in basins and in swales of drainage ways. Clear Lake soils are in basins and in swales of level drainage ways. Slopes are 0 to 2 percent. Elevations are 25 to 2,000 feet. The soils formed in fine textured alluvium derived from sandstone and shale or other mixed rock sources. Used for growing row crops such as tomatoes, beans and sugar beets, dry farmed to grain, or irrigated and dry farmed pasture. Also used for rangeland. Native vegetation is grasses and forbs.

Conejo

The Conejo series of soils is not found in many areas of California, with most of the locations existing in the northern and central California Valley and California Coastal Range. The Conejo series consists of very deep, well drained soils that formed in alluvium from basic igneous or sedimentary rocks found on alluvial fans and stream terraces. Conejo soils are found on alluvial fans and stream terraces at elevations of 30 to 2,000 feet, with slopes ranging from 0 to 9 percent. The soil is predominantly used for irrigated row crops, orchard, hay and pasture and grain. Natural vegetation often included annual grasses and forbs with scattered oaks.

Oswald

The Oswald series consists of moderately deep, poorly drained soils that are formed in alluvium from mixed sources. Oswald soils are predominantly located in basins and on basin rims with slopes of less than two percent. They formed in alluvium from mixed sources deposited over unrelated siltstone with elevations from 20 to 80 feet. The soil series is subject to periods of seasonal flooding due to its fairly poor drainage, and slow permeability. A perched water table is at a depth of 18 to 36 inches from December through April. This soil is used predominantly for irrigated rice, small grains and row crops.

Olashes

The Olashes series is named by a tribe native to Sutter County who now has vanished. The soil series consists of very deep well drained soils that formed in alluvium weathered from mixed sources. Olashes soils are generally located in the Sutter Buttes and southeastern part of the Sacramento Valley, on alluvial fans and fan terraces with slopes of 0 to 5 percent. Elevations typically range from 45 to 750 feet. These soils drain relatively well with very low runoff potential and moderately slow permeability. Some areas of this soil are subject to frequent and brief to long periods of flooding from December to April. This soil is used mainly for irrigated orchards, small grain and forage crops.

Farmland Soil Classifications

The California Department of Conservation has developed a FMMP that classifies the different agricultural soil types related to their ability to sustain agricultural crops. Agricultural land is quantified based upon acreage and classified as Prime, Farmland of Statewide Importance, Unique Farmland, or Farmland of Local Importance. The FMMP also quantifies the amount of urban land and grazing lands within the county. Every two years, the FMMP inventories the amount of farmland lost and gained and the amount of urban land gained.

Farmland classifications are as follows:

Prime Farmland

Prime Farmland is defined as soils with the best combination of physical and chemical features able to sustain long-term production of agricultural crops. This land has the soil quality, growing season, and moisture supply needed to produce sustained high yields. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.

Farmland of Statewide Importance

Farmland of Statewide Importance is similar to Prime Farmland but with minor shortcomings, such as greater slopes or with less ability to hold and store moisture. The land must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date.

Unique Farmland

Farmland of lesser quality soils used for the production of the State's leading agricultural crops. This land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climactic zones in California. The land must have been cropped at some time during the two update cycles prior to the mapping date.

Farmland of Local Importance

Farmland of local importance is defined as land that is imperative in maintaining the local agricultural economy, as determined by each county's board of supervisors and a local advisory committee.

According to the 2000 FMMP report, of Sutter County's 387,603 acres of agricultural land, 169,749 acres or approximately 44 percent is designated as prime agricultural land with the highest productive soils. Grazing land accounts for approximately 13 percent of the county's farmland, with 111,242 acres of farmland designated as of Statewide Importance, and 20,239 acres designated as Unique Farmland. Table 4.2-4 shows the county breakdown of farmland acreage according to the FMMP's designations. Figure 4.2-3 depicts the locations of important farmland in the county.

Table 4.2-4. FMMP 2000 Sutter County Farmland

Type	Acres	Percent
Urban	11,359	3%
Grazing	50,826	13%
Local Importance	8	>1%
Prime Farmland	169,749	44%
Statewide Importance	111,242	29%
Unique Farmland	20,239	5%
Other	24,180	6%
Total	**387,603**	**100%**

Source: Sutter County GIS, farmland .mxd. California Department of conservation Farmland Mapping & Monitoring Program, 2000.

Mineral Resources

The Sutter County Surface Mining Code and the Zoning Code provide for the extraction of mineral resources from unincorporated lands. The extraction of mineral resources in Sutter County has historically been limited to the extraction of clay, sand, soils, and rock. These materials have generally been used for construction; with the exception of clay that was extracted by Gladding-McBean for their Lincoln processing facility to manufacture tile, brick, and other clay products. The Gladding-McBean Mine closed some time prior to 1980. Other previous mining sites that are closed were generally "borrow sites" for highway or other major construction activities.

Sutter County has no deep-shaft mining activity. All mines in the county are open-pit type or surface mines which require the possession of a valid surface mining permit and reclamation plan under both the County's Surface Mining Code and the State's Surface Mining and Reclamation Act (SMARA).

Based on the U.S. Geological Survey's (USGS) preliminary data for 2002, California ranked first among the states in non-fuel mineral production, accounting for approximately nine percent of the United States' total. Construction sand and gravel was California's leading industrial mineral with a total value of $1.16 billion produced for the year, a seven percent increase from 2001 (final USGS data). Sand and gravel production was estimated to be 173 million tons, a five percent increase from 2001.

The unincorporated portions of Sutter County have rich deposits in mineral resources. The County Surface Mining Code and the Zoning Code both permit the extraction of mineral resources from land under Sutter County's jurisdiction. Historic mining extraction has included kaolin and common clay, sand, soils, rock, pumice, and some gold.

Construction aggregate is currently the county's main market for mining resources produced in the county and consists predominantly of sand, gravel, and crushed stone. The California Geological Survey (CGS, formally the Division of Mines and Geology) has classified regions of the state according to the presence or absence of significant concrete-grade aggregate deposits. The land classification is presented in the form of Mineral Resource Zones, or MRZ's. CGS guidelines for establishing the Mineral Resource Zones are as follows:

> **MRZ-1:** Areas where available geologic information indicates there is little or no likelihood for presence of significant mineral resources.

MRZ-2a: Areas underlain by mineral deposits where geologic data indicate that significant measured or indicated resources are present. Areas classified MRZ-2a contain discovered mineral deposits as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Land included in the MRZ-2a category is of prime importance because it contains known economic mineral deposits.

MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified MRZ-2b contain discovered mineral deposits that are either inferred reserves as determined by limited sample analysis, exposure, and past mining history or are deposits that presently are sub-economic. Further exploration and/or changes in technology or economics could result in upgrading areas classified MRZ-2b to MRZ-2a.

MRZ-3a: Areas containing known mineral occurrences of undetermined mineral resource significance. Further exploration within these areas could result in the reclassification of specific localities as MRZ-2a or MRZ-2b.

MRZ-3b: Areas containing inferred mineral occurrences of undetermined mineral resource significance. Land classified MRZ-3b represents areas in geologic settings that appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration could result in the reclassification of all or part of these areas as MRZ-3a or specific localities as MRZ-2a or MRZ-2b.

MRZ-4: Areas of no known mineral occurrences where geologic information does not rule out the presence or absence of significant mineral resources.

The distinction between the MRZ-1 and the MRZ-4 categories is important for land-use considerations. It must be emphasized that MRZ-4 classification does not imply that there is little or no likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence. Further exploration work could well result in the reclassification of land in MRZ-4 areas to a MRZ-3 or MRZ-2 category.

Table 4.2-5 provides the geological information that is the basis for the CGS designations. In 1986, the California Division of Mines and Geology issued Special Report 132 entitled, "Mineral Land Classification: Portland cement and Concrete-Grade Aggregate in the Yuba City-Marysville Production-Consumption Area." That report was prepared pursuant to amendments in SMARA. The report found no significant or substantial deposits located within Sutter County. Under SMARA, any such deposits found in the county would have been required to be protected from conflicting uses. Although the CGS has no areas classified as MRZ-2 documented in Sutter County, pockets of MRZ-1, MRZ-3, and MRZ-4 are found southwest of Yuba City and Live Oak and along the base of the Sutter Buttes.

Qual is a designated unit of geological stratigraphic section under the Quaternary, Holocene sections. The Qual units have proven deposits of PCC-grade aggregate. The predominant non-fuel mineral production in Sutter County consists of sand and gravel aggregate identified as a proven source of Portland Cement Concrete-Grade (PCC) aggregate. Between 0.5 and 2 million tons of aggregate were produced in Sutter County west of Yuba City during 2005.[1]

1 California Geological Survey, *Aggregate Availability in California*. Map Sheet 25, 2006.

Table 4.2-5. Mineral Land Classifications

		Sedimentary Rocks		Volcanic Rocks	
Cenozoic	Quaternary	Qsc	Recent stream channel deposited found in Qual		
		Qf	Recent fan deposits; included in Qual		
		Qb	Recent basin deposits; included in Qual		
Mesozoic	Tertiary			Pv^p	Pliocene volcanic pyroclastic rock

Source: California Geological Survey, *Mineral Land Classification: Portland Cement Concrete-Grade Aggregate in the Yuba City-Marysville Production Consumption Region.* Special Report 132, 1988.

Current County Mining Operations

There are currently three active mining operations within the County. All of the mines in the County are open-pit mines. There are no deep-shaft mine activities currently. As required by both the County's Surface Mining Code and the SMARA, all of the mines in Sutter County must have a current reclamation plan reviewed and be approved by both the Board of Supervisors and the State of California. Refer to Figure 4.2-5 for the locations of the mining areas.

The joint Yuba-Sutter aggregate yield amounts to approximately 360 to 409 million tons annually, depending on market demands. These estimates indicate that area mines have adequate reserves to meet local needs for the next 75 years. Pockets of sand and gravel have been identified along the Feather and Bear Rivers. These pockets were deposited in the stream channels due to mining activities that occurred upstream during the late 1800s and early 1900s. The aggregate is concrete quality; however currently, no mining activity has occurred in these areas due to environmental impacts and ready supplies in other areas.

The South Butte Quarry is one of Sutter County's larges pit mining operations comprised from the recently merged 1956 Butte Sand and Gravel and the 1974 Butte Ranch mines. The combined mining operations cover approximately 320 acres with a total land holding of over 500 acres, jointly used for agricultural purposes. One aggregate material normally produced from these mines is commonly called "Butte Rock." It is a term associated with the materials found in the foothill area of the Sutter Buttes. This material is weathered volcanic rock and is characterized as a good base material due to its compaction and natural cementing capabilities. Butte Rock, however, lacks the strength required for concrete or other high load aggregate uses. Table 4.2-6 summarizes the permitted surface mining operations found within the county.

The Reclamation District 1001 excavates clay from a location in the southern portion of the County, east of Pacific Avenue just north of Catlett Road. The open pit mine started production in 1993 and is slated to yield approximately one million cubic yards of clay over its lifetime.

Several additional mines have the potential to be active within a few years. One of the mines which is currently inactive but expected to be reactivated in the next couple of years is the "Meyer" mine located west of the Butte Sand & Gravel location. The County expects new applications requesting 3 to 4 mines (borrow pits) to be filed in the next few years due to the material that will be needed for future levee construction and Highway 70 widening. It is anticipated that these will be located in the valley (flat areas) rather than the Buttes as many of the other mining operations are; however, no specific locations are known at this time.

Table 4.2-6. 2006 Permitted Surface Mines

Mine/Operator	Materials Mined	Location	Yield[1]	Reserves
South Butte Quarry/ Butte Sand & Gravel (Butte Sand & Gravel & Butte Ranch combined in 2007 under one reclamation plan)	Sand and gravel	On the south side of the Sutter Buttes, north of South Butte Rd.	1.0 to 2.0 million tons	40 million cubic yards
Bihlman Pit/Bihlman Butte Rock	Sand and gravel	South of North Butte and Pennington Roads	Data not available	Data not available
Reclamation District 1001	Clay	Located in the southern portion of the County on the east side of Pacific Ave. and north of Catlett Rd.	< 1,000 cubic yards	Million cubic yards total allowable yield

Source: Butte Sand and Gravel Company Reclamation Plan, 2007.
[1]Yield is contingent on market demand.

REGULATORY CONTEXT

Federal

There are no specific federal regulations pertaining to local agricultural, soils, or resources that would be applicable.

State

California Land Conservation Act of 1965 (Williamson Act)

The California Land Conservation Act of 1965 (or Williamson Act) (California Government Code Section 51200) recognizes the importance of agricultural land as an economic resource which is vital to the general welfare of society. The enacting legislation declares that the preservation of a maximum amount of the limited supply of agricultural land is necessary to the conservation of the State's economic resources, and is necessary not only to the maintenance of the agricultural economy of the State, but also for the assurance of adequate, healthful, and nutritious food for future residents of the State and the nation.

Intended to assist the long-term preservation of prime agricultural land in the State, Williamson Act contracts provide the agricultural landowner with a substantial property tax break for keeping land in agricultural use. When under contract, the landowner no longer pays property tax for an assessed valuation based upon the property's urban development potential. The Williamson Act stipulates that for properties under contract, "the highest and best use of such land during the life of the contract is for agricultural uses." Therefore, property under contract is assessed and taxed based upon its agricultural value. Williamson Act contracts remain in effect for 10 years unless the property owner files for a notice of non-renewal with the County.

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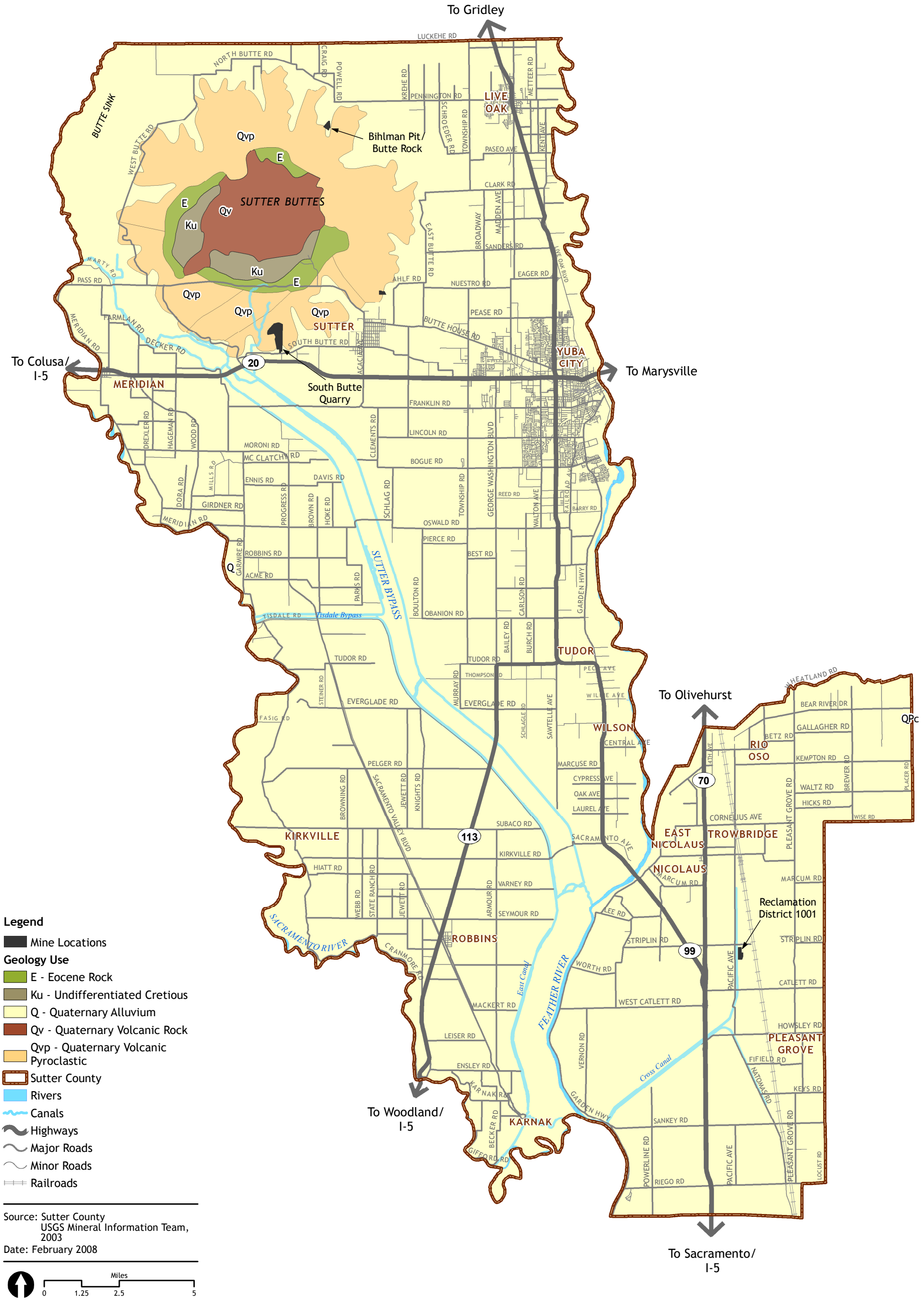

Legend

- Mine Locations

Geology Use

- E - Eocene Rock
- Ku - Undifferentiated Cretious
- Q - Quaternary Alluvium
- Qv - Quaternary Volcanic Rock
- Qvp - Quaternary Volcanic Pyroclastic
- Sutter County
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County
USGS Mineral Information Team, 2003
Date: February 2008

Miles
0 1.25 2.5 5

PBS&J

GEOLOGY AND MINERAL OPERATIONS
Figure 4.2-5

Intended to assist the long-term preservation of prime agricultural land in the State, Williamson Act contracts provide the agricultural landowner with a substantial property tax break for keeping land in agricultural use. When under contract, the landowner no longer pays property tax for an assessed valuation based upon the property's urban development potential. The Williamson Act stipulates that for properties under contract, "the highest and best use of such land during the life of the contract is for agricultural uses." Therefore, property under contract is assessed and taxed based upon its agricultural value. Williamson Act contracts remain in effect for 10 years unless the property owner files for a notice of non-renewal with the County.

The Williamson Act also addresses "compatible" uses. In Section 51231, the Williamson Act states that, "…the board or council, by resolution, shall adopt rules governing the administration of agricultural preserves…Rules related to compatible uses shall be consistent with the provisions of Section 51238.1." Section 51238.1 states the following:

> (a) Uses approved on contracted lands shall be consistent with all of the following principles of compatibility:
>
> (1) The use will not significantly compromise the long-term productive agricultural capability of the subject contracted parcel or parcels or on other contracted lands in agricultural preserves.
>
> (2) The use will not significantly displace or impair current or reasonably foreseeable agricultural operations on the subject contracted parcel or parcels or on other contracted lands in agricultural preserves . . .
>
> (3) The use will not result in the significant removal of adjacent contracted land from agricultural or open-space use.

Surface Mining and Reclamation Act

As previously discussed, mining activities are regulated by the SMARA (Public Resources Code Section 2710 et seq.). The purpose of this act is to create and maintain an effective and comprehensive surface mining and reclamation policy with regulation of surface mining operations so as to assure that: (1) adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses; (2) the production and conservation of minerals are encouraged, while giving consideration to values relating to recreation, wildlife, range and forage, and aesthetic enjoyment; and (3) residual hazards to the public health and safety are eliminated. These goals are achieved through land use planning by allowing a jurisdiction to balance the economic benefits of resource reclamation with the need to provide other land uses.

Performance standards for mine reclamation are set forth in Section 3700 et seq. of Title 14 of the California Code of Regulations (CCR). With regard to geotechnical considerations, these regulations generally address soil erosion control and drainage, re-soiling and revegetation, backfilling, regrading, slope inclination and stabilization, and recontouring, but the specific methods to achieve conformance with the standards are not specified.

Section 2761 (a) and (b) and 2790 of the SMARA provides for a mineral lands inventory process termed classification-designation. The CGS and the State Mining and Geology Board (SMGB) are the State agencies responsible for administering this process. The primary objective of the process is to provide local agencies, such as cities and counties, with information on the location, need, and importance of minerals within their respective jurisdictions. It is also the intent of this process, through the adoption of general plan mineral resource management

policies, that this information be considered in future local land-use planning decisions (Public Resources Code Section 2762).

Mining operations and mine reclamation activities must be performed in accordance with laws and regulations adopted by the SMGB, which are contained in Section 3500 et seq. of Title 14 of the CCR. The Office of Mine Reclamation (OMR) in the State Department of Conservation oversees reclamation requirements.

Local

Agricultural Operations Disclosure

Under the County's Agricultural Operation Disclosure policy (County Ordinance 1013, Sec. 1; August, 1987), agricultural land and operations within the County are protected exclusively for agricultural use. Agricultural land is defined by the policy as those land areas of the county specifically classed and zoned as Upland Agricultural Districts (U-A), Exclusive Agricultural Districts (A-2), general Agricultural District (AG), Restrictive Agricultural Districts (A-3), and food Processing, Agricultural and Recreation Combining Districts (FPARC).

The policy protects agricultural land and agricultural uses from the impacts and restrictions that often occur when adjacent to residential development. The County requires full disclosure to residents residing adjacent to areas designated for agricultural use. The disclosure warns prospective purchasers and residents of agricultural operations that may cause issues inducing excess sounds, odors, dust, smoke, fertilizers and pesticides that may accompany agricultural operations.

Yuba-Sutter Farm Bureau

The Yuba-Sutter Farm Bureau does not have regulatory power in the County on agricultural land use matters; however the organization does promote guidelines to direct land use in the counties. The Yuba-Sutter County Farm Bureau Board of Directors has adopted the following Land Use Policies to protect the rural lifestyle of Yuba and Sutter Counties.

1. Agricultural planning and land use should be driven by agricultural needs.
2. Encroachment of incompatible uses into an agricultural area should be prevented. Productive agricultural land should be recognized with a high priority by agricultural zoning, and growth should be directed away from such areas.
3. We support local planning which accommodates orderly, logical, and restrictive contiguous patterns of urban development. To help control urban sprawl and protect our agricultural resources, responsible governmental agencies should discourage urban development of agricultural land. Parcelization of agricultural lands into non-viable commercial agricultural units should be discouraged and prohibited whenever possible to maintain the viability of commercial agriculture.
4. Efficient land use plans for existing cities and towns should emphasize infill development, redevelopment, and increased densities to preserve farmland. We would encourage financial incentives for such projects such as permit process expediting, as well as reduced fees. They should encourage efficient use of public services, promote affordable housing, and conserve energy and natural resources.
5. LAFCO should have at least one agricultural representative appointed to its board.

6. Yuba and Sutter Counties should participate fully in the Williamson Act and the Farmland Security Zone Act. Local agricultural property owners should be encouraged to participate.

7. Buffers that protect agricultural operations should be incorporated into Building Standards and included into the Zoning Ordinance and/or General Plan for those parcels that are nonconforming due to size or use. A mandatory "Right to Farm Ordinance" and or "Agricultural Land Disclosure" shall be recorded at the time of property purchase or at the time of any development. (Sample provided)

8. We oppose eminent domain to take private lands for any use other than public use.

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4.3 HYDROLOGY AND WATER QUALITY

INTRODUCTION

This section describes Sutter County's ground and surface water resources relative to hydrology and water quality. Information for this section was obtained from the State Water Resources Control Board (SWRCB), the California Stormwater Quality Association (CASQA), Central Valley Regional Water Quality Control Board, and the Department of Water Resources.

Minimizing pollutants in urban runoff is important because it protects water resources in the county for beneficial uses including water supplies, recreation, industry, and natural habitat.

SUMMARY OF KEY FINDINGS

- Sutter County regulates water quality from construction sites through its Public Works Design Standards, and requires the use of water quality BMPs.
- In the future, Sutter County will need to develop and implement a Watershed Management Plan to be fully compliant with Phase 2 of the NPDES system.
- Agricultural runoff from Sutter County contributes to impaired surface water quality in local drainages and the Sacramento and Feather rivers.
- Urban areas of the County discharge stormwater and treated wastewater to local drainages and rivers which can affect water quality.
- Groundwater levels in the County are relatively stable and groundwater quality generally requires treatment for drinking and is affected by application of fertilizers and other farm chemicals and septic systems.

EXISTING CONDITIONS

Surface Water

Regional Overview

Sutter County is located between the Sacramento River on the west and the Feather River on the east, in the northern portion of the relatively flat Sacramento Valley. Similar to Mediterranean climates, Sutter County's climate is generally characterized by hot, dry summers, with relatively moderate, wet winters. Precipitation rates are greatest during late fall to early spring followed by the dry season from later spring to early fall. Because there are no significant water storage reservoirs in Sutter County, rainfall percolates into the soil, runs off into local streams and rivers, and evaporates. By late summer, most small creeks and streams are generally dry and the rivers are at their lowest levels. Some small creeks have water during the dry season due to agricultural irrigation and drainage and/or from drainage in upstream urban areas.

Sutter County lies entirely within the Sacramento River watershed, which includes the Feather and Bear Rivers. Other notable regional hydrology features are Coon and Pleasant Grove Creeks and Markham and Auburn Ravines in the southeastern portion of the County and the Snake River on the east side of the Sutter Buttes. The Sutter Bypass is a major manmade flood control area that acts as an overflow collector of flood flows in the Sacramento River after

passing through the Butte Slough and the Butte Sink. The Sutter Bypass starts north of Pass Road, westerly of the Sutter Buttes generally in a south-southeast orientation for about 27 miles until it intercepts the Feather River about three miles downriver from the rural community of Nicolaus.

Sacramento River

The Sacramento River is the largest river (in terms of volume of water and length) in the State and drains approximately 27,210 square miles of watershed, including Sutter County. It forms a major portion of the western County boundary as it enters from Colusa County and extends south down to the Sacramento County boundary. The river supports various beneficial uses, including recreational, agricultural, and wildlife. The river is not used for municipal or domestic water supplies in the county. Water quality in the Sacramento River is generally of good quality and is treated and used for municipal and industrial water supplies up and downstream of Sutter County. The State Water Resources Control Board (SWRCB) publishes updates to the *Water Quality Control Plan (Basin Plan) for the Sacramento River and San Joaquin River Basins* to improve water quality and maintain beneficial uses in the Sacramento and San Joaquin Rivers. The Basin Plan describes water quality concerns for the Sacramento River that includes agriculture, forestry, urban land uses, and stormwater runoff. Further, the Sacramento River is listed in the SWRCB's Total Maximum Daily Load (TMDL) program for mercury and unknown toxicity. The SWRCB TMDL programs are implemented pursuant to Clean Water Act Section 303(d) for impaired waterbodies. TMDL programs are plans that describe how an impaired waterbody will meet federal water quality standards.

Feather River

The Feather River forms a major portion of Sutter County's eastern boundary. Like the Sacramento River, the Feather River provides beneficial uses, including recreational, agricultural, and wildlife. The City of Yuba City obtains a large portion of its annual water supplies for municipal and domestic use from the river. Water quality in the Feather River is generally good, but is listed in the SWRCB's TMDL program for chlorpyrifos (an agricultural insecticide), Group A pesticides, mercury, and unknown toxicity.

Bear River

The Bear River enters Sutter County from Placer County near the City of Wheatland in Yuba County. It generally flows in a south-southwest direction until it meets the Feather River about one mile upstream from the rural community of Nicolaus. Although smaller than the Sacramento and Feather Rivers, the Bear River also provides beneficial uses that include recreational, agricultural, and wildlife. River flows are generally controlled by the Camp Far West Reservoir in Yuba County. Water quality in the Bear River is generally good, but is listed in the SWRCB's TMDL program for diazinon (a widely used agricultural pesticide).

Agricultural Runoff

Sutter County is dominated by agriculture for production of numerous fruits, vegetables, and row crops. Crops produced in the County include rice, hay, safflower, almonds, plums, and peaches. Farmers in the County use a large variety of herbicides and pesticides during the growing season to control a variety of plant diseases and pests. In addition, farmers use fertilizers to ensure successful crop production. Use of these compounds results in residual concentrations of herbicides, pesticides, and fertilizers entering stormwater runoff or irrigation return water ditches. Some stormwater runoff and return water from agricultural irrigation discharge into local streams and rivers affecting water quality. The SWRCB has identified

agricultural runoff as a major factor affecting water quality in local drainages and the Sacramento, Feather, and Bear Rivers. Water quality data for the Sacramento, Feather, and Bear Rivers list the pesticide diazinon, insecticide chlorpyrifos, and Group A pesticides as constituents that require TMDL monitoring and reduction to ensure beneficial uses within these waterbodies.[1] These pesticides and insecticide are commonly used as part of agricultural practices.

Urban Runoff

Constituents found in urban runoff vary as a result of differences in rainfall intensity and occurrence, geographic features, the land use of a site, as well as vehicle traffic and percent of impervious surface. In the Sutter County region, there is a natural weather pattern of a long dry period from May to October. During this seasonal dry period, pollutants contributed by vehicle exhaust, vehicle and tire wear, crankcase drippings, spills, and atmospheric fallout accumulate within the urban watershed. Precipitation during the early portion of the wet season (November to April) washes these pollutants into the stormwater runoff, which can result in elevated pollutant concentrations in the initial wet weather runoff. This initial runoff with peak pollutant levels is referred to as the "first flush" of a storm event or events. Concentrations of heavy metals present in dry weather runoff (e.g., runoff during the dry season is generated by landscape irrigation, street washing, etc.) are typically lower than concentrations measured in wet weather runoff (runoff generated during the rainy season primarily by precipitation).

Stormwater drainage throughout much of Sutter County is provided by piped storm drain conveyance systems (in the cities) and open channel systems. Stormwater flowing in these systems is either pumped or gravity drains into the Sacramento River, the Sutter Bypass, or the Feather River. These stormwater systems are owned and operated by a variety of agencies including reclamation districts, cities, Sutter County, and the State of California.

Pollutants can enter stormwater runoff as it flows over the ground surface. A summary of pollutant types contained in runoff from various land uses is provided in Table 4.3-1. All of these land use types occur within Sutter County, with agricultural being the most wide spread of these land uses.

Construction is one of the primary activities that can lead to pollutants entering stormwater. One of the most common pollutants from construction sites is sediment from soil erosion. Construction site Best Management Practices (BMPs) are used to prevent contamination of runoff from construction sites. Examples of construction site BMPs from the California Stormwater Quality Association (CASQA) include the following.

- Scheduling construction to occur during non-rainy seasons.
- Preserving existing vegetation.
- Use of mulch or straw to cover the ground surface.
- Use of geotextile fabrics or/and mats to cover the ground surface.
- Use of soil binders to prevent erosion.
- Drainage swales and slope drains.
- Use of sediment basins.

1 State Water Resources Control Board, website: http://www.waterboards.ca.gov/, accessed on November 14, 2007.

Table 4.3-1. Potential Pollutants Generated by Land Use Type

Priority Project Categories	General Pollutant Categories								
	Pathogens	Heavy Metals	Nutrients	Pesticides	Organic Compounds	Sediments	Trash & Debris	Oxygen Demanding Substances	Oil & Grease
Detached Residential Development	X		X	X		X	X	X	X
Attached Residential Development	P		X	X		X	X	P[1]	P[2]
Commercial/Industrial Development >100,000 ft^2	P[3]		P[1]	P[5]	P[2]	P[1]	X	P[5]	X
Automotive Repair Shops		X			X[4,5]		X		X
Restaurants	X						X	X	X
Hillside Development			X	X		X	X	X	X
Parking Lots		X	P[1]	P[2]		P[1]	X	Ps	X
Streets, Highways & Freeways		X	P[1]		X[4]	X	X	P[5]	X
Agricultural	X		X	X	X	X	X	X	

Source: Modified from Table 2-1 of the California Stormwater Quality Association, *Stormwater Best Management Practice Handbook for New Development and Redevelopment,* January 2003.
X = anticipated
P = potential
[1]A potential pollutant if landscaping exists on-site.
[2]A potential pollutant if the project includes uncovered parking areas.
[3]A potential pollutant if land use involves food or animal waste products.
[4]Including petroleum hydrocarbons.
[5]Including solvents.

Permanent BMPs can also be used to reduce pollutants that enter runoff from developed areas after construction is completed. Examples of permanent BMPs from the CASQA include:

- Vegetation and landscaping.
- Pervious pavement.
- Covering trash storage areas, fueling areas, and loading docks. These areas can also be elevated slightly to prevent stormwater from flowing onto these areas. Drains from these areas can also be connected to sanitary sewers rather than storm drains.
- Infiltration trenches and basins.
- Wet or dry treatment basins.
- Treatment wetlands.
- Vegetated swales and buffer strips.
- A variety of commercially available water quality drain inlets.

Sutter County is covered by a Phase 2 permit of the National Pollutant Discharge Elimination System (NPDES) regulations (see discussion under "Regulatory Context" heading below). These regulations are intended to reduce the pollutants that are discharged to surface water bodies. Sutter County has addressed water quality issues through their storm drainage design criteria, as discussed further below, and through the joint Yuba City – Sutter County Stormwater Management Plan to meet Phase 2 NPDES requirements.

Sutter County is currently developing a grading ordinance that will require review and adoption by the County Board of Supervisors.

In addition to stormwater, two urban sewage treatment plants in the County discharge to local channels and rivers. Yuba City discharges its treated effluent to the Feather River. The City of Live Oak discharges its effluent to a Reclamation District 777 drainage canal, which flows to the Sutter Bypass and the Sacramento River. The Central Valley Regional Water Quality Control Board (CVRWQCB) issues permits for wastewater treatment plants. The City of Live Oak maintains its own wastewater treatment plant. The plant was issued a cease and assist order from the CVRWQCB in 1999 due to high levels of residual chlorine, total coliform, and pH in effluent. Because the City of Live Oak is planning to complete a plant upgrade to meet the CVRWQCB's wastewater discharge limitations, the cease and desist order was rescinded on July 9, 2004.[2]

Groundwater

Sutter County is located within the greater Sacramento Valley Groundwater Basin in the Sutter, East Butte, and North American Subbasins. Major surface water sources described above are major sources of groundwater recharge to the groundwater subbasins within Sutter County. Other sources of groundwater recharge in Sutter County are from percolation of rainfall, agricultural irrigation, and subsurface inflow from adjacent groundwater basins. Pumping of groundwater and subsurface outflow to rivers and adjoining subbasins result in a groundwater discharge from Sutter County.

2 Central Valley Regional Water Quality Control Board Order No. R5-2004-0097.

The three subbasins within the county have similar water bearing formations that are used for water supplies for agricultural irrigation and domestic drinking water. The groundwater level trends are reported to be stable within Sutter County and tend to be within about 10 feet below the ground surface. The State Department of Water Resources (DWR) reported that the Sutter Subbasin has an estimated five million acre-feet of usable storage potential for Sutter County. The southern portion of the Butte Subbasin within Sutter County is relatively stable, with seasonal fluctuations in groundwater levels of about four feet during normal precipitation years. The portion of Sutter County within the North American Subbasin experienced some decline, but is relatively stable.[3,4]

Water quality in Sutter County is monitored by DWR, the State Department of Health Services (DHS), and Sutter County. The primary groundwater chemistry in Sutter County is calcium, magnesium, sodium, chloride, sulfate, and bicarbonate. Recent groundwater data in portions of the county report chemical elements and compounds in amounts that exceed drinking water quality safety and aesthetic standards. In addition, groundwater quality is expected to degrade in the future unless measures are taken to reduce contaminants in soil and prevent additional contamination from occurring. In the southern portion of the county within the North American Subbasin, groundwater quality is impaired by high levels of total dissolved solids, manganese, and arsenic. No major areas of groundwater contamination have been reported in Sutter County.[5,6]

REGULATORY CONTEXT

Regulations that are relevant to hydrology and water quality are summarized below.

Federal

Clean Water Act

The Federal Clean Water Act (CWA), established by Congress in 1972, is the cornerstone of surface-water-quality protection in the United States. The 1987 amendments added section 402(p), which regulates municipal, industrial and construction discharges under the NPDES program. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct discharges of pollutants into waterways, finance municipal wastewater-treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. Section 303 of the CWA requires states to adopt water-quality standards for all surface waters of the United States. Section 304(a) requires U.S. EPA to publish water-quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. The CWA prohibits the discharge of pollutants to navigable waters from a point source unless authorized by a NPDES) permit, as described below.

National Pollutant Discharge Elimination System (NPDES) Permits

The NPDES permit system was established in the CWA to regulate municipal and industrial discharges to surface waters of the U.S. Each NPDES permit contains limits on allowable

3 Department of Water Resources, *California's Groundwater*, Bulletin 118.

4 Sutter County, *General Plan Background Report*, November 25, 1996.

5 Department of Water Resources, *California's Groundwater*, Bulletin 118.

6 Sutter County, *General Plan Background Report*, November 25, 1996.

concentrations and mass emissions of pollutants contained in discharges. Sections 401 and 402 of the CWA contain general requirements regarding NPDES permits. Section 307 of the CWA describes the factors that U.S. EPA must consider in setting effluent limits for priority pollutants.

The CWA was amended in 1987 to require NPDES permits for non-point sources (i.e., stormwater) pollutants in discharges. Stormwater sources are diffuse and originate over a wide area rather than from a definable point. The goal of NPDES stormwater regulations is to improve the quality of stormwater discharged to receiving waters to the "maximum extent practicable" through the use of structural and non-structural Best Management Practices (BMPs). BMPs can include the development and implementation of various practices including educational measures (workshops informing public of what impacts results when household chemicals are dumped into storm drains), regulatory measures (local authority of drainage facility design), public policy measures (label storm drain inlets as to impacts of dumping on receiving waters) and structural measures (filter strips, grass swales and detention ponds).

State

Surface Water Quality

The SWRCB and CVRWQCB have established water quality standards that are required by section 303 of the CWA and the Porter-Cologne Water Quality Control Act. The Porter-Cologne Act states that basin plans consist of beneficial uses, water quality objectives, and a program of implementation for achieving water quality objectives. The Water Quality Control Plan, or Basin Plan, prepared by the CVRWQCB, has established water quality numerical and narrative standards and objectives for rivers and their tributaries within its jurisdiction. In cases where the Basin Plan does not contain a standard for a particular pollutant, other criteria, such as U.S. Environmental Protection Agency (U.S. EPA) water quality criteria developed under section 304(a) of the CWA apply.

Because Sutter County drainage is within the Sacramento River watershed, which drains into the Delta, water quality criteria for the Delta is applicable to Sutter County runoff water quality. However, monitoring and enforcement of water quality objectives for the Sacramento River is the responsibility of the CVRWQCB according to objectives identified in a plan developed specifically for the Central Valley Region (Region 5).

Water quality objectives for the Sacramento River are specified in the *Water Quality Control Plan for the Sacramento River Basin and San Joaquin River Basin* (Basin Plan) prepared by the CVRWQCB in compliance with the federal CWA and the California Water Code (Section 13240). The Basin Plan establishes water quality objectives, and implementation programs to meet stated objectives and to protect the beneficial uses of water in the Sacramento-San Joaquin River Basin. Because Sutter County located within the CVRWQCB's jurisdiction, all discharges to surface water or groundwater are subject to the Basin Plan requirements.

Construction Dewatering

Dewatering during construction is sometimes necessary to keep trenches or excavations free of standing water when improvements or foundations/footings are installed where groundwater levels tend to be shallow. Clean or relatively pollutant-free wastewater that poses little or no threat to water quality may be discharged directly to surface water under certain conditions. The CVRWQCB has adopted a general NPDES permit for short-term discharges of small volumes of wastewater from certain construction-related activities. Permit conditions for the discharge of these types of wastewaters to surface water are specified in "General Order for

Dewatering and Other Low-Threat Discharges to Surface Waters" (Order No. 5-00-175, NPDES No. CAG995001). Discharges may be covered by the permit provided they are: (1) either four months or less in duration; or (2) the average dry weather discharge does not exceed 0.25 million gallons per day. Construction dewatering, well development water, pump/well testing, and miscellaneous dewatering/low-threat discharges are among the types of discharges that may be covered by the permit. The general permit also specifies standards for testing, monitoring, and reporting, receiving water limitations, and discharge prohibitions.

Construction Site Runoff Management

In accordance with NPDES regulations, to minimize the potential effects of construction runoff on receiving water quality, the state requires that any construction activity affecting one acre or more must obtain a General Construction Activity Stormwater Permit (General Permit). The first General Permit was issued in 1992. The SWRCB adopted a revised General Permit in August 1999. Performance standards for obtaining and complying with the General Permit are described in NPDES General Permit No. CAS000002, Waste Discharge Requirements, Order No. 99-08-DWQ. Under the 1999 General Permit, all construction activity over one acre must obtain a General Permit. The General Permit was modified in April 2001 (SWRCB Resolution No. 2001-046) to require permittees to implement specific sampling and analytical procedures to determine whether the BMPs used at permitted construction sites are effective.

General Permit applicants are required to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) which includes implementing BMPs to reduce construction effects on receiving water quality by implementing erosion control measures and reducing or eliminating non-stormwater discharges. Examples of typical construction BMPs included in SWPPPs include, but are not limited to: using temporary mulching, seeding, or other suitable stabilization measures to protect uncovered soils; storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or surface water; developing and implementing a spill prevention and cleanup plan; and installing sediment control devices such as gravel bags, inlet filters, fiber rolls, or silt fences to reduce or eliminate sediment and other pollutants from discharging to the City's drainage system or receiving waters.

Local

Sutter County manages discharges of stormwater from construction sites by its Department of Public Works Design Standards, Appendix B. These standards are consistent with the state and federal regulations described above. For construction activities that disturb one acre or more, a Notice of Intent (NOI) to comply with the terms of the State General Permit to Discharge Storm Water Associated with Construction Activities must be submitted to the State Water Resources Control Board. One of the most important terms is to develop and implement a SWPPP. The SWPPP describes how stormwater runoff will be protected at the construction site.

The Sutter County Design Standards further require all construction sites, regardless of the area disturbed, to implement BMPs to mitigate the discharge of pollutants and provide erosion control. The Design Standards reference the California Stormwater Quality Association's *Stormwater Best Management Practice Handbook, Construction* for guidance on use of BMPs.

4.4 AIR QUALITY

INTRODUCTION

This section describes the existing air quality conditions within Sutter County, the County's attainment status for criteria air pollutants, relevant State and federal ambient air quality standards, the regulatory agencies responsible for managing and improving air quality, and the laws and plans that have been adopted to improve air quality. A discussion of global greenhouse gas emissions and the potential for emissions to cumulatively contribute to global climate change is also discussed, in addition to recent regulations passed to monitor and reduce those emissions. Information for this section is based on data from the U.S. Environmental Protection Agency (U.S. EPA), the California Energy Commission (CEC), the Feather River Air Quality Management District (FRAQMD), and the California Air Resources Board (CARB).

The attainment of criteria air pollutants in the county is important for the health and well-being of Sutter County's residents and visitors. Non-attainment of air pollutants increases the risk of adverse health effects to those that live and work in these areas. It is important to note that both the regional and local air quality can affect residents in the county. Planning for communities that reduce people's dependence on the automobile can greatly reduce the amount of emissions generated in the county.

SUMMARY OF KEY FINDINGS

- Air pollutant emissions within the Northern Sacramento Valley Air Basin (NSVAB) are generated by stationary and mobile sources. Mobile sources, which include emissions from motor vehicles, account for the majority of the air pollutant emissions within the NSVAB. Farming operations also contribute 42 percent of the total PM emissions in the entire county.
- The CARB indicates that Sutter County has an existing estimated risk that is between 50 and 500 cancer cases per 1 million people. A significant portion of Sutter County is within the 100 to 250 cancer cases per 1 million people range. There is a higher risk around Yuba City where the cancer risk is as high as 500 cases per 1 million people. There are only very small portions of the county where the cancer risk is between 50 and 100 cases.
- Sutter County is in non-attainment for the federal 8-hour ozone standard, the State 1-hour and 8-hour standards, and the PM_{10} 24-hour standard. Future population growth around the incorporated cities in the county will make attaining these standards challenging. The meteorology and topography of the NSVAB also adds to this challenge.
- Regional efforts, as well as policies adopted by the FRAQMD, indicate that there is acknowledgement of the linkage between land use, transportation, agricultural operations, and air quality.
- While the effects of global warming within Sutter County are difficult to predict, a broad scientific consensus has been reached that concludes that addition of greenhouse gases to the atmosphere by human activities, predominantly the burning of fossil fuels but also land use changes, is increasing the potency of the greenhouse effect and leading to global climate change.

EXISTING CONDITIONS

Regional Climate

Sutter County is located within the Sacramento Valley Air Basin (SVAB) which consists of the northern half of the Central Valley and approximates the drainage basin for the Sacramento River and its tributaries. The SVAB is bounded on the west by the Coast Range, on the north by the Cascade Range, on the east by the Sierra Nevada, and on the south by the San Joaquin Valley Air Basin. The intervening terrain is flat, and approximately 25 feet above sea level. The SVAB consists of the counties of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba and portions of Placer and Solano Counties.

Hot dry summers and mild rainy winters characterize the Mediterranean climate of the Sacramento Valley. The climate of the SVAB is dominated by the strength and position of the semi-permanent high-pressure cell over the Pacific Ocean north of Hawaii. In summer, when the high-pressure cell is strongest and farthest north, temperatures are high and humidity is low, although the incursion of the sea breeze into the Central Valley helps moderate the summer heat. In winter, when the high-pressure cell is weakest and farthest south, conditions are characterized by occasional rainstorms interspersed with stagnant and sometimes foggy weather. Throughout the year, daily temperatures may range from summer highs usually exceeding 100 degrees Fahrenheit and winter lows occasionally below freezing. Average annual rainfall is about 20 inches with snowfall being very rare. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

In addition to prevailing wind patterns that control the rate of dispersion of local pollutant emissions, Sutter County experiences two types of inversions that affect the vertical depth of the atmosphere through which pollutants can be mixed. In the warmer months in the SVAB (May through October), sinking air forms a "lid" over the region. These subsidence inversions contribute to summer photochemical smog problems by confining pollution to a shallow layer near the ground. These warmer months are characterized by stagnant morning air or light winds with the delta sea breeze arriving in the afternoon out of the southwest. Usually, the evening breeze transports the airborne pollutants to the north and out of the SVAB. During about half of the day from July to September, however, a phenomenon called the “Schultz Eddy” prevents this from occurring. Instead of allowing the prevailing wind patterns to move north carrying the pollutants out of the valley, the Schultz Eddy causes the wind pattern to circle back south. This phenomenon exacerbates the pollution levels in the area and increases the likelihood of violating federal or State standards. The Schultz Eddy normally dissipates around noon when the Delta sea breeze begins.

In the second type of inversion, the mountains surrounding the SVAB create a barrier to airflow which can trap air pollutants in the valley. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells lie over the valley. The air near the ground cools by radiative processes, while the air aloft remains warm. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. These inversions typically occur during winter nights and can cause localized air pollution "hot spots" near emission sources because of poor dispersion. The surface concentrations of pollutants are highest when these conditions are combined with smoke from agricultural burning or when temperature inversions trap cool air and pollutants near the ground. Although these subsidence and radiative inversions are present throughout much of the year, they are much less dominant during spring and fall, and the air quality during these seasons is generally good.

Local Climate

The climate of Sutter County is subject to hot dry summers and mild rainy winters which characterize the Mediterranean climate of the SVAB. Summer temperatures average approximately 90 degrees Fahrenheit during the day and 50 degrees Fahrenheit at night. Winter daytime temperatures average in the low 50s and nighttime temperatures are mainly in the upper 30s.

During summer, prevailing winds are from the south. This is primarily because of the north-south orientation of the valley and the location of the Carquinez Strait, a sea-level gap in the coast range that is southwest of Sutter County. During winter, atmospheric conditions cause north winds to become more frequent, but winds from the south still predominate.

Criteria Air Pollutants

Criteria air pollutants are a group of pollutants for which federal or State regulatory agencies have adopted ambient air quality standards. Criteria air pollutants are classified in each air basin, county, or in some cases, within a specific urbanized area. The classification is determined by comparing actual monitoring data with State and federal standards. If a pollutant concentration is lower than the standard, the area is classified as "attainment" for that pollutant. If an area exceeds the standard, the area is classified as "non-attainment" for that pollutant. If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated "unclassified."

Ambient Air Quality Standards

Both the federal and State government have established ambient air quality standards for outdoor concentrations of various pollutants in order to protect public health. The federal and State ambient air quality standards have been set at levels whose concentrations could be generally harmful to human health and welfare and to protect the most sensitive persons from experiencing health impacts with a margin of safety. Applicable ambient air quality standards are identified later in this section.

The air pollutants for which federal and State standards have been promulgated and which are most relevant to air quality planning and regulation in the air basins include ozone, carbon monoxide, nitrogen oxides, suspended particulate matter, sulfur dioxide, and lead. In addition, toxic air contaminants are of concern in Sutter County. Each of these pollutants is briefly described below.

- **Ozone (O_3)** is a gas that is formed when reactive organic gases (ROGs) and nitrogen oxides (NO_X), both byproducts of internal combustion engine exhaust and other processes undergo slow photochemical reactions in the presence of sunlight. Ozone concentrations are generally highest during the summer months when direct sunlight, light wind, and warm temperature conditions are favorable to the formation of this pollutant.

- **Carbon Monoxide (CO)** is a colorless, odorless gas produced by the incomplete combustion of fuels. CO concentrations tend to be the highest during the winter morning, with little to no wind, when surface-based inversions trap the pollutant at ground levels. Because CO is emitted directly from internal combustion engines, unlike ozone, motor vehicles operating at slow speeds are the primary source of CO in the SVAB. The highest ambient CO concentrations are generally found near congested transportation corridors and intersections.

- **Nitrogen Oxides (NO_X)** is the generic term for a group of highly reactive gases, all of which contain nitrogen and oxygen in varying amounts. Many of the nitrogen oxides are colorless and odorless. However, one common pollutant, nitrogen dioxide (NO_2) along with particles in the air can often be seen as a reddish-brown layer over many urban areas. Nitrogen oxides form when fuel is burned at high temperatures, as in a combustion process. The primary manmade sources of NO_X are motor vehicles, electric utilities, and other industrial, commercial, and residential sources that burn fuels. Nitrogen oxides can also be formed naturally.

- **Respirable Particulate Matter (PM_{10})** and **Fine Particulate Matter ($PM_{2.5}$)** consist of extremely small, suspended particles or droplets 10 microns and 2.5 microns or smaller in diameter. Some sources of suspended particulate matter, like pollen and windstorms, occur naturally. However, in populated areas, most fine suspended particulate matter is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities.

- **Sulfur Dioxide (SO_2)** is a colorless, extremely irritating gas or liquid. It enters the atmosphere as a pollutant mainly as a result of the burning of high sulfur-content fuel oils and coal, and from chemical processes occurring at chemical plants and refineries.

- **Lead** occurs in the atmosphere as particulate matter. The combustion of leaded gasoline is the primary source of airborne lead. Since the use of leaded gasoline is no longer permitted for on-road motor vehicles, lead is not a pollutant of concern in the SVAB.

- **Toxic Air Contaminants (TACs)** are known to be highly hazardous to health, even in small quantities. TACs are airborne substances capable of causing short-term (acute) and/or long-term (chronic or carcinogenic) adverse human health effects (i.e., injury or illness). TACs can be emitted from a variety of common sources, including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations.

  TAC impacts are assessed using a maximum individual cancer risk (MICR) that estimates the probability of a potential maximally exposed individual (MEI) contracting cancer as a result of sustained exposure to toxic air contaminants over a constant period of 24 hours per day for 70 years for residential receptor locations. The CARB and local air districts have determined that any stationary source posing an incremental cancer risk to the general population (above background risk levels) equal to or greater than 10 people out of 1 million to be excessive. For stationary sources, if the incremental risk of exposure to project-related TAC emissions meets or exceeds the threshold of 10 excess cancer cases per 1 million people, the CARB and local air district require the installation of best available control technology (BACT) or maximum available control technology (MACT) to reduce the risk threshold. To assess risk from ambient air concentrations, the CARB has conducted studies to determine the total cancer inhalation risk to individuals due to outdoor toxic pollutant levels. The CARB has conducted studies to determine the total cancer inhalation risk to individuals due to outdoor toxic pollutant levels. According to the map prepared by the CARB showing the estimated inhalation cancer risk for TACs in the State of California, Sutter County has an existing estimated risk that is between 50 and 500 cancer cases per 1 million people. A significant portion of Sutter County is within the

100 to 250 cancer cases per 1 million people range. There is a higher risk around Yuba City where the cancer risk is as high as 500 cases per 1 million people. There are only very small portions of the County where the cancer risk is between 50 and 100 cases.[1] This represents the lifetime risk that between 50 and 500 people in 1 million may contract cancer from inhalation of toxic compounds at current ambient concentrations under an MEI scenario.

Federal and State Air Quality Standards

Table 4.4-1 identifies the federal and State ambient air quality standards that are applicable in California. Table 4.4-2 lists the health effects associated with these pollutants.

Table 4.4-1. Ambient Air Quality Standards Applicable in California

Pollutant	Averaging Time	Standard (ppm)[4]		Standard (µg/m^3)[5]	
		State[1]	Federal[2]	State[1]	Federal[2]
Ozone (O_3)	1-hour	0.09	0.12	-	-
	8-hour	0.07	0.08	-	-
Carbon Monoxide (CO)	1-hour	20	35	-	-
	8-hour	9.0	9.0	-	-
Nitrogen Dioxide (NO_2)	1-hour	0.25	-	-	-
	Annual arithmetic mean	-	0.053	-	-
Sulfur Dioxide (SO_2)	1-hour	0.25	-	-	-
	24-hour	0.04	0.14	-	-
	Annual arithmetic mean	-	0.03	-	-
Hydrogen Sulfide (H_2S)	1-hour	0.03	-	-	-
Vinyl Chloride (C_2H_3Cl)	24-hour	0.01	-	-	-
Particulate Matter – 10 microns or less (PM_{10})	24-hour	-	-	50	150
	Annual arithmetic mean	-	-	20	-
Particulate Matter – 2.5 microns or less ($PM_{2.5}$)	24-hour	-	-	-	35
	Annual arithmetic mean	-	-	12	15
Sulfate Particles (SO_4)	24-hour	-	-	25	-
Lead Particles (Pb)	30 days	-	-	1.5	-
	Calendar quarter	-	-	-	1.5

Source: California Air Resources Board, Ambient Air Quality Standards, http://www.arb.ca.gov/research/aaqs/aaqs2.pdf, Accessed August 31, 2007.

[1]California standards for ozone, carbon monoxide (except Lake Tahoe), sulfur dioxide (1- and 24-hour), nitrogen dioxide, suspended particulate matter (PM10 and PM2.5), and visibility reducing particles, are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 on Title 17 of the California Code of Regulations.

[2]National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest eight hour concentration in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m^3 is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard.

[4] ppm = parts per million by volume.

[5] µg/m3 = micrograms per cubic meter.

1 California Air Resources Board, Cancer Inhalation Risk: Local Trend Maps, Yuba-Sutter: 2001 Cancer Risk Per Million, http://arb.ca.gov/toxics/cti/hlthrisk /cncrinhl/rskmapvwtrend.htm, accessed August 29, 2007.

Table 4.4-2. Health Effects of Main Criteria Air Pollutants

Pollutant	Adverse Effects
Ozone	• Ozone can irritate lung airways and cause inflammation. Other symptoms include wheezing, coughing, and breathing difficulties during exercise or outdoor activities. People with respiratory problems are most vulnerable, but even healthy people that are active outdoors can be affected when ozone levels are high. • Repeated exposure to ozone pollution for several months may cause permanent lung damage. • Even at very low levels, ground-level ozone triggers a variety of health problems including aggravated asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses like pneumonia and bronchitis. • Ground-level ozone interferes with the ability of plants to produce and store food, which makes them more susceptible to disease, insects, other pollutants, and harsh weather. • Ozone reduces crop and forest yields and increases plant vulnerability to disease, pests, and weather.
Carbon Monoxide	• The health threat from lower levels of CO is most serious for those who suffer from heart disease. For a person with heart disease, a single exposure to CO at low levels may cause chest pain and reduce that person's ability to exercise; repeated exposures may contribute to other cardiovascular effects. • Healthy people can be affected by high levels of CO as well. People who breathe high levels of CO can develop vision problems, reduced ability to work or learn, reduced manual dexterity, and difficulty performing complex tasks. At extremely high levels, CO is poisonous and can cause death. • CO contributes to the formation of ground-level ozone, which can trigger serious respiratory problems.
Particulate Matter	• Particle pollution, especially fine particles, contains microscopic solids or liquid droplets that are so small that they can get deep into the lungs and cause serious health problems. Numerous scientific studies have linked particle pollution exposure to a variety of problems, including: increased respiratory symptoms, such as irritation of the airways, coughing, or difficulty breathing; decreased lung function, aggravated asthma, development of chronic bronchitis; irregular heartbeat, nonfatal heart attacks; and premature death. • Particles can be carried over long distances by wind and then settle on ground or water. The effects of this settling include: making lakes and streams acidic; changing the nutrient balance in coastal waters and large river basins; depleting the nutrients in soil; damaging sensitive forests and farm crops; and affecting the diversity of ecosystems.
Nitrogen Dioxide	• One of the main ingredients involved in the formation of ground-level ozone, which can trigger serious respiratory problems. • Reacts to form nitrate particles, acid aerosols, as well as NO2, which also cause respiratory problems. • Contributes to formation of acid rain; to nutrient overload that deteriorates water quality; and to atmospheric particles that cause visibility impairment. • Reacts to form toxic chemicals.
Sulfur Dioxide	• SO_2 causes a wide variety of health and environmental impacts because of the way it reacts with other substances in the air. • Peak levels of gaseous SO_2 can cause temporary breathing difficulty for people with asthma who are active outdoors. Longer-term exposures to high levels of SO_2 gas and particles cause respiratory illness and aggravate existing heart disease. • SO_2 reacts with other chemicals in the air to form tiny sulfate particles. When these are breathed, they gather in the lungs and are associated with increased respiratory symptoms and disease, difficulty in breathing, and premature death.
Lead	• People, animals, and fish are mainly exposed to lead by breathing and ingesting it in food, water, soil, or dust. Lead accumulates in the blood, bones, muscles, and fat. Infants and young children are especially sensitive to even low levels of lead. • Excessive exposure to lead causes seizures, mental retardation, behavioral disorders, memory problems, and mood changes. Low levels of lead damage the brain and nerves in fetuses and young children, resulting in learning deficits and lowered IQ. • Lead exposure causes high blood pressure and increases heart disease, especially in men. Lead exposure may also lead to anemia.

Source: Environmental Protection Agency, Six Common Air Pollutants, http://www.epa.gov/air//urbanair/6poll.html, accessed August 29, 2007.

Stationary and Mobile Sources

Air pollutant emissions within the SVAB are generated by stationary and mobile sources. Stationary sources can be divided into two major subcategories: point and area sources.

Point sources are usually subject to a permit to operate from the local air district, occur at specific identified locations, and are usually associated with manufacturing and industry. Examples of point sources include refineries, concrete batch plants, and can coating operations.

Area sources are widely distributed and produce many small emissions, and do not require permits to operate from any air agency. Examples of area sources include residential and commercial water heaters, painting operations, portable generators, lawn mowers, and consumer products such as barbeque lighter fluid and hairspray. The wide-spread use of these items and operations contributes to regional air pollution.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and are classified as either on-road or off-road. On-road sources are those that are legally operated on roadways and highways. Off-road sources include aircraft, ships, trains, racecars, and construction vehicles. Mobile sources account for the majority of the air pollutant emissions within the SVAB.

Regional Air Quality

Regionally, some portions of the SVAB have fewer air quality problems than others. Only the southern portion of the SVAB is in non-attainment for federal ozone standards, which includes the southern portion of Sutter County. Regarding State standards, the entire SVAB is in non-attainment for ozone and PM standards.

Even though the SVAB does not attain certain standards, air quality has improved over time. Pollutant levels have decreased dramatically since the 1980s even with substantial region-wide population growth.

Local Air Quality

The CARB collects ambient air quality data through a network of air monitoring stations throughout the State. Many of the monitoring stations are part of the State and Local Air Monitoring Network Plan (SLAM) which collect data on ambient levels of gaseous and particular air pollutants which are used to determine attainment status. There are two monitoring stations in Sutter County: the Yuba City – Almond Street station and the Sutter Buttes – S Butte station. While the Yuba City station collects data on ozone, carbon monoxide, PM_{10}, $PM_{2.5}$, and nitrogen dioxide, the Sutter Buttes station only collects data on ozone.

Table 4.4-3 lists the ambient pollutant concentrations that have been measured within the county through the period of 2004 to 2006. As shown, Sutter County has a recent history of federal exceedances for the 8-hour ozone standard. Sutter County has also exceeded the State standards for the ozone 1-hour average, the ozone 8-hour average, and the PM_{10} standards. The federal and state standards for CO, $PM_{2.5}$, and NO_2 have not been exceeded during this time.

Table 4.4-3. Exceedances of Federal and State Air Pollution Standards in Sutter County[1]

Pollutant	Standard[2]	2004	2005	2006
Ozone (1-hour)				
Highest 1-hour measurement	-	0.100 ppm	0.096 ppm	0.110 ppm
# days over Federal standard	0.12 ppm	0	0	0
# days over State standard	0.09 ppm	1	4	5
Ozone (8-hour)				
Highest 8-hour measurement	-	0.081 ppm	0.073 ppm	0.081 ppm
# days over Federal standard	0.08 ppm	1	0	2
# days over State standard	0.07 ppm	3	7	10
Carbon Monoxide (CO 8-hour)				
Highest 8-hour measurement	-	2.54 ppm	3.39 ppm	2.29 ppm
# days over Federal standard	9.0 ppm	0	0	0
# days over State standard	9.0 ppm	0	0	0
Particulate Matter (PM_{10})				
Highest 24-hour concentration	-	53.0 µg/m^3	60.0 µg/m^3	66.0 µg/m^3
# days over Federal standard	150.0 µg/m^3	0	0	0
# days over State standard	50.0 µg/m^3	1	5	4
Particulate Matter ($PM_{2.5}$)				
Highest 24-hour concentration	-	41.0 µg/m^3	47.2 µg/m^3	51.6 µg/m^3
# days over Federal standard	35.0 µg/m^3	0	0	0
Annual Mean	-	10.1 µg/m^3	10.2 µg/m^3	11.2 µg/m^3
Annual Mean over State standard	12.0 µg/m^3	n/a	n/a	n/a
Nitrogen Dioxide (NO_2)				
Highest 1-hour measurement	-	0.066 ppm	0.062 ppm	0.070 ppm
# days over State standard	0.25 ppm	0	0	0
Annual Mean	-	0.012 ppm	0.012 ppm	0.012 ppm
Annual Mean over Federal standard	0.053 ppm	n/a	n/a	n/a

Source: California Air Resources Board, Air Quality Data Statistics, http://www.arb.ca.gov/adam/welcome.html, accessed August 30, 2007.

[1]Data is derived from the Yuba City-Almond Street station due to the limited data collection capabilities of the Sutter Buttes-S Butte station. The Sutter Buttes station only collects data about ozone, while the Yuba City station collects data for all the pollutants listed above.

[2]It should be noted that according to the California Air Resources Board, an exceedance is not necessarily a violation of federal or State standards.

Attainment Status

As specified in the California Clean Air Act (CCAA) of 1988, it is the responsibility of each air pollution control district and air quality management district within the State to attain and maintain California's ambient air quality standards. The CCAA requires that an Attainment Plan be developed by all non-attainment districts for O_3, CO, sulfur oxides (SO_X), and NO_X that are either receptors or contributors of transported air pollutants. Districts are required to update the Plan every three years. The purpose of this Plan is to comply with the requirements of the CCAA as implemented through the California Health and Safety Code.

In compliance with the CCAA, the FRAQMD, in conjunction with other air districts in the NSVAB, prepared the 2003 NSVAB Air Quality Attainment Plan (AQAP) to address the non-attainment status for ozone and respirable PM_{10}. The NSVAB includes the following counties located in the northern portion of the SVAB: Butte, Colusa, Glenn, Shasta, Sutter, Tehama, and Yuba. This triennial update of the NSVAB AQAP discusses the progress made in implementing the 2000 plan and proposes modifications to the strategies necessary to attain the California ambient air quality standard for the 1-hour ozone standard at the earliest practicable date. The 2003 Plan

also identifies the air pollution problems to be cooperatively addressed on as many fronts as possible with the cooperation of other air districts. Like the 1994, 1997 and 2000 Plans, the 2003 Plan focuses on the adoption and implementation of control measures for stationary sources, area wide sources, indirect sources, and address public education and information programs. The 2003 Plan also addresses the effect that pollutant transport has on the NSVAB's ability to meet and attain the State standards.[2] Table 4.4-4 shows the District's attainment status for criteria air pollutants.

Table 4.4-4. Criteria Air Pollutants Attainment Status of the Feather River Air Quality Management District Area

Pollutant	State Standards	Federal Standards
Ozone (1-hour)	**Non-attainment**	N/A
Ozone (8-hour)	**Non-attainment**	**Non-attainment**
Carbon Monoxide	Attainment	N/A
PM_{10}	**Non-attainment**	Unclassified
$PM_{2.5}$	Unclassified	N/A
Nitrogen Dioxide	Attainment	Unclassified/Attainment
Sulfur Dioxide	Attainment	Unclassified/Attainment
Sulfates	Attainment	N/A
Lead	Attainment	N/A
Hydrogen Sulfide	Unclassified	N/A
Visibility Reducing Particles	Unclassified	N/A

Source: Feather River Air Quality Management District, 2004 FRAQMD Area Designations for State and National Ambient Air Quality Standards, http://www.fragmd.org, accessed August 30, 2007.

Ozone violations are caused in part, within the NSVAB, by combustion sources and have occasionally been influenced by smoke impacts due to nearby wildfires. The primary emission source is the internal combustion engine. The ozone problem is further aggravated by transport from the greater Sacramento region, which is comprised of Sacramento County, and portions of El Dorado, Placer, Sutter, and Yolo Counties. Ozone is formed by a photochemical reaction of the ozone precursors, nitrogen oxides and reactive organic gases. These ozone precursors are emitted as part of the exhaust of internal combustion engines in the NSVAB and greater Sacramento area and are transported northward via prevailing winds. Due to the regional nature of the ozone problem and the fact that the NSVAB counties share the same air basin with the greater Sacramento area, the 2003 Attainment Plan is prepared in conjunction with the Sacramento Valley Air Basin Control Council's Technical Advisory Committee.

The CARB has outlined, in the approved 1994 State Implementation Plan (SIP) for ozone, new control strategies that will be developed and implemented over the next decade in California. This 2003 Plan contains the suggested control measures included in the 2000 Plan along with the Tier 1 Control Measures (*Identification of Achievable Performance Standards and Emerging Technologies for Stationary Sources – March 1998*; *Identification of Performance Standards for Existing Stationary Sources – Updated May 16, 2002*). These control measures will reduce air pollution throughout California and ensure continued progress towards meeting or maintaining federal standards, as well as progress towards California's more stringent health protective State standards.

2 Feather River Air Quality Management District, Northern Sacramento Valley Air Basin, 2003 Air Quality Attainment Plan, http://www.fraqmd.org/FinalNSVAB/2003PlanContents.htm, Accessed August 31, 2007.

With the SIP as the State's established control strategy for the future, the CARB found that the NSVAB Districts would not be required to prepare a comprehensive Plan update for 2003. Instead, districts were directed to focus on implementing their existing control strategies and SIP commitments. The 2003 Plan update incorporates three general principles that guide air districts in their planning process:[3]

1. Air quality modeling to identify the reductions needed and to design effective emission reduction strategies,
2. Comprehensive emission reduction programs that take advantage of current emission control technologies, and
3. Address the impacts of pollutant transport in the attainment demonstration.

While air quality is gradually improving and tons of ROG and NO_x have been removed from the emission inventory, the District must continue to reduce emissions to meet and maintain state healthful air quality levels. Incentive programs, such as the Carl Moyer Program, assist the District in achieving the necessary NO_x and PM emission reductions to meet these objectives and requirements. Without incentive programs, emission reductions would have to be obtained from industry and other sources or through regulatory measures, where reductions are not typically as cost effective.

Sutter County Emission Contributions

Table 4.4-5 presents the latest average daily emissions for a variety of air pollutants including total organic gases (TOG), ROG, CO, NO_x, SO_x, PM_{10}, and $PM_{2.5}$ for Sutter County. It should be noted that there is a wide variety of activities that contribute to the emission of criteria air pollutants. The sources that are most associated with producing these pollutants come from fuel combustion, petroleum production, farming operations, and motor vehicles. Other contributions come from waste disposal, cleaning and surface coatings, solvent evaporation, and natural sources. Natural sources make up approximately five percent of Sutter County's emissions totals. It should also be noted that farming operations in Sutter County contribute approximately 42 percent to the total PM emissions (11.51 tons of PM per day from farming operations with 27.26 tons of PM per day for the entire county).

Within Sutter County, there are a number of facilities that emit significant amounts of air pollutants which contribute to the ambient air quality in the county and in the entire FRAQMD. Table 4.4-6 shows the various point source facilities located in Sutter County that report emissions to the CARB. A search on the CARB's database revealed 48 facilities in the county that contribute to the ambient air quality in the region, including gas stations, print shops, auto body shops, and dry cleaners.

Sensitive Receptors

Some individuals are considered to be more sensitive than others to air pollution. Reasons for greater sensitivity can include existing health problems, duration of exposure to air pollutants, or certain peoples' increased susceptibility to pollution-related health problems due to factors such as age.

3 Feather River Air Quality Management District, Northern Sacramento Valley Air Basin, 2003 Air Quality Attainment Plan, http://www.fraqmd.org/FinalNSVAB/2003PlanContents.htm, Accessed August 31, 2007.

Table 4.4-5. 2006 Estimated Average Daily Emissions for Sutter County (tons/day)

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
STATIONARY SOURCES								
Fuel Combustion								
Electric Utilities	0.29	0.03	0.34	0.78	0.02	0.12	0.12	0.12
Cogeneration	0.00	0.00	-	-	0.00	0.00	0.00	0.00
Oil and Gas Production (combustible)	0.83	0.24	0.43	1.76	0.00	0.05	0.00	0.05
Manufacturing and Industrial	0.03	0.01	0.14	0.41	0.05	0.03	0.03	0.03
Food and Agricultural Processing	0.19	0.16	0.40	1.89	0.02	0.14	0.13	0.13
Service and Commercial	0.06	0.01	0.46	0.23	0.01	0.05	0.05	0.05
Other (fuel combustion)	0.01	0.00	0.02	0.09	0.00	0.01	0.00	0.01
Total Fuel Combustion	**1.41**	**0.45**	**1.78**	**5.15**	**0.11**	**0.40**	**0.34**	**0.39**
Cleaning and Surface Coatings								
Laundering	0.02	0.00	-	-	-	-	-	-
Degreasing	0.18	0.14	-	-	-	-	-	-
Coatings and Related Process solvents	0.13	0.12	-	-	-	-	-	-
Printing	0.01	0.01	-	-	-	-	-	-
Adhesives and Sealants	0.03	0.02	-	-	-	-	-	-
Total Cleaning and Surface Coatings	**0.39**	**0.32**	**-**	**-**	**-**	**-**	**-**	**-**
Petroleum Production and Marketing								
Oil and Gas Production	8.63	2.47	0.00	0.00	-	-	-	-
Petroleum Refining	0.02	0.01	-	-	-	-	-	-
Petroleum Marketing	0.17	0.17	-	-	-	-	-	-
Other (Petroleum Production and Marketing)	0.00	0.00	-	-	-	-	-	-
Total Petroleum Production and Marketing	**8.82**	**2.65**	**0.00**	**0.00**	**-**	**-**	**-**	**-**
Industrial Processes								
Food and Agricultural	0.01	0.01	-	-	-	1.87	1.04	0.40
Mineral Processes	-	-	-	-	-	0.35	0.20	0.10
Wood and Paper	-	-	-	-	-	0.20	0.12	0.07
Other (Industrial Processes)	-	-	-	-	-	0.06	0.02	0.02
Total Industrial Processes	**0.01**	**0.01**	**-**	**-**	**-**	**2.47**	**1.38**	**0.60**
Total Stationary Sources	**10.62**	**3.43**	**1.78**	**5.15**	**0.11**	**2.88**	**1.72**	**0.99**

Table 4.4-5. 2006 Estimated Average Daily Emissions for Sutter County (tons/day)

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
AREAWIDE SOURCES								
Solvent Evaporation								
Consumer Products	0.68	0.57	-	-	-	-	-	-
Architectural Coatings and Related Process Solvents	0.27	0.26	-	-	-	-	-	-
Pesticides/Fertilizers	0.88	0.88	-	-	-	-	-	-
Asphalt Paving/Roofing	0.13	0.13	-	-	-	-	-	-
Total Solvent Evaporation	**1.95**	**1.84**	-	-	-	-	-	-
Miscellaneous Processes								
Residential Fuel Combustion	0.67	0.30	4.56	0.22	0.01	0.70	0.66	0.63
Farming Operations	2.32	0.19	-	-	-	11.51	5.23	0.78
Construction and Demolition	-	-	-	-	-	1.26	0.62	0.06
Paved Road Dust	-	-	-	-	-	3.35	1.53	0.23
Unpaved Road Dust	-	-	-	-	-	3.83	2.27	0.23
Fugitive Windblown Dust	-	-	-	-	-	2.35	1.07	0.18
Fires	0.00	0.00	0.02	0.00	-	0.00	0.00	0.00
Managed Burning and Disposal	0.89	0.49	5.85	0.39	0.07	0.64	0.63	0.60
Cooking	0.01	0.01	-	-	-	0.06	0.04	0.03
Total Miscellaneous Processes	**3.90**	**0.98**	**10.42**	**0.62**	**0.08**	**23.71**	**12.06**	**2.75**
Total Area-wide Sources	**5.85**	**2.82**	**10.42**	**0.62**	**0.08**	**23.77**	**12.06**	**2.75**
MOBILE SOURCES								
On-Road Motor Vehicles								
Light Duty Passenger (LDA)	0.81	0.75	6.66	0.58	0.00	0.03	0.03	0.02
Light Duty Trucks (LDT1)	0.50	0.47	4.56	0.45	0.00	0.02	0.02	0.01
Light Duty Trucks (LDT2)	0.41	0.37	3.85	0.49	0.00	0.02	0.02	0.01
Medium Duty Trucks (MDV)	0.19	0.17	1.98	0.27	0.00	0.01	0.01	0.01
Light Heavy Duty Gas Trucks 1 (LHDV1)	0.10	0.09	0.71	0.09	0.00	0.00	0.00	0.00
Light Heavy Duty Gas Trucks 2 (LHDV2)	0.04	0.03	0.26	0.03	0.00	0.00	0.00	0.00
Medium Heavy Duty Gas Trucks (MHDV)	0.15	0.14	1.06	0.07	-	0.00	0.00	0.00
Heavy Heavy Duty Gas Trucks (HHDV)	0.05	0.04	0.62	0.05	-	0.00	0.00	-
Light Heavy Duty Diesel Trucks 1 (LHDV1)	0.01	0.01	0.04	0.21	0.00	0.00	0.00	0.00
Light Heavy Duty Diesel Trucks 2 (LHDV2)	0.00	0.00	0.02	0.09	0.00	0.00	0.00	0.00
Medium Heavy Duty Diesel Trucks (MHDV)	0.01	0.01	0.12	0.63	0.01	0.02	0.02	0.02
Heavy Heavy Duty Diesel Trucks (HHDV)	0.49	0.43	1.75	6.39	0.05	0.27	0.27	0.24
Motorcycles (MCY)	0.13	0.12	0.98	0.03	-	0.00	0.00	0.00
Heavy Duty Diesel Urban Buses (UB)	-	-	-	0.00	-	-	-	-
Heavy Duty Gas Urban Buses (UB)	0.00	0.00	0.01	0.00	-	-	-	-

Table 4.4-5. 2006 Estimated Average Daily Emissions for Sutter County (tons/day)

	TOG	ROG	CO	NO_X	SO_X	PM	PM_{10}	$PM_{2.5}$
School Buses (SB)	0.00	0.00	0.03	0.04	0.00	0.00	0.00	0.00
Other Buses (OB)	0.01	0.01	0.05	0.01	-	0.00	0.00	0.00
Motor Homes (MH)	0.01	0.01	0.23	0.03	0.00	0.00	0.00	0.00
Total On-Road Motor Vehicles	**2.89**	**2.66**	**22.93**	**9.47**	**0.08**	**0.39**	**0.38**	**0.31**
Other Mobile Sources								
Aircraft	0.03	0.03	0.85	0.00	0.00	-	-	-
Trains	0.05	0.05	0.13	0.68	0.04	0.02	0.02	0.02
Recreational Boats	0.15	0.15	0.36	0.02	-	0.00	0.00	0.00
Off-Road Recreational Vehicles	0.06	0.06	0.53	0.01	-	0.00	0.00	0.00
Off-Road Equipment	0.48	0.43	2.89	1.19	0.01	0.07	0.07	0.07
Farm Equipment	0.74	0.64	3.16	3.14	0.03	0.19	0.19	0.19
Fuel Storage and Handling	0.08	0.08	-	-	-	-	-	-
Total Other Mobile Sources	**1.60**	**1.43**	**7.93**	**5.04**	**0.08**	**0.29**	**0.29**	**0.26**
Total Mobile Sources	**4.49**	**4.09**	**30.86**	**14.51**	**0.15**	**0.67**	**0.67**	**0.58**
NATURAL (NON-ANTHROPOGENIC) SOURCES								
Natural Sources								
Biogenic Sources	3.62	3.20	-	-	-	-	-	-
Geogenic Sources	0.02	0.00	-	-	-	-	-	-
Total Natural Sources	**3.64**	**3.20**	**-**	**-**	**-**	**-**	**-**	**-**
Total Natural (non-anthropogenic) Sources	**3.64**	**3.20**	**-**	**-**	**-**	**-**	**-**	**-**
GRAND TOTAL FOR SUTTER COUNTY	**24.61**	**13.54**	**43.06**	**20.27**	**0.35**	**27.26**	**14.45**	**4.31**

Source: California Air Resources Board, Almanac Emission Projection Data, http://www.arb.ca.gov/app/emsinv/emssumcat.php, Accessed August 30, 2007.

Table 4.4-6. Point Source Facilities and Criteria Pollutant Emissions (tons/year)

Facility Name	Address	City/County	Zip	TOG	ROG	CO	NOx	SOx	$PM_{2.5}$	PM_{10}
99 Travel Center	4142 S. Highway 99	Yuba City	95991	0.96	0.96	0.00	0.00	0.00	0.00	0.00
A & A Concrete Supply, Inc	1201 Market St	Yuba City	95991	0.00	0.00	0.00	0.00	0.00	8.94	2.27
Anacapa Oil 2001	Kellogg #2	Sutter Co.	95982	4.23	0.39	4.10	7.34	0.01	0.15	0.15
Anacapa Oil 2003	Frye #5	Sutter Co.	95982	9.01	0.82	2.88	20.01	0.00	0.08	0.08
Atlantic Oil 2030	Site 21221	Sutter Co.	95982	19.10	1.75	0.43	2.13	0.00	0.01	0.01
Atlantic Oil 2031	Atlantic Giusti #1	Sutter Co.	95982	6.77	0.62	1.44	12.22	0.00	0.00	0.00
Atlantic Oil 2076	Frye #1 S 27, T15n R1e	Sutter Co.	95982	5.30	0.48	17.24	0.88	0.49	15.47	0.01
Butte Sand & Gravel	10373 South Butte Rd	Sutter Co.	95982	1.14	1.00	6.93	31.30	3.29	24.25	13.82
Calpine Greenleaf I	5087 South Township Rd	Yuba City	95993	42.48	3.88	55.45	143.53	1.11	14.02	14.02
Calpine Greenleaf Unit/Gilroy Energy Center	875 North Walton Ave	Yuba City	95993	38.59	3.53	58.83	32.06	1.05	11.63	11.56
Calpine NgCo	232 Lewis	Sutter Co.	95982	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Catlett Whs	2138 East Catlett Rd	Pleasant Grove	95668	0.03	0.02	0.07	0.52	0.00	36.19	15.14
City Of Yuba City	202 Burns Drive	Yuba City	95991	7.10	0.68	1.85	0.91	0.05	0.03	0.03
Deluxe Packages	800 N. Walton Ave	Yuba City	95993	5.18	5.16	0.52	0.32	0.00	0.05	0.05
Eagle Moulding Co	1625 Tierra Buena	Yuba City	95992	0.00	0.00	0.00	0.00	0.00	7.33	3.67
El Centro Stg	7339 Pacific Ave	Pleasant Grove	95668	0.00	0.00	0.04	0.14	0.05	22.26	8.04
H & J Ent	101 Sumner St	Yuba City	95991	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hi And Dry Whs	1551 Acacia Ave	Sutter Co.	95982	0.13	0.05	0.09	0.50	0.00	44.48	16.20
Key Prod Co, Inc	Anapurna#1	Meridian	95957	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Montna Farms Rice Dryer	12755 Garden Highway	Yuba City	95991	0.03	0.02	0.07	0.49	0.01	44.05	15.90
North Valley Gin	9450 Agri Park Rd	Sutter Co.	95992	0.03	0.02	0.07	0.52	0.00	36.19	15.14
North Valley Gin	9450 Agri Park Rd	Meridian	95957	0.01	0.01	0.02	0.17	0.00	18.33	9.17
Pacific Gas And Electric Co.	15871 Central St	Robbins	95982	49.23	4.50	0.00	0.00	0.00	0.00	0.00
Pacific Intl Rice Mills, Inc	17465 Highway 113	Rio Vista	94571	0.02	0.02	0.06	0.40	0.00	18.08	6.01
Royale Energy, Inc	Po Box 1082	Yuba City	95991	0.65	0.06	0.93	0.36	0.00	0.02	0.01
Smc Cabinets	800 Northgate Drive	Live Oak	95953	0.11	0.00	0.00	0.00	0.00	6.34	0.00
Sunset Moulding Co	2200 Paseo Ave	Knights Landing	95645	6.19	6.10	0.27	0.33	0.00	19.34	9.69
Sutter Basin Growers Coop	21831 Knights Landing Rd	Yuba City	95993	0.14	0.09	0.51	3.78	0.05	82.91	33.53
Sutter Energy Center	5029 South Township Road	Sutter Co.	95982	28.48	2.60	8.49	107.79	6.65	23.08	22.94
Sutter Rice Co	1421 Acacia Rd	Sutter Co.	95851	0.06	0.03	0.44	0.53	0.00	44.57	16.19
Teichert Readymix	Pacifc Ave And Riego Rd	Sutter Co.	95982	0.00	0.00	0.00	0.00	0.00	11.80	0.01
Triunion Dvpt Corp 2021	Sanborn 4	Sutter Co.	95982	0.85	0.08	8.90	5.31	0.00	0.02	0.03
Triunion Dvpt Corp 2025	Steidlmayer #26	Sutter Co.	95982	0.84	0.08	8.76	5.22	0.01	0.02	0.02
Triunion Dvpt Corp 2028	Cs #1	Sutter Co.	95982	3.03	0.28	31.49	18.13	0.00	0.07	0.07
Triunion Dvpt Corp 2057	Spencer 113	Yuba City	95991	0.30	0.03	3.08	1.92	0.00	0.02	0.01

Table 4.4-6. Point Source Facilities and Criteria Pollutant Emissions (tons/year)

Facility Name	Address	City/County	Zip	TOG	ROG	CO	NOx	SOx	$PM_{2.5}$	PM_{10}
Unity Forest Products	1162 Putman Ave	Yuba City	95991	0.03	0.03	0.13	1.80	0.00	15.93	7.97
Valley View Packing Co	7547 Sawtelle Ave	Pleasant Grove	95668	1.40	0.00	5.00	24.10	0.10	1.80	0.00
Van Dyke's Rice Dryer Inc	4036 Pleasant Grove Rd	Pleasant Grove	95957	0.03	0.02	0.23	0.93	0.33	61.12	39.55
Venoco Inc 2027	Site 2227d3	Meridian	95957	6.78	0.62	1.72	12.44	0.00	0.20	0.00
Venoco Inc 2035	Site 52	Meridian	95957	13.56	1.24	3.39	24.68	0.01	0.38	0.00
Venoco Inc 2042	Site 27284	Meridian	95957	6.71	0.61	1.73	12.47	0.00	0.20	0.00
Venoco Inc 2044	Site 33342	Meridian	95957	6.78	0.62	1.73	12.47	0.00	0.20	0.00
Venoco Inc 2048	Site 21224	Meridian	95957	6.78	0.62	1.72	12.44	0.00	0.20	0.00
Venoco Inc 2049	Site 2227d1	Sutter Co.	95982	13.59	1.24	3.47	25.09	0.01	0.41	0.00
Vintage Petro, Inc 2009	Sanborn 33	Sutter Co.	95982	6.99	0.00	2.26	16.56	0.00	0.46	0.00
Vintage Petro, Inc 2050	Tisdale 128	Sutter Co.	95982	7.01	0.64	2.27	16.62	0.00	0.46	0.00
Vintage Petro, Inc 2054	Deane 1(Middleton & Norman)	Sutter Co.	95982	0.29	0.03	13.99	3.55	0.00	0.46	0.00
Vintage Petro, Inc 2055	Hankins 171	Yuba City	95992	1.85	0.17	5.61	3.86	0.00	0.01	0.00
Yuba City Cogeneration	5087 N. Township Rd	Yuba City	95991	10.68	0.98	52.99	80.74	3.30	6.45	6.41

Source: California Air Resources Board, Facility Search Engine, http://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php, Accessed August 30, 2007.

Land uses such as day care providers, primary and secondary schools, hospitals, and convalescent homes are considered to be sensitive receptors to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality related health problems than the general public. Residential uses are considered sensitive because people in residential areas are often at home for extended periods of time, so they can be exposed to pollutants for extended periods. Recreational areas are considered moderately sensitive to poor air quality because vigorous exercise associated with recreation places a high demand on the human respiratory function.

Land Use Planning and Air Quality

California's population is expected to grow, and meeting federal and State air quality standards suggests a need for a fundamental shift in approaches to land use and development. According to the CEC, the State needs to investigate approaches that go beyond decreasing transportation fuel use and relieving congestion to approaches that can serve as a nexus for developing efficient transportation means in communities. This approach can help California reach attainment status for those pollutants which are currently above the standards. An opportunity to meet those goals includes incorporating "smart growth," which refers to the application of specific development principles to make prudent use of resources and create low-impact communities through design.[4]

Sutter County is a member of the Sacramento Area Council of Governments (SACOG), which covers a six-county area. SACOG has developed the "Blueprint," a transportation and land use study for the Sacramento region which includes all of Sutter County. SACOG has also adopted a Metropolitan Transportation Plan (MTP) to provide a regional vision for all modes of surface transportation and a guide for regional transportation investments. The MTP includes programs designed to meet goals which include: clean air; design of communities to encourage local walk, bicycle, and transit travel; and for improvements to main routes that serve longer distance travel around the region, specifically freeways, rail lines, and major roadways and streets that serve regional traffic. Application of these smart growth planning concepts in growing areas of Sutter County would help reduce the emission of criteria air pollutants by reducing vehicle trips, promoting alternative transportation, and developing smart-growth projects that, overall, reduce the population's reliance on motor vehicle use and reduces the distance of any necessary vehicle trips.

Global Warming and Greenhouse Gases

Gases that trap heat in the atmosphere are called greenhouse gases (GHG), analogous to the way a greenhouse retains heat. Common GHG include water vapor, carbon dioxide, methane, nitrous oxides, chlorofluorocarbons, hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, ozone, and aerosols. Global atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased markedly as a result of human activities since 1750 and now far exceed pre-industrial values determined from ice cores spanning many thousands of years. The accumulation of GHG in the atmosphere regulates the earth's temperature. This "greenhouse effect" is a natural phenomenon, without which the planet would be significantly colder. However, a broad scientific consensus has been reached that concludes that GHG emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. While uncertainties remain, the most recent scientific reports both at the

4 California Energy Commission, *2006 Integrated Energy Policy Report Update*, January 2007.

international level and for the State of California conclude that human-made climate change is occurring.

In California, the most common GHG is carbon dioxide (CO_2), which constitutes approximately 84 percent of all GHG emissions.[5] CO_2 emissions in California are mainly associated with in-state fossil fuel combustion and with fossil fuel combustion in out-of-state power plants supplying electricity to California. Other activities that produce CO_2 emissions include mineral production, waste combustion, and land use changes that reduce vegetation.

By percentage, the transportation sector is the largest contributor to greenhouse gas emissions in California, followed by residential and commercial energy use. California's transportation sector is heavily dependent upon oil, with petroleum-based fuels currently providing nearly all (96 percent) of California's transportation energy needs (State of California 2007). Transportation-related activities represent almost half (48 percent) of California's petroleum-based fuel consumption. Within the transportation sector, light vehicles (i.e., cars, light trucks, and motorcycles) account for about 60 percent of the petroleum-based energy consumption. Electricity generation is the second largest category of GHG emissions in California, followed by natural gas combustion and solid waste processing/disposal.

Global climate change, as a result of increased GHG in the atmosphere, refers to the change in the average weather of the earth that may be measured by changes in wind patterns, storms, precipitation, and temperature. Projected climate changes could impact California's public health through changes in air quality, weather related disasters, and a possible increase in infectious disease. If extreme precipitation and severe weather events become more frequent, and if sanitation and water-treatment facilities have inadequate capacity or are not maintained, increases in infectious diseases may result.[6] The baseline by which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. Many of the recent concerns over global climate change use this data to extrapolate a level of statistical significance specifically focusing on temperature records from the last 150 years (the Industrial Age) that differ from previous climate changes in rate and magnitude.

The United Nations Intergovernmental Panel on Climate Change (IPCC) constructed several emission trajectories of greenhouse gas emissions needed to stabilize global temperatures and climate change impacts. The IPCC predicted that the range of global mean temperature change from 1990 to 2100, given six scenarios, could range from 1.1°C to 6.4°C. Regardless of analytical methodology, global average temperature and sea level are expected to rise under all scenarios.[7]

Although not specifically designed to address GHG emissions, California Code of Regulations (CCR) Title 24 Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings was enacted in 1978 and allow consideration and possible incorporation of new energy efficient technologies that could reduce emissions. The latest amendments, made in October 2005, currently require new homes to use half the energy they used only a decade ago. Energy efficient buildings require less electricity, and electricity

5 California Energy Commission. December 2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report.

6 California EPA, AB 1493 (Pavley) Briefing Package Global Warming and Greenhouse Gas Emissions from Motor Vehicles.

7 Intergovernmental Panel on Climate Change, 2007. R.B. Alley et al. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Summary for Policymakers.

production by fossil fuels results in greenhouse gas emissions. Therefore, increased energy efficiency results in decreased greenhouse gas emissions.

In 2006, the California State Legislature adopted AB 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing GHG in California. GHG as defined under AB 32 include carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. AB 32 requires CARB, the State agency charged with regulating statewide air quality, to adopt rules and regulations that would achieve greenhouse gas emissions equivalent to statewide levels in 1990 by 2020. On or before June 30, 2007, CARB is required to publish a list of discrete early action GHG emission reduction measures that can be implemented by 2010. The law further requires that such measures achieve the maximum technologically feasible and cost effective reductions in GHGs from sources or categories of sources to achieve the statewide greenhouse gas emissions limit for 2020.

AB 32 also requires that by January 1, 2008, CARB shall determine what the statewide greenhouse gas emissions level was in 1990, and approve a statewide greenhouse gas emissions limit that is equivalent to that level, to be achieved by 2020. While the level of 1990 GHG emissions has not yet been approved, reported emissions vary from 425 to 468 Tg CO_2 Eq. (teragrams of CO_2 equivalent).[8] In 2004, the emissions were estimated at 492 Tg CO_2 Eq.[9]

Under AB 32, CARB has the primary responsibility for reducing GHG emissions. However, the California Climate Action Team Report (2006) contains strategies that can be undertaken by many other California agencies. In addition, CARB staff are working on several non-regulatory measures including guidance documents and protocols to encourage the public, local government and businesses to take positive steps to reduce GHG emissions. Currently no State or regional regulatory agency has formally adopted or widely agreed upon thresholds of significance for greenhouse gas emissions, or issued guidance regarding the analysis of greenhouse gas emissions in EIRs. CEQA Guidelines §15064.7 states that “each public agency is encouraged to develop and publish thresholds of significance that the agency uses in the determination of the significance of environmental effects.” This provides justification for lead agencies to determine their own climate change thresholds. The Association of Environmental Professionals (AEP) recommends that "If a Lead Agency chooses to address GCC [Global Climate Change] in a [CEQA] document, it should be addressed in the context of a cumulative (versus project-specific) impact."

REGULATORY CONTEXT

Air quality in the county is regulated by the U.S. EPA, the CARB, and the FRAQMD. These agencies develop rules and regulations to meet the goals or directives imposed on them through legislation. Although U.S. EPA regulations may not be superseded, both state and local regulations may be more stringent. In general, air quality evaluations are based on air quality standards developed by the federal and state government.

Since many air pollution problems are regional in nature, the federal government sometimes designates multi-county areas as “Non-attainment Areas.” Because it covers a large area, a

8 CO_2 equivalent is the quantity that describes the amount of CO_2 that would have the same global warming potential (GWP) when measured over a specified timescale (generally, 100 years). For example, the GWP for methane is 21 and for nitrous oxide is 310. This means that one million metric tonnes of methane is equivalent to the emissions of 21 million metric tonnes of CO_2; one million metric tonnes of nitrous oxide is equal to 310 million metric tonnes of CO_2.

9 California Energy Commission. December 2006. Inventory of California Greenhouse Gas Emissions and Sinks: 1990 to 2004. Staff Final Report.

non-attainment area can be composed of several different air districts. The "non-attainment area" designation means that these individual local agencies must work together to solve regional air pollution problems. The Sacramento Federal Ozone Non-attainment Area includes all of Sacramento and Yolo Counties and portions of El Dorado, Solano, Sutter, and Placer Counties.

Federal

U.S. Environmental Protection Agency

The U.S. EPA is the federal agency responsible for setting and enforcing the federal ambient air quality standards for atmospheric pollutants. The U.S. EPA regulates emission sources that are under the exclusive authority of the federal government, such as aircraft, ships, and certain locomotives. The U.S. EPA also has jurisdiction over emission sources outside state waters (outer continental shelf), and establishes various emissions standards for vehicles sold in states other than California.

As part of its enforcement responsibilities, the U.S. EPA requires each state with non-attainment areas to prepare and submit a State Implementation Plan that demonstrates the means to attain the federal standards. The SIP must integrate federal, state, and local plan components and regulations to identify specific measures to reduce pollution in non-attainment areas, using a combination of performance standards and market-based programs.

Federal Clean Air Act

The Federal Clean Air Act (CAA), as amended, establishes air quality standards for several pollutants. These standards are divided into primary standards and secondary standards. Primary standards are designed to protect public health, and secondary standards are intended to protect public welfare from effects such as visibility reduction, soiling, nuisance, and other forms of damage. The CAA requires that regional plans be prepared for non-attainment areas illustrating how the federal air quality standards could be met. The CARB approved the most recent revision of the SIP in 1994, and submitted it to the U.S. EPA. The SIP, approved by the U.S. EPA in 1996, consists of a list of ROG and NO_x control measures for demonstrating future attainment of ozone standards. The steps to achieve attainment will continue to require significant emissions reductions in both stationary and mobile sources.

State

California Air Resources Board

The CARB, a part of the California EPA (Cal/EPA) is responsible for the coordination and administration of both federal and state air pollution control programs within California. In this capacity, the CARB conducts research, sets state ambient air quality standards, compiles emission inventories, develops suggested control measures, and provides oversight of local programs. The CARB establishes emissions standards for motor vehicles sold in California, consumer products (such as hairspray, aerosol paints, and barbecue lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions. The CARB also has primary responsibility for the development of California's SIP, for which it works closely with the federal government and the local air districts.

California Clean Air Act

The CCAA of 1988 requires non-attainment areas to achieve and maintain the state ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the state ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards. The CCAA also requires that by the end of 1994 and once every three years thereafter, the air districts are to assess their progress toward attaining the air quality standards. The triennial assessment is to report the extent of air quality improvement and the amounts of emission reductions achieved from control measures for the preceding three year period.

Air Toxics Hot Spots Information and Assessment Act

The Air Toxics Hot Spots Information and Assessment Act of 1987 (AB 2588), California Health and Safety Code Section 44300 et seq., provides for the regulation of over 200 air toxics and is the primary air contaminant legislation in the state. Under the Act, local air districts may request that a facility account for its TAC emissions. Local air districts then prioritize facilities on the basis of emissions, and high priority designated facilities are required to submit a health risk assessment and communicate the results to the affected public. The TAC control strategy involves reviewing new sources to ensure compliance with required emission controls and limits, maintaining an inventory of existing sources of TACs, and developing new rules and regulations to reduce TAC emissions. The purpose of AB 2588 is to identify and inventory toxic air emissions and to communicate the potential for adverse health effects to the public.

Assembly Bill 1807

AB 1807, enacted in September 1983, sets forth a procedure for the identification and control of TACs in California. The CARB is responsible for the identification and control of TACs, except pesticide use. AB 1807 defines a TAC as an air pollutant that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. The CARB prepares identification reports on candidate substances under consideration for listing as TACs. The reports and summaries describe the use of and the extent of emissions in California resulting in public exposure, together with their potential health effects.

In 1998, the CARB identified diesel particulate matter as a toxic air contaminant under the AB 1807 program. Diesel particulate matter is emitted into the air via heavy-duty diesel trucks, construction equipment, and passenger cars. In October 2000, the CARB released a report entitled Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles. This plan identifies diesel particulate matter as the predominant TAC in California and proposes methods for reducing diesel emissions.

Senate Bill 656

As a first step in the implementation of Senate Bill 656 (SB 656, Reducing Particulate Matter in California), the CARB approved a list of the most readily available, feasible, and cost-effective control measures that can be employed by air districts to reduce particulate matter PM_{10} and $PM_{2.5}$ (collectively referred to as PM) in 2004. The list is based on rules, regulations, and programs existing in California as of January 1, 2004, for stationary, area-wide, and mobile sources. As a second step air districts must adopt implementation schedules for selected measures from the list. The implementation schedules will identify the appropriate subset of measures, and the dates for final adoption, implementation, and the sequencing of selected control measures. In developing the implementation schedules, each air district will prioritize measures based on the nature and severity of the PM problem in their area and cost-

effectiveness. Consideration is also given to ongoing programs such as measures being adopted to meet national air quality standards or the state ozone planning process. The consideration and adoption of air district rules in their implementation schedules, coupled with CARB's ongoing programs, will ensure continued progress in reducing public exposure to PM and attainment of the state and federal standards.

Senate Bill 700

In September 2003, the California Legislature adopted SB 700: Agriculture and Air Quality Summary and Implementation. This bill removed a long-standing statute that exempted agricultural operations from obtaining operating permits for sources of air pollution. The bill requires agricultural sources with emissions greater than or equal to one-half the threshold for a federal major source to obtain a District permit, and sources that meet or exceed the threshold for a federal major source to obtain a federal operating permit from U.S. EPA or a local district with a federally approved federal operating permits program.

Assembly Bill 32

On September 27, 2006, AB 32, the California Global Warming Solutions Act, of 2006 was enacted by the State of California. The legislature stated that “global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California (AB 32).” The Act caps California’s GHG emissions at 1990 levels by 2020. The Act defines greenhouse gas emissions as all of the following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. This agreement represents the first enforceable state-wide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB 32 lays out a program to inventory and reduce greenhouse gas emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB 32 charges the CARB with responsibility to monitor and regulate sources of greenhouse gas emissions in order to reduce those emissions. By July 1, 2007, CARB must adopt a list of discrete early action measures that can be adopted and implemented before January 1, 2010 to reduce greenhouse gas emissions. By January 1, 2008, CARB must define the 1990 baseline emissions for California, and adopt that baseline as the 2020 statewide emissions cap. CARB is then to conduct rulemaking, culminating in rule adoption by January 1, 2011, for reducing greenhouse gas emissions to achieve the emissions cap by 2020. The rules must take effect no later than 2012. In designing emission reduction measures, CARB must aim to minimize costs, maximize benefits, improve and modernize California’s energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state’s efforts to improve air quality.

To date however, neither the CARB nor the FRAQMD have promulgated regulations or guidance aimed at assessing or reducing greenhouse gas emissions from commercial development.

Local

Feather River Air Quality Management District

The FRAQMD is a bi-county District that was formed in 1991 to administer local, State, and federal air quality management programs for Yuba and Sutter Counties. The mission of

FRAQMD is to promote and improve the air quality of Sutter and Yuba Counties through monitoring, evaluation, education, implementing control measures to reduce emissions from stationary sources, permitting and inspecting pollution sources, enforcing air quality regulations, and supporting and implementing measures to reduce emissions from motor vehicles.

FRAQMD also collaborates with other air districts in the NSVAB to address the non-attainment status for O_3 and PM_{10} in the greater Sacramento region. For example, FRAQMD prepared the 2003 NSVAB AQAP to discuss the progress made in implementing the previous 2000 plan and proposed modifications to the strategies necessary to attain the California ambient air quality standards at the earliest practicable date. The 2003 Plan also identified the air pollution problems to be cooperatively addressed on as many fronts as possible with the cooperation of other air districts.

Currently FRAQMD is proposing to adopt new and amend existing regulations regarding agricultural source emissions in accordance with passage of SB 700. As discussed above, SB 700 requires that major agricultural sources of air pollution and certain non-major agricultural sources of air pollution obtain stationary source permits from local districts. Existing FRAQMD Rule 4.3 exempts all agricultural sources from obtaining district permits. The proposed amendments to Rule 4.3 would remove those exemptions for these sources and will update FRAQMD rules and regulations to be consistent with State and federal law. The exemption will be such that FRAQMD rules will be equally, but not more stringent than state law requires.[10]

10 Feather River Air Quality Management District, Staff Report, Proposed Rule Amendment: Regulation IV Rule 4.3 Exemptions From Permit, http://www.fraqmd.org/Rules/Rule4-3_staffreport(draft).pdf, Accessed August 31, 2007.

4.5 VISUAL RESOURCES

INTRODUCTION

This section describes the existing visual character of Sutter County. This section lists local scenic resources, which include a variety of natural and man-made elements that give Sutter County its unique character. Information for this section was obtained from the California Department of Transportation and photographs from a field survey of the County.

Protection of Sutter County's scenic resources and open space areas is important to help define the visual character of the County and can provide opportunities for other facilities and services such as passive recreation opportunities, pedestrian and bike access, storm drainage, flood water conveyance, utility infrastructure, and land use buffering.

SUMMARY OF KEY FINDINGS

- There are no officially recognized scenic roadways in Sutter County, however many of the rural country roads offer unobstructed views of surrounding mountain ranges, expansive agricultural land, and miles of orchards.
- The most visually predominant natural element in the county is the Sutter Buttes. Sutter County also includes two large river corridors, a 70-mile segment of the Sacramento River and a 45-mile segment of the Feather River, which extend the length of the County.

EXISTING CONDITIONS

Visual resources are an important component to the quality of life and identity of any geographic area. When people experience a place, their primary sensory interaction with that place is visual in nature. The scenic resources within the county include a variety of elements and viewsheds such as the Sutter Buttes; the Feather, Sacramento and Bear Rivers; and the valley's orchards, all of which contribute to the unique character of the county.

"Aesthetic value" refers to the perception of the natural beauty of an area, as well as the elements that create or enhance its visual quality. While aesthetic value is subjective, it is typically included as a criterion for evaluating those elements that contribute to the quality that distinguishes an area. Most communities identify scenic resources as an important asset, although what is considered "scenic" may vary according to its environmental setting. "Scenic resources" can include natural open spaces, topographic formations, and landscapes. These are resources that can be maintained and enhanced to promote a positive image in the future. Many people associate natural landforms and landscapes with scenic resources, such as oak woodlands, lakes, rivers, streams, and some historical areas. Scenic resources can also include urban open spaces and the built environment. Examples of these would include parks, trails, pathways, nature centers, archaeological and historical resources, and architectural features. "Viewsheds" constitute the range of vision in which scenic resources may be observed. They are defined by physical features that frame the boundaries or context to one or more scenic resources.

Scenic Roadways

The California State Scenic Roadways Program, established in 1963 by the State legislature, identifies key roadways in California that contribute to the State's scenic resources by providing viewsheds with aesthetic value. The program establishes the State's responsibility for the protection and enhancement of California's natural scenic beauty through regulations pertaining to scenic roadways and their function.

There are no officially recognized scenic roadways in Sutter County, however many of the rural country roads offer unobstructed views of surrounding mountain ranges, expansive agricultural land, and miles of flowering fruit trees. In a state such as California with most of the population centered in and around highly urbanized areas, Sutter County offers residents and visitors the natural beauty of the great Central Valley.

Views and Vistas

Sutter County is characterized by relatively flat terrain with generally expansive viewsheds and valley elevations ranging from 35 to 80 feet above measured sea level.[1] The one prominent topographic feature within the county is the Sutter Buttes (32,000 acres), a remnant volcano with a peak elevation approximately 2,000 feet above the surrounding valley floor. Juxtaposed to the vast open farmland, the Sutter Buttes create a dramatic landmark that is visible throughout the County.

Views West

Views to the west span across the open valley's rich agricultural land and natural wildlife areas. The western portion of the County is predominantly agricultural with miles of emerald green rice paddies and fertile soils supporting row crops and orchards. The Sacramento River borders the western edge of the County creating a lush viewshed corridor providing recreation and visual beauty to the County. Looking beyond the valley's patchwork of farmland and the snaking Sacramento River, the scene is back-dropped by the California coastal mountains dotted with native oaks.

Views East

Most of Sutter County's population is located in the eastern side of the county with the cities of Yuba City and Live Oak forming a major economic hub. The eastern side of the county is bordered by the Feather River, which is a source of water and is a significant recreational amenity for the region. Just beyond the river are Yuba and Placer counties, which have a similar landscape character, with rolling oak-studded hills and views of the Sierra Nevada Mountain Range.

Views South

Much like the western part of the county, the southern area is predominantly farmland. Grain fields and state wildlife areas provide refuge for thousands of migratory birds each year. The southern part of the county is also where the Sacramento and the Feather Rivers converge with the Sutter Bypass, a major north-south floodway that extends through the County.

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

Views North

Sprouting abruptly out of the base of the valley is the "smallest mountain range in the world" known by most as the Sutter Buttes. The mountain range is visible from most areas in the County and serves as a statewide destination for tourists, who can access the private mountain range through guided tours. The Buttes' landscape is predominantly characterized by grasslands and oak woodlands, with canyons that support natural drainage ways and riparian vegetation.

Natural Elements

The most visually predominant natural element in Sutter County is the Sutter Buttes, but the County is also bordered by the Feather River and the Sacramento River. The Sacramento River, the largest river in the state, extends for approximately 70 miles along the western border of Sutter County. The Feather River extends approximately 45 miles through Sutter County, forming part of the east Sutter County boundary.

The Bear River roughly parallels about 11 miles of the eastern County boundary, entering the County from Placer County to the east, and crossing the boundary at several points. The river flows in a south-southwest direction until it joins the Feather River, about one mile north of the town of Nicolaus. Although smaller than either the Sacramento or Feather Rivers, the Bear River also provides recreational opportunities, agricultural irrigation water, and a diverse wildlife habitat.

Open Space

A large percentage of the County is agricultural in nature, which creates vast viewsheds of undeveloped areas. However, land recognized by the General Plan as having an open space land use designation also exists through much of the County. These types of open space lands can be found along the miles of river corridors, as well as approximately 44,084 acres of wildlife areas that support abundant animal life.

Manmade Elements

The Sutter Bypass is a manmade canal system that provides water to agricultural lands throughout the County. It consists of two parallel canals that extend from the northern area of the County, along the western side of the Sutter Buttes, and to the southern border of Sutter and Yolo Counties. Sutter County is also home to historic buildings that have been home to the founding families of the region. Further discussion on these structures and correlating historic designations can be found in the Cultural Resources section of this document.

REGULATORY CONTEXT

Federal

Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act (16 U.S.C. 1271-1287) establishes a method for providing federal protection for certain free-flowing rivers remaining in the country. Its intent is to preserve them and their immediate environments for the use and enjoyment of present and future generations. Eligible rivers can be designated as Wild River Areas, Scenic River Areas, or Recreational River

The Wild and Scenic Rivers Act, under Section 10, includes management direction for designated rivers. Section 10(a) states the following:

> *....each component of the national wild and scenic rivers system shall be administered in such manner as to protect and enhance the values which caused it to be included in said system without, insofar as is consistent therewith, limiting other uses that do not substantially interfere with public use and enjoyment of these values. In such administration primary emphasis shall be given to protecting its aesthetic, scenic, historic, archaeologic, and scientific features. Management plans for any such component may establish varying degrees of intensity for its protection and development, based on the special attributes of the area.*

State

California Scenic Highway Program

In 1963, the State legislature established the California Scenic Highway Program through Senate Bill 1467. This Senate Bill added Section 260 et seq. to the Streets and Highway Code. In these statutes, the State proclaims its intent to:

> *...establish the State's responsibility for the protection and enhancement of California's natural scenic beauty. After it is determined that a proposed highway satisfies the qualifications for Scenic Highway designation, the local jurisdiction, with support of its citizens, must adopt a program to protect the scenic corridor. The zoning and land use along the highway must meet the State's minimum requirements for scenic highway corridor protection. The five legislatively required standards for scenic highways under Section 261 of the Streets and Highways Code are:*
>
> - *Regulation of land use and density of development (i.e., density classifications and types of allowable land uses),*
> - *Detailed land and site planning (i.e., permit or design review authority and regulations for the review of proposed developments),*
> - *Prohibitions of off-site outdoor advertising and control of on-site outdoor advertising,*
> - *Careful attention to and control of earthmoving and landscaping (i.e., grading, ordinances, grading permit requirements, design review authority, landscaping and vegetation requirements), and*
> - *The design and appearance of structures and equipment (i.e., placement of utility structures, microwave receptors, etc.).*

As stated in Section IV of Caltrans' "Guidelines for the Official Designation of Scenic Highways," a Scenic Corridor is defined as the area of land generally adjacent to and visible from the highway. It is usually limited by topography and/or jurisdictional boundaries.

Local

There are no local regulations that govern visual resources in the County.

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4.6 PREHISTORIC AND HISTORIC RESOURCES

INTRODUCTION

This chapter provides the history of Sutter County, and discusses the prehistoric and historic resources within the County. The history provides a context by which the resources in the County can be interpreted and evaluated for significance. Information for this section was obtained from the California Office of Historic Preservation, a records search at the Northeast Information Center, and a variety of cultural resources inventories, ethnographies, and archaeological surveys.

Many recorded resources are concentrated in just a few areas of the County demonstrating that many unknown prehistoric and historic sites/resources may be located throughout the County. Understanding the history and timelines for these known sites is an important part of obtaining a greater appreciation for the value of these resources. Planning for sensitive areas that may contain unknown prehistoric and historic resources is important for the preservation and conservation of sites and structures that may be important to the County's rich history and for putting together and understanding pieces of the past.

SUMMARY OF KEY FINDINGS

- A limited portion of the County has been surveyed for prehistoric, historic, cultural or archeological resources.
- There is a record of early explorers witnessing a large population of Native Americans within the Sacramento and San Joaquin Valleys.
- Agricultural uses and urban development may have compromised some prehistoric sites; however, previous studies have shown that resources are often found well below the common plow zone and it cannot be assumed that agricultural land does not contain valuable cultural resource.
- The Sutter Buttes have served as a point of cultural and historic significance in Sutter County.
- Sutter County has two registered California Historical Landmarks, twenty-one Points of Historic Interest recognized by the California Department of Parks and Recreation Office of Historic Preservation, and a number of other sites considered to have local or County-wide historic and cultural significance.
- The Northeast Information Center records included a total of 402 previously recorded/recognized cultural resources:
    - 263 of the 402 identified resources are historic-era resources.
    - 52 of the 402 identified resources are prehistoric.
    - 15 of the 402 identified resources have both historic and prehistoric components (multi-component).

EXISTING CONDITIONS

History

Ethnography

Sutter County is within the ethnographic territory of three Native American groups: the Nisenan (also called the Southern Maidu), the Patwin, and the Konkow (also known as Northeastern Maidu). The Nisenan's territory included the northeastern portion of the Sacramento Valley, from the Sacramento River to the crest of the Sierra Nevada. Along the Sacramento River, Nisenan territory was bounded by Patwin territory, which continued west to Chiles Valley, near Putah Creek (Johnson 1978). The Konkow were limited to the northeastern corner of Sutter County, around the present day town of Live Oak (Riddell 1978).

Ethnographic research suggests similar behavioral patterns and social organization for the Native American groups (Beals 1933; Dixon 1905; Duncan 1964; Kroeber 1925, 1929; Riddell 1978; Wilson and Towne 1978). Members of a tribelet lived in a village comprised of clustered or dispersed family groups. A tribelet is a small independent group of Native California people who shared one language. Three to five villages made up a village cluster, which were small, self-sufficient communities. Villages were located on natural rises along rivers and streams, though groups did relocate during the course of seasonal gathering rounds. Houses were typically semi-subterranean, dome-shaped, and covered with earth or vegetation (tule or grasses).

A variety of plants and animals comprised the Native American diet. Deer, antelope, elk, rabbits, fish, eels, quail, waterfowl were the primary game hunted. Plant resources exploited included acorns, pine nuts, seeds, roots, and hazel nuts. In the summer, groups would travel to the hills to hunt large game, and return to the valley to collect seeds in the spring. Such a large, abundant resource base allowed these groups to attain a high population density.

Trade with nearby and distant groups was regular and well established. Exchange networks that extended from the coast to the eastern slope of the Sierra Nevada allowed the distribution of extra-local materials, including obsidian and marine shell, across the Sacramento Valley.

Prehistory

The cultural chronology for the Sacramento Valley has witnessed little revision since archaeologists first proposed a sequence of cultural change for the Delta, Sacramento Valley, and San Joaquin Valley (Lillard and Purves 1936; Lillard et al. 1939). This sequence was revised by Beardsley (1948; 1954), and based the Central California Taxonomic System (CCTS), on central California archaeology. More than 20 years later, Fredrickson (1973), realizing the limitation of the CCTS, revised the sequence to its current form. A sequence is a series of distinct cultures separated by time and distinguished from each other in the archaeological record by physical differences (assemblage composition, artifact types, settlement practices, mortuary practices). A pattern is a general way of life shared by peoples within a defined geographic area. It is characterized by the presence of similar technologies, trade networks, ceremonies, mortuary practices.

Although it has been established that prehistoric groups inhabited parts of California prior to 6,000 years ago, the **Windmiller Pattern** (ca. 3,000 B.C. – 500 B.C.) is the earliest recognized cultural assemblage for the Sacramento Valley. These deposits contain a variety of flaked and ground stone artifacts, baked clay, and shell artifacts, suggesting that populations exploited a diverse resource base during this period.

The **Berkeley Pattern** (ca. 500 B.C. – A.D. 500) suggests a shift in subsistence practices and technology. Technological changes include the increased use of mortar and pestles, extensive use of bone tools, shifts in flaked stone reduction technologies, and the occurrence of certain type of shell beads and pendants. The switch to mortar and pestle indicates acorn became a diet staple. The addition of acorns, a high-cost resource due to the time-consuming leaching process, implies greater diet breadth than that observed during Windmiller times.

The **Augustine Pattern** (ca. A.D. 500- A.D. 1880) is a time of resource intensification, and increasing sedentism, territoriality, and social complexity. Technological innovations, such as shift from the dart and atlatl to the bow and arrow, occurred during this period. Assemblages from this period include flaked and ground stone artifacts, shell beads and pendants, bone tools, and steatite objects. Bedrock milling features also are present, either in association with mounds or as a component of smaller task-oriented locations.

European Exploration and Settlement

The first European to see the Sutter Buttes was Gabriel Moraga, a Spaniard trying to locate mission sites in 1808. Another Spaniard, Luis Arguello, led an expedition in 1817 to explore Northern California by water. He called the Buttes “Los Picachos” or “the peaks.” He also named the Feather River (“El Rio de las Plumas”) because he saw many feathers of wild fowl floating on the water. In 1828, Jedediah Smith trapped in the vicinity of the Buttes. It was in 1833 that a brigade of French fur trappers from the Hudson Bay Company first referred to these mountains as the “buttes.” This contingent is believed responsible for the introduction of the small pox virus to the Native American population. This devastating illness is attributed with killing up to 75 percent of the Maidu and resulting in the abandonment of many villages in a single year.

Sutter County derives its name from one of its first settlers, John Augustus Sutter. Sutter received a grant from the Mexican government of approximately 50,000 acres and named it New Helvetia. In 1841, after settling at Sutter's Fort, he established Hock Farm, believed to be a corruption of the German word "hoch" or "upper", on the site of a Nisenan village originally located on the west bank of the Feather River about eight miles south of Yuba City. In establishing the Hock Farm he created the first large-scale agricultural settlement in this part of the state. Sutter planted grapes, pomegranates, fig trees, grain, and the first peach orchard on his land at Hock Farm, as well as using it as a stock ranch for cattle.

With the 1848 discovery of gold at Sutter's sawmill in Coloma on the south fork of the American River and the rapid spread of mining to all foothill areas, the culture and life style of the Nisenan were severely disturbed. Widespread disruption of the people and destruction of their villages and other sites occurred with the resulting influx of miners and mining activities. At the same time, farming was begun in the Valley, impacting native culture in the lowlands.

Sutter County itself experienced little mining, but was attractive for its agricultural potential and was primarily settled by former miners who became interested in agriculture after 1860. Early activities included the cutting of wild hay, herding of stock and the harvesting of lumber along the rivers. It has been reported that when the early settlers arrived, a belt of woodland extended along all the major rivers from one-quarter to two miles in width, consisting of oaks, sycamores, cottonwoods, and willows. This growth was soon cleared to provide lumber fuel for steamboats, as well as for building supplies, and also to clear land for farming.

During the Gold Rush, as hundreds of thousands of new immigrants flooded into California, hostilities between these new immigrants and the Native Americans rapidly accelerated. The new immigrant miners, ranchers and farmers came to see the Native Americans as threats to

their prosperity and security, an obstacle blocking progress, as well as primitive. There is a traceable evolution of attitudes based on the changing needs of the immigrants. The unfortunate events that followed included the massacre of many remaining villages. In 1863 some 461 Native Americans, mostly Maidu, were force-marched 125 miles to the Round Valley Reservation during which many were killed or died. Only 277 completed the journey, most in poor health. The Round Valley Reservation is located to the northwest of Sutter County in Mendocino County.

During the 1870's and 1880's, valuable farmland in Sutter County was lost to the silting up of the rivers caused by hydraulic gold mining in the Sierras. Local farmers formed the Anti-Debris Association, and in 1884, they won a landmark suit halting the practice of hydraulic mining. Once land was cleared, river bottom land claimed and hydraulic mining stopped, agriculture developed rapidly. Several famous agricultural varieties were developed in Sutter County, including Proper Wheat in 1868, which opened up the wheat exporting market in Sutter County; the Thompson Seedless Grape in the 1870's, which led to a thriving raisin industry; and the Phillips Cling Peach in the 1880's, which paved the way for a surge in the canning industry, with three local canneries established. Several organizations, important to the prosperity of Sutter County, were created as a result of agriculture. The Farmers' Cooperative Union of Sutter County grew out of the farmers concerns about speculators who worked together to keep the prices paid to farmers low, regardless of the market. These speculators also worked in concert to drive up the price of transportation of agricultural products. The Farmers' Cooperative Union, begun by S.E. Wilson, B.F. Walton, George Ohleyer, A.L. Chandler, Francis Hamlin, George Brittan and Henry Elmer, enabled the farmers to join together and act to improve prices paid to farmers. Other organizations included: the Farmers' Union Bank, the financial branch of the Farmers' Cooperative Union; Producers' Bank of Yuba City; the Nicolaus Farmers' Grain Warehouse; the California Fruit Canners Association, now known as the Californian Packing Corporation.

Agriculture and the promise of a stable and prosperous future brought many different kinds of people to Sutter County. One of these groups of people was the East Indian Sikhs of the Punjab province of India. Beginning around 1910, East Indians moved to the Central Valley of California to work on roadbeds for the electric railroads. Eventually, the East Indians turned their attention to orchard and farm work.

Many people had an impact on the way in which Sutter County has developed. They include: B.F. Walton, largely responsible for the development of the peach canning industry in the County; J.T. Bogue, the first nurseryman to propagate the Phillips cling peach commercially; E.T. Thornbrough of Meridian, who first brought prune trees to the area; George Ohleyer, founder and editor of the Sutter County Farmer newspaper and one time supervisor; Allen Noyes, who acquired land on the west side of the Buttes, creating the village of Noyesburg and deeding, upon his death, land to the school and cemetery districts; Frederick Peter Tarke and Frederick Hoke, who as young men were drawn to the gold fields but soon decided that they might better make their living in a ranching and agricultural partnership that encompassed several thousand acres of land on the southwest side of the Buttes; Harry Stabler, one of the first County Agricultural Commissioners; William Thompson, a Sutter resident and propagator of the seedless grape; and John Paxton Onstott, responsible for establishing the raisin industry in the United States.

Sutter County was one of the 27 original counties of California, set up by the first Legislature on February 18, 1850. Originally, Sutter County included portions of what are now Placer and Colusa counties; the boundaries were fixed at their current location around 1856. Prior to 1900, Live Oak, Meridian, and Nicolaus were noted as shipping points and South Butte, Pennington,

West Butte, Kirkville, and Pleasant Grove had post offices and a few stores and shops. Many of these communities were short lived.

Senator Thomas J. Green purchased land from John Sutter, which he called Oro. Green convinced the State to name Oro the County seat in 1850. Unfortunately Oro, located approximately two miles from Nicolaus in the southern portion of the County, consisted of a single building. Since there was no suitable building in Oro, however, the County seat was moved to Nicolaus the same year. In 1851, the Seat was moved to Auburn, but when Placer County was formed later that year the town of Vernon (now called Verona) was selected. As Vernon's growth declined, the Seat moved back and forth between Nicolaus and Yuba City. In 1856, Yuba City became the permanent County Seat for Sutter County.

Yuba City was named after and founded upon the site of a Nisenan village in 1849 by Sam Brannan, Pierson Reading, and Henry Cheever. A year later Yuba City was nearly abandoned as neighboring Marysville on the east side of the Feather River grew rapidly, becoming a major supply point for the gold mines in the Sierras. As the Gold Rush continued and many miners became less enchanted with the gold fields, many of them began moving into Sutter County to develop the rich agricultural land, and Yuba City flourished again to eventually become the larger city. In 1908 Yuba City became incorporated.

Live Oak evolved as a commercial center to serve the agricultural population where alfalfa, dairying, fruit and nuts were quite prominent. Live Oak became an incorporated community in 1947, the second and last incorporated community in Sutter County to date.

The town of Sutter traces its origins to 1849 when Edward Thurman and a partner built a cabin at the east end of the Sutter Buttes. Four years later G.E. Brittan purchased the Thurman land and built a two-story home out of the Butte rock. As the agricultural industry developed and thrived, the community continued to grow. In 1887, real estate speculator and developer P.D. Gardemeyer arrived on the scene with a grand view of the future of "Sutter City". Plans were laid out for a large and modern city but unlawful land deals caused Gardemeyer to quietly and quickly leave town. Shortly thereafter Sutter dropped the "City" from its name.

There are two Registered Historical Landmarks located within Sutter County. No. 346 is the site of John Sutter's Hock Farm, the first non-Native American settlement in Sutter County. No. 929 is the site where William Thompson settled and propagated what has come to be known as the Thompson Seedless Grape. There are also twenty-one (21) Points of Historical Interest in Sutter County as identified by the California Department of Parks and Recreation Office of Historic Preservation.

Sutter County has continued to rely on its agricultural resources as the primary economic base. The cropping patterns have evolved into two predictable types. Those areas nearer the rivers with the coarser soils are extremely well suited to orchard crops while the lowlands farther from the rivers with the clayey soils are well suited to the production of rice. A variety of truck crops and grains are also grown in various locations. Grazing is the predominant agricultural use in the Buttes with scattered grain and orchard farming.

Summary

Earlier studies have suggested that many prehistoric sites in Sutter County could have intact deposits that would contribute to the archaeological record. A significant portion of Sutter County has not been systematically surveyed for prehistoric or historic resources. Although previously recorded prehistoric sites are concentrated along present-day levees along rivers or in close proximity to the Sutter Buttes, Native Americans regularly gathered grasses, seeds, and

other resources from the valley floor (Johnson 1978). Before the levees were constructed, winter storms and spring run-offs regularly deposited sediments over the valley floor, covering any archaeological resources that may exist; it is possible that currently unknown archaeological sites exist in these contexts. While this may reflect a bias in inventory sampling, it may also reflect Native American settlement patterns. Early ethnographers noted that the typical Nisenan village was situated upon natural rises along rivers and streams (Kroeber 1925:395; Powers 1877:316; Wilson and Towne 1978:388). Villages were placed on natural rises as winter storms and spring run-off frequently turned the valley between the Sacramento and Feather rivers into an inland sea (Johnson 1978). During these times, the Sutter Buttes became a place of refuge for Native Americans (California Department of Parks and Recreation 2007).

In Sutter County, levees were often built on top of midden deposits and mounds (Bouey 1990, 1993; Glover and Bouey 1990; Jewell and Clemmer 1958; Johnson and Johnson 1974a; Wilson 1979). There have been limited attempts to relocate some of these resources (Bouey 1989, 1990, 1993; Glover and Bouey 1990; Jewell and Clemmer 1958; Johnson and Johnson 1974a; 1974b; Shapiro et al. 1997) but a significant number could not be relocated, either due to the destruction of the resource, or a possible error in the location information. Among the prehistoric sites that were relocated and excavated, several were partially impacted, but many retained enough integrity and data potential to be eligible for the National Register of Historic Places (Bouey 1990, 1993; Glover and Bouey 1990; Jewell and Clemmer 1958; Johnson and Johnson 1974a; Wilson 1979).

In addition to using the Sutter Buttes as a refuge, it was also a place of reverence to the Maidu, who called the formation Histum Yani, which translated to “Middle Mountain of the Earth” or “Spirit Mountain.” The Maidu believed that after death, a person rested at the Sutter Buttes before journeying to the afterlife (California Department of Parks and Recreation 2007).

Known Resources

A review of the records at the Northeast Information Center identified 402 previously recorded/recognized resources, 132 of which included Trinomials or Primary Numbers. Of these, 263 are historic-era, 52 are prehistoric, and 15 resources have historic and prehistoric components (multi-component); documentation is missing for three resources. More information on the location of historic resources is provided on Figure 4.6-1. Specific locational information of archaeological resources and prehistoric sites is confidential and not provided in this TBR or any public document.

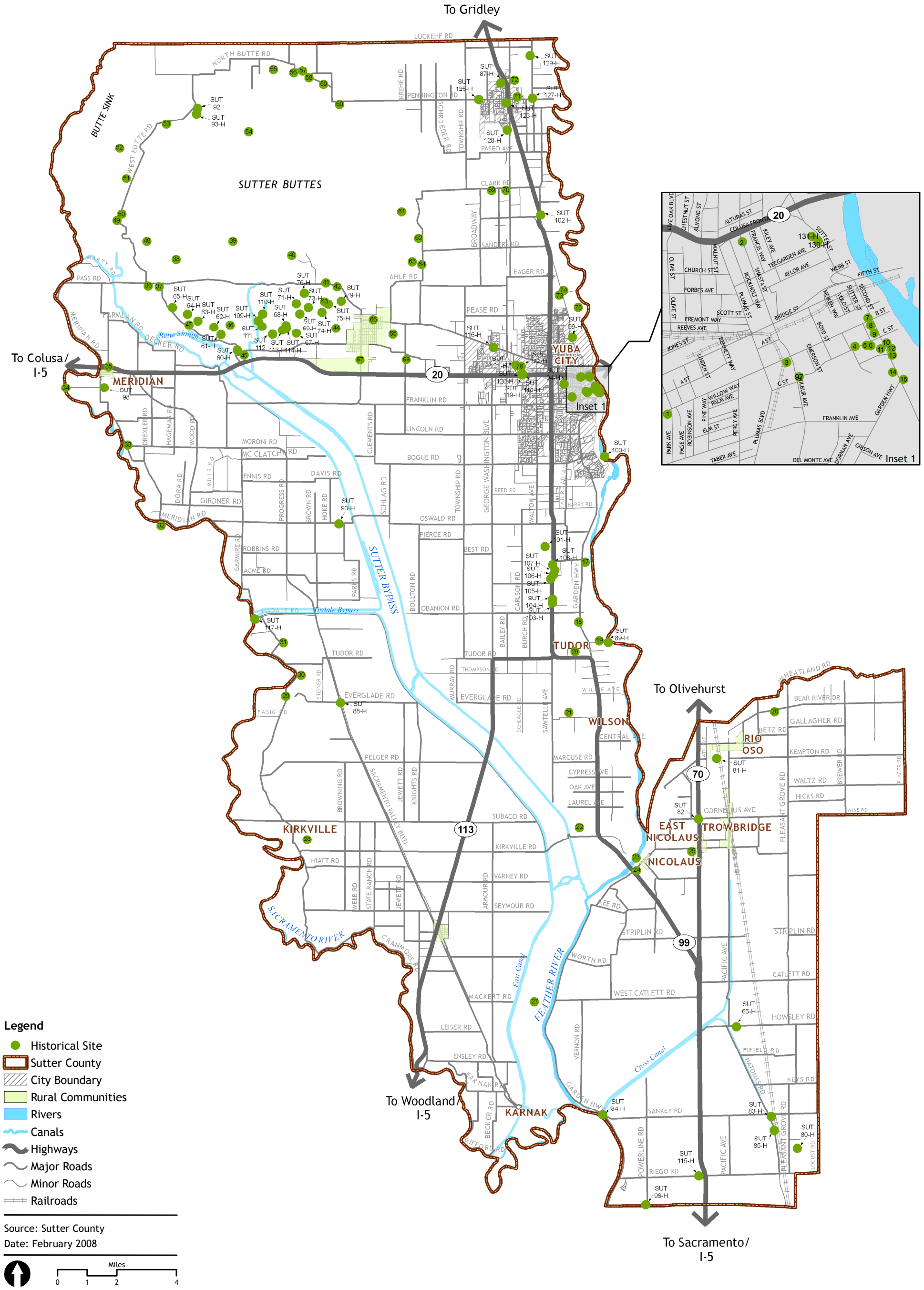
Historic resources include residential and commercial buildings, bridges, canals, rock walls, and levees. Many of the historic resources are clustered along Highway 99 and in Yuba City as well as the smaller towns and previous known settlement areas throughout the county such as Sutter, Meridian, Kirkville, Rio Oso, and the Nicolaus/Trowbridge area.

Of the 52 prehistoric and 15 multi-component resources, 31 sites contain midden deposits. Bedrock mortars were observed at 23 sites, burials were identified at 17 locales, and mounds were noted in 16 instances. These sites are generally located along water courses with a high concentration of sites in the Sutter Buttes.

Sutter County has two registered California Historical Landmarks, twenty-one Points of Historic Interest, recognized by the California Department of Parks and Recreation Office of Historic Preservation, and a number of other sites considered to have local or county-wide historic and cultural significance.

SUTTER COUNTY
General Plan Update

SUTTER COUNTY
GENERAL PLAN UPDATE



Legend

- Historical Site
- Sutter County
- City Boundary
- Rural Communities
- Rivers
- Canals
- Highways
- Major Roads
- Minor Roads
- Railroads

Source: Sutter County
Date: February 2008

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HISTORIC RESOURCES
Figure 4.6-1

Currently, the status of many resources in Sutter County is unknown. At the time of documentation, 21 resources were partially or completely destroyed; many had been impacted by levee or building construction, while other sites were known pot-hunting locations. Most sites have not been visited since initial recordation. Records indicate that 63 sites have not been visited since 1990. Of these, 21 have not been visited since the 1950s. Many of the built resources had not been visited in several years and their condition is also unknown.

REGULATORY CONTEXT

Federal, state, and local governments have developed laws and regulations designed to protect significant cultural resources that may be affected by actions they undertake or regulate. The National Historic Preservation Act (NHPA) and CEQA are the basic federal and state laws governing the preservation of historic and archaeological resources of national, regional, state and/or local significance.

Federal

Federal regulations for cultural resources are primarily governed by Section 106 of the NHPA of 1966, which applies to actions taken by federal agencies. The goal of the Section 106 review process is to offer a measure of protection to sites that are listed in or determined eligible for listing in the NRHP. The criteria for determining NRHP eligibility are found in 36 Code of Federal Regulations (CFR) Part 60. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and affords the federal Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The Council's implementing regulations, "Protection of Historic Properties," are found in 36 CFR Part 800. The NRHP criteria (contained in 36 CFR 60.4) are used to evaluate resources when complying with NHPA Section 106. Those criteria state that eligible resources comprise districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

a) are associated with events that have made a significant contribution to the broad patterns of our history; or

b) are associated with the lives of persons significant in our past; or

c) embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction; or

d) have yielded or may be likely to yield, information important to history or prehistory.

Archaeological site evaluation assesses the potential of each site to meet one or more of the criteria for NRHP eligibility based upon visual surface and subsurface evidence (if available) at each site location, information gathered during the literature and records searches, and the researcher's knowledge of and familiarity with the historic or prehistoric context associated with each site.

The American Indian Religious Freedom Act, Title 42 United States Code, Section 1996, protects Native American religious practices, ethnic heritage sites, and land uses.

State

Under CEQA, public agencies must consider the effects of their actions on both "historical resources" and "unique archaeological resources." Pursuant to Public Resources Code, Section 21084.1, a "project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment."

"Historical resource" is a term with a defined statutory meaning (see Public Resources Code, Section 21084.1 and CEQA Guidelines Section 15064.5 (a) and (b)). The term embraces any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR). The CRHR includes resources listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest. A project is deemed to have a significant effect on the environment if it would cause a substantial adverse change in the significance of an historical resource (CEQA Section 15064.5 (b)). A substantial adverse change with regards to an historical resource is defined under CEQA as "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Section 15064.5 (b) (1). CEQA Guidelines Section 15064.5 (b) (2) provides further detail regarding substantial adverse change.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be "historical resources" for the purposes of CEQA unless a preponderance of evidence indicates otherwise (Public Resources Code, Section 5024.1; California Code of Regulations, Title 14, Section 4850). Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the CRHR.

In addition to assessing whether historical resources potentially impacted by a proposed project are listed or have been identified in a survey process, lead agencies have a responsibility to evaluate them against the CRHR criteria prior to making a finding as to a proposed project's impacts on historical resources (Public Resources Code, Section 21084.1; CEQA Guidelines, Section 15064.5 (a)(3)). In general, an historical resource, under this approach, is defined as any object, building, structure, site, area, place, record, or manuscript that:

a) is historically or archeologically significant; or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political or cultural annals of California; and

b) meets any of the following criteria:

   1. is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

   2. is associated with the lives of persons important in our past;

   3. embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

   4. has yielded, or may be likely to yield, information important in prehistory or history.

CEQA Guidelines Section 15064.5 (b) (3) indicates that a project that follows the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving,

Rehabilitating, Restoring, and Reconstructing Historic Buildings, or the Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings (1995) shall mitigate impacts to a level of less than significant. Potential eligibility also rests upon the integrity of the resource. Integrity is defined as the retention of the resource's physical identity that existed during its period of significance. Integrity is determined through considering the setting, design, workmanship, materials, location, feeling, and association of the resource.

As noted above, CEQA also requires lead agencies to consider whether projects would impact "unique archaeological resources." Public Resources Code, Section 21083.2 (g) states that "unique archaeological resource" means an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type.

3. Is directly associated with a scientifically recognized important prehistoric or historic event or person" (Public Resources Code, Section 21083.2 (g)).

Treatment options under Section 21083.2 of the Public Resources Code include activities that preserve such resources in place in an undisturbed state. Other acceptable methods of mitigation under Section 21083.2 include excavation and curation or study in place without excavation and curation (if the study finds that the artifacts would not meet one or more of the criteria for defining a "unique archaeological resource").

Advice on procedures to identify cultural resources, evaluate their importance, and estimate potential effects is given in several agency publications, such as the series produced by the Governor's Office of Planning and Research (OPR). The technical advice series produced by OPR strongly recommends that Native American concerns and the concerns of other interested persons and corporate entities, including but not limited to, museums, historical commissions, associations and societies, be solicited as part of the process of cultural resources inventory. In addition, California law protects Native American burials, skeletal remains, and associated grave goods regardless of their antiquity and provides for the sensitive treatment and disposition of those remains.

Section 7050.5 (b) of the California Health and Safety code specifies protocol when human remains are discovered. The code states:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

CEQA Guidelines Section 15064.5 (e) requires that excavation activities be stopped whenever human remains are uncovered and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. At that time, the lead agency is required to consult with the appropriate Native Americans as identified by the NAHC and directs the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

Local

The Sutter County Zoning Code includes Division 65 – Historic Preservation Combining District (HP), which provides for the establishment of a Historic Preservation Combining District in combination with any other zoning district classification. Applications for HP zoning are reviewed by the Historic Preservation Review Committee.