TO 2045

Thousand Oaks

BACKGROUND ENVIRONMENTAL REPORT

Existing Conditions | January 2020

CHAPTER 1: CULTURAL RESOURCES

Cultural Setting

The cultural history of the City of Thousand Oaks and the surrounding Conejo Valley can be divided in to three major eras: Native-American, Spanish-Mexican, and Anglo-American. Remnants from these unique eras exist in the region as a diverse range of tribal, archaeological and architectural resources. The Conejo Valley served as an integral part of the larger Chumash territory that extended from the coast and Channel Islands to include Santa Barbara, most of Ventura, parts of San Luis Obispo, Kern and Los Angeles Counties. The late 18th and early 19th centuries saw the influx of Spanish-Mexican culture, with the establishment of a large Spanish land grant "Rancho el Conejo," while the modern Anglo-American era began in the late 19th century with the break-up and sale of the Spanish Land Grants (City of Thousand Oaks 2011).

Prehistoric and Ethnographic Background

During the Pleistocene Epoch, from 1.8 million to 10,000 years ago, California transitioned from a shallow marine to terrestrial habitat, with a moister climate than present. The presence of large ice sheets to the north prompted the migration of diverse communities of large animals to the abundant resources of the Southern California region. These included several large herbivores and predators that became extinct at the end of the Ice Age, including mastodon, ground sloth, and saber-toothed cat (City of Thousand Oaks 2011).

Native American Era

The earliest inhabitants of Southern California were transient hunters visiting the region approximately 12,000 B.C.E., who were the cultural ancestors of the Chumash. Evidence of significant and continuous habitation of the Conejo Valley region began around 5,500 B.C.E. Specifically, during the Millingstone (5,500 B.C.E – 1,500 B.C.E.) and the Intermediate (1,500 B.C.E. – 500 C.E.) periods, the Conejo Valley experienced a year-round stable population of an estimated 400-600 people. During this time, people typically lived in largely open sites along water courses and in caves and rock shelters; however, a number of site types have been discovered, including permanent villages, semi-permanent seasonal stations, hunting camps and gathering localities focused on plant resources (City of Thousand Oaks 2011).

As permanent Chumash villages increased in size in the Conejo Valley, extensive trade networks were established with other villages located further inland and along the coast. These interactions increased local food supplies and provided access to locally unavailable resources for production of durable tools and food, including specific stones and shells (City of Thousand Oaks 2011).

Regional and Local Historic Background

Spanish-Mexican Era

The first Europeans to visit the Conejo Valley were Gaspar de Portola and his expedition in 1769 and Juan Batista de Anza around 1775, beginning the Spanish Mexican era of the region's history. The Conejo Valley received its name, "Rancho el Conejo", when the region was included in the Spanish land grant to two Spaniards, Ygnazio Rodriguez and Jose Polanco, in 1803. This began the region's rich history of ranching and farming, including both cattle and sheep ranching, which lasted well into the 1900's (City of Thousand Oaks 1969).

As result of the Mexican War of Independence, in which Mexico gained its independence from Spain; the southwestern United States became part of the Mexican Empire, which included the Conejo Valley as part of the Alta California territory. During this time, the Conejo Valley underwent a change of ownership, with the Polanco portion of the original grant being transferred to Jose de la Guerra y Noriega. During this period, the Conejo Valley went largely undeveloped, as its owners considered it as remote and inaccessible (City of Thousand Oaks 1969).

Anglo-American Era

Americans from the United States began arriving in California in the 1840s, but larger scale farming and development in the Conejo Valley began in the 1870s when larger land grants were divided into smaller parcels. A depression in the cattle business in the 1860s, which is partially attributed to drought, led to the subdivision and sale of large private land ownerships in California to pioneers arriving from the eastern United States. The Conejo Valley was divided in the 1870s, which marks the beginning of permanent modern settlement in what is now Thousand Oaks (City of Thousand Oaks 1969).

The first post office in the Conejo Valley was established in 1875 by James Newbury. During these early settlement days, the Conejo Valley served as both a rest stop for travelers passing between Los Angeles and Ventura, as well as the location of large ranching operations that became the primary economic activity of the Valley. This way of life continued until the late 1930s, when the community of Thousand Oaks began developing (City of Thousand Oaks 1969).

By 1961, the town contained two shopping centers, an industrial park, schools, churches and California Lutheran University. The community voted to incorporate the town of nearly 20,000 on September 29, 1964, with the name City of Thousand Oaks, in honor of the area's abundant oak trees (City of Thousand Oaks N.D.).

Existing Cultural Resources

Historical Landmarks and Points of Interest

The history of Thousand Oaks is preserved in several historical landmarks and points of interest. The City's historic landmark designation is currently approved by the City Council based on recommendations made by the Arts Commission. The following is a description of the City's existing historical landmarks and points of interest as designated by the City Council. The locations of these landmarks and sites are shown in Figure 1.1 (City of Thousand Oaks 2013).

1. Stagecoach Inn

The original structure was built in 1876 and was a Monterey style structure of northern California redwood with a wraparound porch and balcony. It served as a stagecoach stop, school, and post office. The Inn was destroyed by fire in the early 1970's. The building was reconstructed and moved to its present location at 51 South Ventu Park Road. The original site was closer to the Ventura Freeway, and is located by a historical marker. The Inn was placed on the National Register of Historic Places and designated as a State Historical Landmark (State Landmark #659) in December of 1975. In May 1976 it was designated as County Historical Landmark #30. It is owned by the Conejo Recreation and Park District and managed by the Conejo Valley Historical Society. Through living history and exhibits, this Center describes life in the Conejo Valley in the late 1800's. Permanent exhibits also describe Chumash culture. The Stagecoach Inn was designated as Local Historical Landmark #1 in November 1997.

Stagecoach Inn

2. Sycamore Tree

This large sycamore tree is estimated to be over 150 years old and one of the largest sycamores in the Conejo Valley. It was designated as County Landmark #44 in June 1978. It is located just north of the Stagecoach Inn, at 51 South Ventu Park Road. It is on land owned by the Conejo Recreation and Park District. The Sycamore Tree was designated as Local Historical Landmark #2 in November 1997.

3. Pederson House and Water Tower

This is a typical turn-of-the- century farmhouse and water tower that were built in 1913-14 for Lars and Karn Pederson, members of the Norwegian Colony that settled the northern end of the

Conejo Valley in 1890. In 1967 the Pederson's son Richard gave the land to California Lutheran University and the buildings were restored. It was designated as County Landmark #45 in June 1978. It is located on Faculty Street at California Lutheran University and shown by appointment. The Pederson House and Water Tower were designated as Local Historical Landmark #3 in November 1997.

4. Hunt Olive Tree

This is the only surviving tree from an orchard planted by R.O. Hunt on the Salto Ranch, which he established in 1876. The tree was moved to its present location in 1993. It was designated as County Landmark #64 in January 1982 and located at the southwest corner of Hillcrest Drive and Lynn Road. The Hunt Olive Tree was designated as Local Historical Landmark #4 in November 1997.

5. Oakbrook Regional Park Archaeological Area and Chumash Interpretive Center

This 428-acre park contains areas of significance to the Chumash culture. It is on land owned by the Conejo Recreation and Park District and managed by the Oakbrook Park Chumash Indian Corporation. It was designated as County Landmark #90 in February 1983. The interpretive center includes exhibits, special events, and an interpretive trail that describe Chumash life. The Regional Park and Interpretive Center are owned by the Conejo Recreation and Park District. They are located on the south side of Lang Ranch Parkway, opposite Oak Valley Lane. The Oakbrook Regional Park Archaeological Area was designated as Local Historical Landmark #5 in November 1997. The Woolsey Fire of 2018 severely damaged the park, including damage to the museum building and a complete loss of the Chumash replica village and stairs and bridges for nature hike tours. The museum building is currently open to visitors and the Chumash replica village and nature hike tour features are currently undergoing repairs.

6. Dos Vientos Ranch Buildings

The Dos Vientos Ranch Buildings were two large barns built in 1930 on the Dos Vientos Ranch, which was a portion of the 30,593-acre Rancho Guadalasca Mexican land grant. The buildings were dismantled in 1996 during the construction of the Dos Vientos residential development. Lumber from dismantled barn was stored at COSCA's Rancho Potrero open space. Some pieces of salvaged lumber from the buildings have since been used to construct the blacksmith shop at the Stagecoach Inn and to build the podium for the Conejo Recreation and Park District boardroom. The barn and associated buildings were designated as County Landmark #99 in May 1986. The Dos Vientos Ranch Barn was designated as Local Historical Landmark #6 in November 1997. The original site buildings were designated as Local Point of Historical Interest #2 in November 1997

7. Crowley House

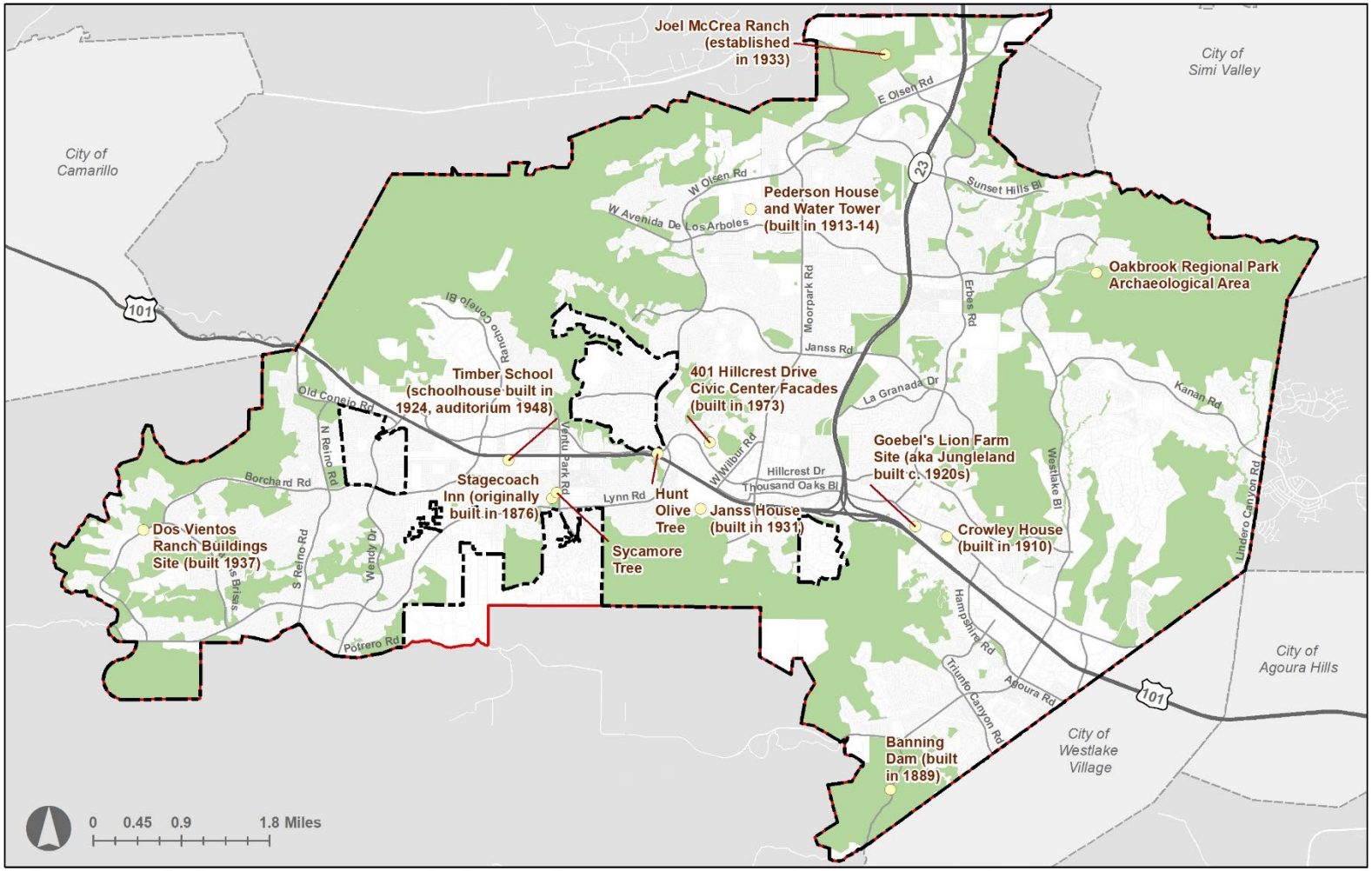
This house is currently owned by the Conejo Recreation and Park District and is used as their District Sports Office. It was built in 1910 for newlyweds Frank and Mae Casey Crowley on the Newbury Ranch served as a real estate office for the first housing development in the Conejo Valley in the 1920's. The two-story white frame, five-bedroom house still has its original hardwood floors, mahogany beams and volcanic rock fireplace. The property

is located at 2224 Pleasant Way (next to Parque de la Paz), and is owned by the Conejo Recreation and Park District. The house was designated as County Landmark #109 in May 1986 and Local Historical Landmark #7 in November 1997.

8. Janss House

This house was built for Peter Janss as a weekend retreat in 1931. Peter Janss moved to Los Angeles in 1893. In Los Angeles, he became a land developer and was joined in his business by his sons Harold and Edwin. The Janss Corporation planned and developed in Monterey Park, the San Fernando Valley and Westwood Village, donating the land on which UCLA is built. In 1943 the house became the principal home of Janss' younger son, Edwin Janss. The house is now owned by the City of Thousand Oaks and was designated as County Landmark #112 in July 1987 and Local Historical Landmark #8 in November 1997. It is located at 482 Greenmeadow Drive.

Figure 1.1 Historical Landmarks



Raimi + Associates 2019 | Data Source: City of Thousand Oaks 2019, County of Ventura, County of Los Angeles; State Water Resources Control Board, 2019

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City Limits
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9. Lake Eleanor Dam

This dam, also known as Banning Dam, was built in 1889 and is considered one of the earliest concrete arch dams in California. Its 8-acre lake and adjacent 529 acres of natural open space provide habitat for wildlife. Designated as County Landmark #120 in May 1988.The property is owned by the Conejo Open Space Conservation Agency and located on the west side of Westlake Boulevard, about one-half mile south of East Potrero Road. The Lake Eleanor Dam was designated as Local Historical Landmark #9 in November 1997.

10. Hillcrest Civic Center

The civic center was constructed in 1973 and was the site of the first permanent City Hall in Thousand Oaks. It is the site of the first city hall built by the City of Thousand Oaks. The historical designation applies to the exterior wall (facades and architectural style) of the Civic Center buildings. The building currently houses the administrative office of the Conejo Recreation and Park District and the headquarters for the National Park Service's Santa Monica Mountains. The building was designated as Local Historic Landmark #10 in May 1997. The historical designation applies to the exterior walls (facades and architectural style) of the Civic Center buildings. The Hillcrest building is located at 401 West Hillcrest Drive.

11. Joel McCrea Ranch

This former cattle ranch is comprised of approximately 220 acres is located at the bottom of the Norwegian Grade at the eastern end of the Santa Rosa Valley. The working portion of the ranch is located near Moorpark Road with a cluster of buildings including the barns, shop, milk house, corrals and bunkhouse. Film actor and Western movie actor Joel McCrea, and his wife Frances Dee, also a movie star, raised their sons here. The McCreas donated their ranch and family home to the Conejo Recreation and Park District in 1995. The ranch home and outbuildings were listed on the National Register of Historic Places on April 18, 1997. The McCrea Ranch Visitors Center was completed in 2011 and provides a variety of interpretive, educational and cultural programs for the community, while preserving the unique history of this property. Public access to the visitor center is scheduled through the Conejo Recreation and Park District. The Joel McCrea Ranch was designated as Local Historical Landmark #11 in November 1997. The ranch is located at 4500 North Moorpark Road.

12. Timber School House and Auditorium

Constructed in 1924 and 1948, respectively, the Timber School House and Timber School Auditorium buildings are the former site of the Conejo Valley High School campus. The 1924 Timber School building was designed in the Mission Revival architectural style by Roy C. Wilson, the first licensed architect in Ventura County. It is the oldest original school and public building in the Conejo Valley. Children of early Conejo Valley ranchers, including the Borchard, Haigh, Hays, Kelley, Janss, and Olsen families, attended the school. The site of buildings was sold by the Conejo Valley Unified School District in 2015, which is intended to include a mixed-residential development (Rode 2019). The structures were designated as a Local Historic Landmark #12 in July 2004. The property is located at 1872 Newbury Road and owned by the Conejo Valley Unified School District.

13. Goebel's Lion Farm Site (aka Jungleland)

Louis Goebel established his farm in 1927 as a site where he could import, breed, and maintain exotic animals for rental to movie studios. His animals included the famous MGM lion. The popular tourist attraction Jungleland developed from the animal farm. Roy C. Wilson, architect, designed some of the building structures at Jungleland. The original buildings and animal compound were built in the 1920s and later demolished in the mid-1970s. The Thousand Oaks Civic Arts Plaza currently occupies a portion of this site. The site was designated as County Landmark #63 in March 1981. Located at 2100 East Thousand Boulevard, it was designated as Local Point of Historical Interest #1 in November 1997.

14. Rancho Sierra Vista and Satwiwa Native American Cultural Center

This site includes special events and exhibits that describe Native American culture and ranching activities in the local area. The site is operated by the National Park Service and is part of the Santa Monica Mountains National Recreation Area. The entrance is located on the south side of Lynn Road, just east of Via Andrea.

15. Hill Ranch Brick Cistern

This large brick cistern is located near a natural spring on what was once Hill Ranch. It is believed to have been constructed in 1880 and probably held water for livestock. The cistern was designated as Ventura County Historical Landmark #43 in June 1978; however, its exact location was unknown. Staff recently determined the location of the cistern in the northerly part of Wildwood Park, near the Santa Rosa Valley.

16. Case Study House #28

Case Study Houses were built as part of an experimental housing program between 1945 and 1966 in southern California. Built in 1966, Case Study House #28 was designed by architects Conrad Buff and Donald Hensman and was the program's last single-family home and the only one in Ventura County. Because of its significance as an important example of modern architecture, this house was been placed on the National Register of Historic Places in July 2013. It is located in a gated community on Inverness Road, near the southern terminus of Moorpark Road.

Archaeological and Tribal Cultural Resources

The Conejo Valley has a long history of human inhabitance. Traces of this inhabitance remain in the form of archaeological and tribal resources. As urbanization in Thousand Oaks has increased, more cultural resources have been identified as site surveys have been conducted. Existing state laws including Senate Bill 18 and Assembly Bill 52 ensure that cultural resources are preserved and mitigated through acceptable means. Senate Bill 18, passed in 2004, protects tribal cultural resources by requiring that cities and counties conduct consultations with California Native American tribes prior to adoption or amendment of a General Plan. Assembly Bill 52, passed in 2014, established procedures and requirements under the California Environmental Quality Act for the purposes of avoiding or minimizing impacts to tribal cultural resources.

Thousand Oaks has taken a proactive role in the conservation and management of local tribal resources. Several recorded habitation and tribal activity sites have been permanently preserved within the Open Space System, through coordination with representatives of the local Native American Indian Council. While many cultural resources from earlier excavations remain in storage at UCLA, more recent artifacts have been returned to the Conejo Valley for curation and display at the Stagecoach Museum (City of Thousand Oaks 2013).

Cemeteries

Russel Cemetery

Founded by Joseph Russel, Russel Cemetery is the burial site of many early pioneers in the Conejo Valley. Originally located on the southeastern edge of Thousand Oaks, the cemetery was relocated and restored by the American Hawaiian Land Company to the Valley Oaks Cemetery.

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CHAPTER 2: NATURAL RESOURCES

Physical Habitat and Vegetation

Thousand Oaks has a Mediterranean climate characterized by warm, dry summers and cool, moist winters. Plants in this climate have adapted to grow in the winter and early spring, when water is available, and become mostly dormant in the long dry summers, when water availability is limited. The varied topography and soil types of Thousand Oaks have enabled a mix of native plant communities to exist in the region. Each vegetation community exists in areas of preferred soil, slope, exposure, and availability of sub-surface moisture, etc. While each individual plant species has unique requirements that account for its presence or absence within a general area, considerable overlap in plant distribution often occurs due to the variability of environmental factors and other related habitat conditions. As a result, these communities sometimes merge along relatively indiscreet borders to form mosaic patterns of different vegetation types and varying species composition. Figure 2.1 shows main habitat types in the city. In general, Thousand Oaks contains six native plant communities, which are representative of the larger Santa Monica Mountains region. These communities are briefly discussed below.

Grasslands

Grasslands are characterized by low, annual, native and non-native grasses and herbs, including wild oats, brome grass, narrow leaf, milkweed, and dove weed. This plant community is located primarily in heavy clay soils on gently rolling hills and valleys. In less disturbed areas, native grasses, such as purple needle grass, and native bulbs, such as Catalina mariposa lily, may be common. This community is becoming increasingly scarce in California due to man-made pressures, including competition from non-native species, agricultural conversion, increased frequency of wildfires, and urbanization. In areas where grasslands have remained, this has resulted in the replacement of the native flora with introduced non-native plants. On the urban/wildland interface, many native grasslands have become completely dominated by weedy annual species such as ripgut brome (Bromus diandrus), black mustard (Brassica nigra) and tocalote (Centaurea melitensis).

Chaparral

Chaparral is typical of Mediterranean climates around the world and is found mostly on steep, north-facing slopes with shallow soil. This community usually occurs at higher elevation than California sage scrub and consists of a variety of stiff woody shrubs including chamise, scrub oak, manzanita, laurel sumac, mountain mahogany, and several species of ceanothus. Chaparral shrubs provide cover for large animals, serve as a major component of the diet of mule deer, and produce seeds for birds and small mammals.

California Sage Scrub

Along with chaparral, California sage scrub is the most widespread plant community in undeveloped areas of Thousand Oaks. It is comprised of small semi-woody shrubs, including California sagebrush, California sunflower, California buckwheat, and purple sage. This community is often found below 1,000 feet elevation, often inter-grading with chaparral. Two forms of this plan community occur within the Conejo Valley – "inland", and "maritime". The landform is by far the most abundant within the City's Planning Area. The maritime form is present along the Conejo Grade and on south-facing slopes of the Broome Ranch where the penetration of fog provides additional moisture. The cumulative loss of California sage scrub habitat throughout the state is of considerable concern. Many of Thousand Oaks' rarest endemic plants and animals found within this plant community.

Southern Oak Woodland/Oak Savannah

Southern oak woodlands and savannahs primarily occur in gently rolling foothills and valleys. This habitat type is comprised of large, widely spaced Valley Oaks separated by extensive grasslands. This plant community is present with the Planning Area but in its undisturbed form is limited to small geographic areas. The only remaining examples of southern oak woodlands and savannahs with their associated plants are within public open space. Southern oak woodlands and savannahs support a wide variety of bird and animal species wherever they occur.

Riparian/Coast Live Oak Woodland

Riparian and coast live oak woodland are mostly restricted to perennial streams or springs where there is moisture at or near the surface for most of the year. This plant community naturally occurs in valleys and canyons and provides important habitat for wildlife. However, it is diminishing throughout the Santa Monica Mountains region and comprises less than 3% of the Planning Area's remain open space. Riparian woodland consists of an overstory of large deciduous trees such as arroyo and red willow, coast live oak, California sycamore and Fremont cottonwood with an understory of shrubs such as California wild rose and mule fat. Herbaceous riparian habitat consists of a dense growth of low perennial plants such as cattails, rushes, sedges and California loosestrife.

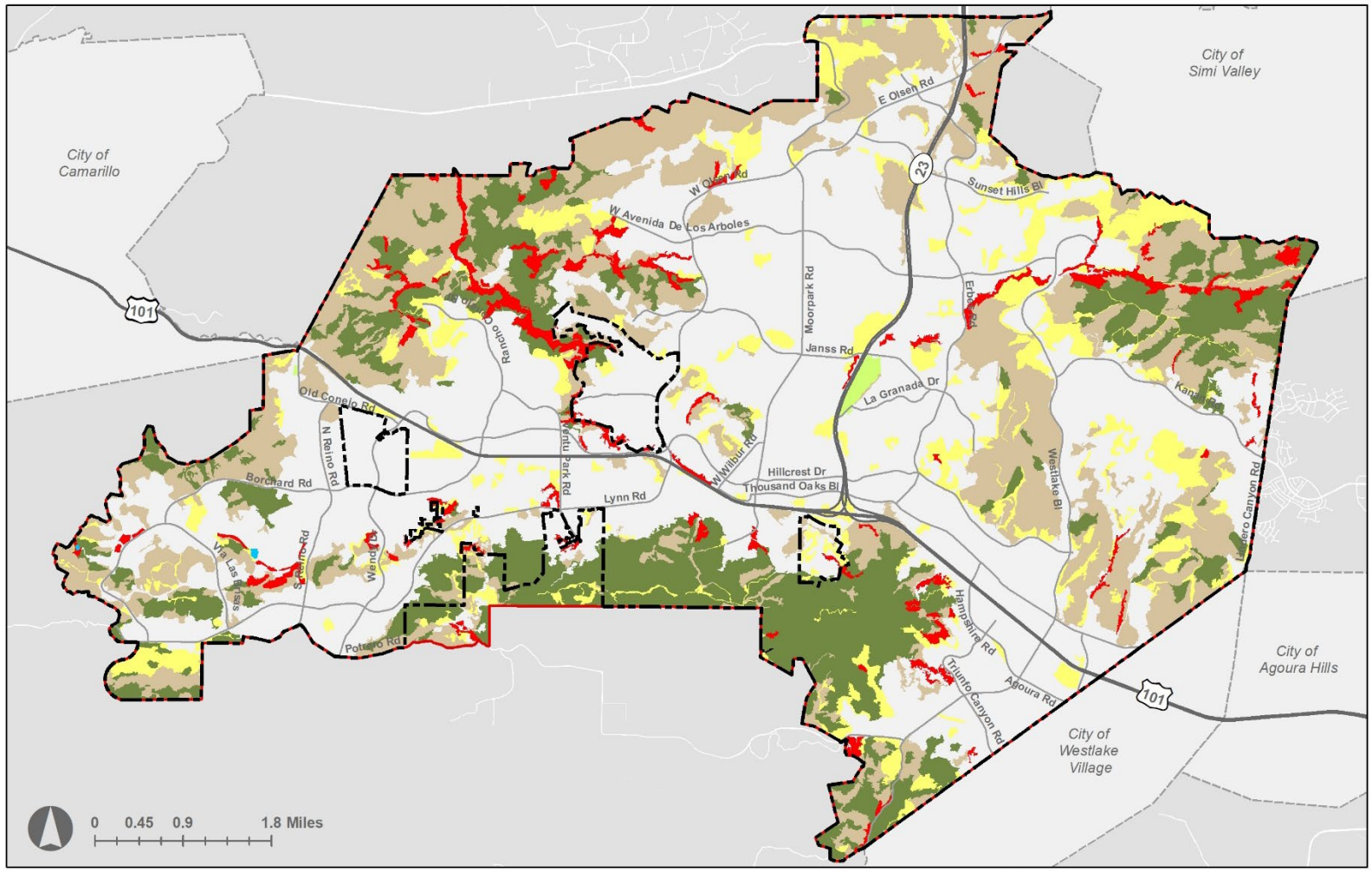
Freshwater Marsh

In Thousand Oaks, freshwater marsh covers the smallest geographic area of any of the natural communities discussed in this chapter. It is comprised of an accumulation of herbaceous perennial plants found where water ponds. Examples of this habitat type occur along the margins of Lake Eleanor and at the wetlands adjacent to the Hill Canyon Treatment Plan. Common plants in this community include cattails, tules and water plantain. Freshwater marsh areas are used as foraging and breeding areas by waterfowl such as cinnamon teal and wading birds such as great blue heron.

Biological Crusts

Although not technically a plant community, biological crusts are a unique assemblage of organisms comprised of cyanobacteria, mosses, lichens and liverworts. They occur in most plant communities in the Planning Area but are best represented in chaparral and California sage scrub. Research indicates that these biotic communities perform several critical functions in ecosystems. Belying their humble appearance, they provide soil stability by cementing soil particles together, thereby providing resistance to wind and water erosion. They also increase water infiltration by retarding run-off and suppress weed germination by forming a "crust" on the soil which weed seeds cannot penetrate. In areas where the crust has been removed by trampling, or movement of heavy equipment, weedy, introduced plants soon colonize the soil, crowding out native species.

Figure 2.2 Thousand Oaks Habitat Types



Raimi + Associates 2019 | Data Source: City of Thousand Oaks 2019, County of Ventura, County of Los Angeles; State Water Resources Control Board, 2019

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- City Limits
- CitySphere
- Major Roads
- Freeways
- Unincorporated Counties Land
- Adjacent cities
- Chaparral
- California Sage Scrub
- Grassland and Barren
- Riparian/Coastal Live Oak Woodland
- Valley Oak Woodland
- Agriculture
- Lakes
- Urban

Sensitive Biological Communities

Critical Habitat

Open space in Thousand Oaks contains critical habitat for at least three known endangered species: Coastal California Gnatcatcher, Lyon's pentachaeta and Braunton's milk vetch. Critical habitat is a term used by the Endangered Species Act to identify specific geographic areas that contain features essential for the conservation of a threatened or endangered species, that may require special management or protection. Brief summaries of these species are provided below.

Coastal California Gnatcatcher

The Coastal California Gnatcatcher is a sub-species of the California Gnatcatcher and is a federal threatened species. It is a small songbird species that measures about 4.5 inches and weighs 0.2 ounces. It has dark blue-gray feathers on its back and grayish-white feathers on its underside. The bird feeds on insects and inhabits coastal sage scrub.

Lyon's Pentachaeta

Lyon's pentachaeta is a federal and California endangered plant species, and has a 1B.1 designation (Rare, Threatened, or Endangered in CA and Elsewhere) from the California Native Plant Society (CNPS). It is an annual plant in the sunflower family that blooms with yellow flower heads from March through August. Lyon's pentachaeta tend to occur in grassland vegetation communities on rocky clay soils of volcanic origin, only in the Santa Monica Mountains.

Braunton's Milk Vetch

Braunton's milk vetch is a federal endangered plant species and has a 1B.1 designation from CNPS. It is a perennial herb that is endemic only to southern California, with critical habitat known to exist within Thousand Oaks. The plant can be found in coastal sage scrub and grassland communities.

Waterbodies, Wetlands and Riparian

Waterbodies

Thousand Oaks contains two manmade lakes: Westlake, which is privately owned, and Lake Eleanor, which is owned by the Conejo Open Space Conservation Agency. Just outside of the Thousand Oaks Sphere of Influence are Lake Sherwood, Las Virgenes Reservoir, and Bard Reservoir. Westlake Lake and Lake Sherwood allow for private recreation, while Lake Eleanor, Las Virgenes Reservoir and Bard Reservoir are not recreational facilities. Westlake Lake is surrounded by residential development and Lake Sherwood is mostly surrounded by residential development. Lake Eleanor, Bard Reservoir and Las Virgenes Reservoir host a mix of freshwater marsh and riparian habitat at their edges, which provide natural habitat for migratory birds and other wildlife.

Wetlands

In addition to these perennial waterbodies, Thousand Oaks contains several United States Fish and Wildlife Service-recognized wetlands, which are registered in the National Wetlands Inventory (NWI). These wetlands provide habitat for

fish, wildlife, and plants; and provide value in the form of groundwater recharge, flooding prevention, and providing clean drinking water. The waterbodies and NWI wetlands in Thousand Oaks and the surrounding region are shown in Figure 2.2.

The wetland designation of the area between US Highway 101 and Borchard Road is currently under contention, as the U.S Army Corps of Engineers (USACE) and U.S. Department of Fish and Wildlife (USDFW) have differing definitions for wetlands. The owners of the 36.5-acre property have argued that the wetland does not fit the definition under USACE, which requires a wetland to be a permanently, semi permanently or seasonally flooded area of land with a distinct ecosystem based on hydrology, hydric soils and vegetation adapted for life in water-saturated soils. While the USACE has ruled that the property does not fit this definition, USDFW contends that, since the property has evidence of wetland plants or soils, it should still be categorized as a wetland (Whitnall 2018).

Riparian

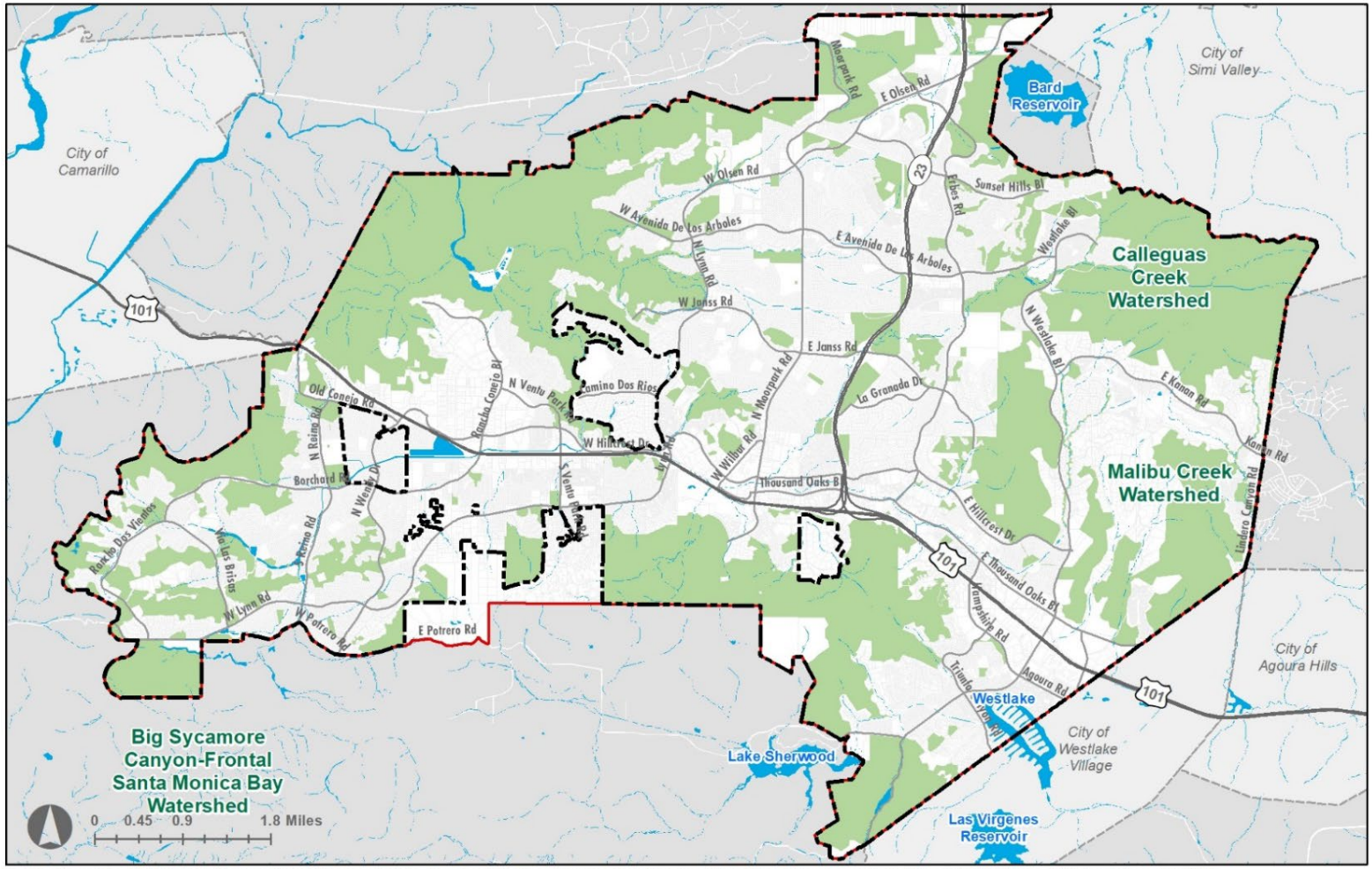
The word "riparian" means streamside and refers to the vegetation that grows along the edges of freshwater bodies such as streams, ponds and lakes. Riparian zones are typically characterized by moisture-dependent vegetation such as willows, cottonwoods and mule fat. Typically, riparian woodland is comprised of an overstory of large trees and an understory of shrubs and herbaceous perennials. Other types of riparian habitats may consist entirely of herbaceous perennials such as sedges and rushes and lack trees and shrubs.

In Thousand Oaks, larger perennial streams such as the Arroyo Conejo support good examples of Riparian Woodland. Smaller tributaries within these watersheds normally contain running water only part of the year and consequently are called intermittent streams. However, even these intermittent streams often retain significant soil moisture and may support riparian vegetation.

Special Status Species

The abundance of open space in Thousand Oaks provides habitat for several federal and State protected plant and animal species in addition to those discussed above. Table 2.1 identifies protected wildlife species that are known to have suitable habitat within the City's Sphere of Influence, and Table 2.2 identifies protected plant species in the same area.

Figure 2.3 Water Bodies and NWI Wetlands



Raimi + Associates 2019 | Data Source: City of Thousand Oaks, County of Ventura, County of Los Angeles; State Water Resources Control Board, 2019; National Wetlands Inventory2018

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City Limits
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Major Roads
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Table 2.1 Rare, Threatened and Endangered Wildlife Species in Thousand Oaks

Common Name	Scientific Name	Designation
American Badger	Taxidea taxus	CDFW Species of Special Concern; IUCN Least Concern
Bell's Sage Sparrow	Amphispiza belli	USFWS Birds of Conservation Concern; CDFW Watch List
Blainville's Horned Lizard	Phrynosoma blainvillii	CDFW Species of Special Concern
Burrowing Owl	Athene cunicularia	CDFW Species of Special Concern; USFWS Birds of Conservation Concern; IUCN Least Concern
California Coastal Gnatcatcher	Polioptila californica	ESA Threatened; CDFW Species of Special Concern
California Mountain Kingsnake	Lampropeltis zonata	CDFW Species of Special Concern
California Newt	Taricha torosa	CDFW Species of Special Concern
California Red-Legged Frog	Rana draytonii	ESA Threatened; CDFW Species of Special Concern; IUCN Vulnerable
Coastal Western Whiptail	Aspidoscelis tigris	CDFW Species of Special Concern
Coast Horned Lizard	Phrynosoma coronatum	CDFW Species of Special Concern; IUCN Least Concern
Coast Patchnose Snake	Salvadora hexalepis	CDFW Species of Special Concern
Coast Range Newt	Taricha torosa	CDFW Species of Special Concern
Cooper's Hawk	Accipiter cooperi	CDFW Watch List
Grasshopper Sparrow	Ammodramus savannarum	CDFW Species of Special Concern
Least Bell's Vireo	Vireo bellii pusillus	ESA Endangered; CESA Endangered
Loggerhead Shrike	Lanius ludovicianus	CDFW Species of Special Concern; USFWS Birds of Conservation Concern; IUCN Least Concern
Merlin	Falco columbarius	CDFW Watch List
Oak Titmouse	Baeolophus inornatus	USFWS Birds of Conservation Concern
Prairie Falcon	Falco mexicanus	CDFW Watch List; USFWS Birds of Conservation Concern
Pallid Bat	Antrozous pallidus	CDFW Species of Special Concern; USFS Sensitive; IUCN Least Concern; WBWG High Priority
(San Diego) Black-tailed Hare	Lepus californicus	CDFW Species of Special Concern
(San Diego) Desert Woodrat	Neotoma lepida	CDFW Species of Special Concern
Silvery Legless Lizard	Anniella pulchra	CDFW Species of Special Concern; USFS Sensitive
Southwestern Pond Turtle	Actinemys marmorata	CDFW Species of Special Concern; IUCN Vulnerable; USFS Sensitive
Southwestern Willow Flycatcher	Empidonax traillii extimus	CESA Endangered; USFWS Birds of Conservation Concern
Southern California Rufous-crowned Sparrow	Aimophila ruficeps canescens	CDFW Watch List

Townsend's Big-eared Bat	Corynorhinus townsendii	CDFW Species of Special Concern
Two-striped Gartersnake	Thamnophis hammondii	CDFW Species of Special Concern
Western Mastiff Bat	Eumops perotis	CDFW Species of Special Concern
Western Red Bat	Lasiurus blossevillii	CDFW Species of Special Concern
White-Tailed Kite	Elanus leucurus	CDFW Fully Protected; IUCN Least Concern
Yellow-breasted Chat	Icteria virens	CDFW Species of Special Concern
Yellow Warbler	Dendroica petechia brewster	CDFW Species of Special Concern; USFWS Birds of Conservation Concern

Notes:
***CDFW**: California Department of Fish and Wildlife*
***IUCN**: International Union for Conservation of Nature*
***USFWS**: United States Fish and Wildlife Service*
***ESA**: Federal Endangered Species Act*
***CESA**: California Endangered Species Act*
***USFS**: United States Forest Service*
Sources:
CDFW. 2019. CNDDB – Plants and Animals. Search 5-mile buffer around Thousand Oaks Sphere of Influence. https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals
Thousand Oaks, City of. 2013. Conservation Element. *Thousand Oaks General Plan.* https://www.toaks.org/departments/community-development/planning/general-plan

Table 2.2 Rare, Threatened and Endangered Plant Species in Thousand Oaks

Common Name	Scientific Name	Designation
Braunton's Milk-vetch	Astragalus brauntonii	ESA Threatened; CNPS Rare Plant Rank 1B.1
Malibu Baccharis	Baccharis malibuensis	CNPS Rare Plant Rank 1B.1
California Macrophylla	California macrophylla	CNPS Rare Plant Rank 1B.1
Catalina Mariposa Lily	Calochortus catalinae	CNPS Rare Plant Rank 4.2
Plummer's Mariposa Lily	Calochortus plummerae	CNPS Rare Plant Rank 4.2
Southern Tarplant	Centromadia parryi	CNPS Rare Plant Rank 1B.1
Blochman's Dudleya	Dudleya blochmaniae	CNPS Rare Plant Rank 1B.1
Chaparral Beargrass	Nolina cismontana	CNPS Rare Plant Rank 1B.2
Conejo Buckwheat	Eriogonum crocatum	CDFW Rare; CNPS Rare Plant Rank 1B.2
Conejo Dudleya	Dudleya parva	ESA Threatened; CNPS Rare Plant Rank 1B.2
Island Mountain Mahogany	Cercocarpus betuloides	CNPS Rare Plant Rank 4.3
Lyon's Pentachaeta	Pentachaeta lyonia	ESA Endangered; CESA Endangered; CNPS Rare Plant Rank 1B.1
Rayless Ragwort	Senecio aphanactis	CNPS Rare Plant Rank 2.2
Santa Monica Mountains Dudleya	Dudleya cymosa	CNPS Rare Plant Rank 1B.2
Santa Susana Tarplant	Deinandra minthornii	CDFW Rare; CNPS Rare Plant Rank 1B.2
Small-Flowered Morning-glory	Convolvulus simulans	CNPS Rare Plant Rank 4.2
Southern California Black Walnut	Juglans californica	CNPS Rare Plant Rank 4.2

Notes:
CDFW: California Department of Fish and Wildlife
ESA: Federal Endangered Species Act
CNPS: California Native Plant Society

California Rare Plant Ranks:
1B: Plants, Rare, Threatened, or Endangered in California and Elsewhere
2: Plants, Rare, Threatened, or Endangered in California, but more Common Elsewhere
3: Plants about Which We Need More Information – A Review List.
4:Plants of Limited Distribution – A Watch List
Threat Code Extension
.1: Seriously Endangered in California
.2: Fairly Endangered in California
.3: Not Very Endangered in California

Sources:
Thousand Oaks, City of. 2013. Conservation Element. *Thousand Oaks General Plan.* *https://www.toaks.org/departments/community-development/planning/general-plan*

Wildlife Resources

A variety of resident and migratory wildlife species that are representative of the Santa Monica Mountains region can be found within natural open space areas that have been permanently preserved, as well as remaining undeveloped areas. Not only are key habitat resources such as food, cover, and water plentiful throughout these areas on a year-round basis, but rocky outcrops, high peaks, steep hillside and canyon areas combine to provide important undisturbed nesting and breeding opportunities for wildlife. Along with an extensive network of movement corridors that serves to prevent habitat isolation and maintain unrestricted access to these resources, both the diversity and quality of this ecosystem are relatively high.

Examples of the range of wildlife found within the Thousand Oaks area are discussed below

Native Pollinators

The City's open space system as well as urban landscaping supports a great diversity of invertebrates. The importance of invertebrates as pollinators and essential building blocks of ecosystems cannot be overstated. For an endangered or threatened plant species to be conserved, the species pollinator must also be conserved. In addition, many species of reptiles, amphibians, birds, bats and small mammals rely on pollinating insects as a principal or critical food source. Invertebrates, particularly insects, also serve as indicators of environmental health. The recent colony collapse disorder among honeybees, is an example of an environmental issue that may have ramifications throughout the ecosystem.

Fish

The Planning Area has several water bodies and drainages which support fish species. Under natural conditions, streams within the City were generally seasonal, meaning that they tended to dry up or experience very low flow during periodic droughts. As the City developed, these water courses began to conduct irrigation water and other urban water which ran into storm drains, resulting in an increase in stream water. Streams such as the Arroyo Conejo are therefore now considered perennial. The Hill Canyon Treatment plant also discharges tertiary treated water into the Arroyo Conejo, which has also increased stream flow. Today, these drainages and artificial water bodies such as Lake Eleanor provide suitable habitat for fish.

All fish which occur today in the Planning Area are introduced. Some of these are game fish such as largemouth bass, while others are aquarium fish such as goldfish which have been released by well-meaning people into these waterbodies. Introduced fish such as bass can have a significant adverse effect on aquatic ecosystems because the introduced fish eat native animals such as amphibians and even young birds. Species such as goldfish and carp create sedimentation by churning up the substrate. However, it should be noted that the presence of fish does provide food for bird species such as kingfishers and herons, and mammals such as raccoons.

The only sensitive fish species found recently in the Planning Area is the arroyo chub. The arroyo chub is considered a "special animal" by the California Department of Fish and Wildlife (CDFW). This small (3-4") minnow is native to rivers of the Los Angeles Basin, Malibu and San Juan Creek and the Santa Margarita River drainage and it has been introduced in the Santa

Clara and Cuyama Rivers in Ventura County. The arroyo chub was found in the Arroyo Conejo by biologists conducting surveys for the southwest pond turtle in 2002. The species has not been documented since that time and is believed to be extirpated from the area.

Reptiles and Amphibians

Reptiles occur throughout natural open space areas and commonly include sideblotched lizards, southern alligator lizards and western fence lizards. A variety of snakes are also present, including gopher snakes, striped racers, Southern Pacific rattlesnakes, common king snakes, ringneck snakes, and western aquatic garter snakes. The southwestern pond turtle is a state "species of special concern" and can be found in the Arroyo Conejo and its major tributary drainages.

Several species of amphibians are present in the cool, moist habitats afforded by woodlands and riparian communities. Amphibians expected to occur include slender salamanders, ensatina salamanders, western toads, and Pacific tree frogs. Toads and tree frogs utilize temporary pond and stream habitats for breeding, and do not require much water for the rest of the year. Fully aquatic forms such as the introduced bullfrog are present along perennial streams and ponds. Another State-listed "species of special concern," the red-legged frog, also listed as threatened by the federal government may also be present in riparian areas, but has not been found within the City in recent surveys

Birds

The great diversity of bird species found within Thousand Oaks reflects the variety of habitat types available to resident and migratory populations. Local survey records have identified a total of 166 bird species in Thousand Oaks. These species include breeding birds that nest in the City but migrate to warmer climates during the winter months, resident species that are present year-round, and migrants that are here only during the fall and winter. Among the most commonly encountered birds within urbanized portions of the City are house sparrows, house finches and Brewer's blackbirds; while several species of warblers, California and spotted towhees, plain titmice, acorn woodpeckers, California quail and red-tailed hawks are more typical of natural open space areas.

Particularly noteworthy are the 13 species of raptors, or "birds of prey" which can be found in Thousand Oaks. The following species are known to nest and breed locally: Cooper's hawk, American kestrel, prairie falcon, red-tailed hawk, red-shouldered hawk, great horned owl, barn owl and white-tailed kite. Other raptors that range through the area or become more numerous in the winter months include the turkey vulture, northern harrier, sharpshinned hawk, merlin, and screech owl. As a whole, raptor population densities within the Santa Monica Mountains region, which includes the Conejo Valley, are considered to be some of the highest in the country.

Mammals

Mammals that have either been observed or are expected to occur locally include species ranging from small ground dwelling rodents to large carnivores. Resident populations of small to

medium-sized mammals such as deer mouse, Pacific kangaroo rat, Audubon cottontail, long-tailed weasel, striped skunk and raccoon are encountered in and around urban areas, as well as open space. Larger mammals including coyote, grey fox, badger, bobcat, and mule deer tend to be more restricted in their distribution and primarily occupy larger natural undisturbed habitats. Although locally uncommon, mountain lions are occasionally seen by hikers or residents bordering the open space system. These large predators have extensive territories that include the Santa Monica Mountains, Simi Hills and the Santa Susana Mountains.

Wildlife Movement Corridors

Wildlife corridors connect fragmented patches of habitat. The fragmentation of natural areas in Ventura County and Thousand Oaks due to development patterns limits the ability of plant and animal populations to disperse and move to different areas. Maintaining and enhancing existing habitat linkages is essential to ensuring the preservation of regional natural resources, biodiversity, and sensitive species.

The Santa Monica-Sierra Madre Wildlife Corridor, located along the northern fringes of Thousand Oaks, is one of the few remaining coastal connections in the South Coast Ecoregion. This corridor was documented in the 2006 South Coast Missing Linkages Project and was established as a planning region in 2019 by the Ventura County Board of Supervisors. It is designed to protect landscape linkages for 20 focal species that are sensitive to habitat loss and fragmentation. These focal species cover a wide array of habitats and movement needs in the region. Figure 2.3 shows the Santa Monica-Sierra Madre Wildlife Corridor region in relation to Thousand Oaks.

Oak and Landmark Trees

Thousand Oaks lies in the Conejo Valley, the beauty of which is enhanced by the presence of large numbers of oak trees which have long been recognized for their historic and cultural significance to the area. Trees provide shade, lower temperatures, produce oxygen, filter air and significantly enhance and beautify the urban landscape. In open space settings they also provide valuable arboreal habitat for numerous bird species including hawks and owls, all of which increase both the diversity and quality of the natural environment. Oaks that are native to Thousand Oaks are Valley Oak (*Quercus lobata*), Coast Live Oak (*Quercus agrifolia*), Scrub Oak (*Quercus berberidifolia*), and Palmer's Oaks (*Quercus palmeri*). Development of the city has removed portions of the oak savannah and grasslands that at one point almost completely covered the area. In order to avoid further loss of oaks, which characterize the region and are the namesake of the city, the City has adopted ordinances to protect oak and other landmark tree species.

Oak Tree Preservation and Protection Ordinance

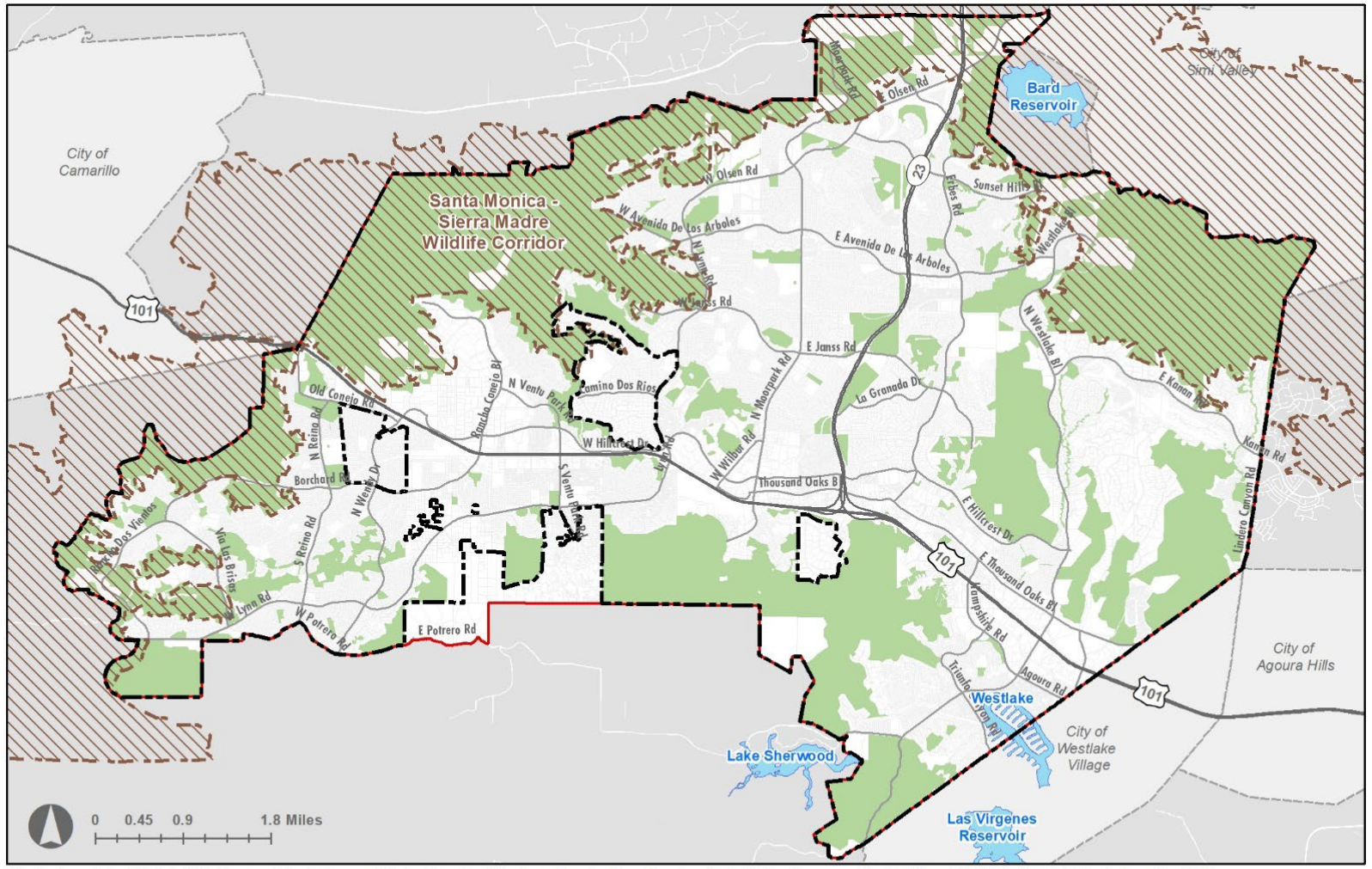
The Oak Tree Preservation and Protection Ordinance was established in 1986. The Ordinance requires that the owner of any property that contains oak trees must maintain all trees in a state of good health, as outlined by the Oak Tree Preservation and Protection Guidelines. An Oak Tree Permit is required for any

person to cut, remove, or relocate any species of oak tree, whether native or not, on any public or private property in the city.

Landmark Tree Preservation and Protection Ordinance

The Landmark Tree Preservation and Protection Ordinance requires the preservation of healthy landmark trees. Trees protected under the ordinance include the following species: California sycamore, California bay laurel, California black walnut and the California holly. A Landmark Tree Permit must be issued by the City for any person to cut, remove or relocate any landmark tree on any public or private property within the city. The ordinance does not apply to landmark tree species on single-family properties that are less than two acres or landmark tree species that do not meet specific trunk diameters as outlined in the ordinance.

Figure 2.4 Wildlife Movement Corridors



Raimi + Associates 2019 | Data Source: City of Thousand Oaks, County of Ventura, County of Los Angeles; State Water Resources Control Board, 2019; National Wetlands Inventory2018

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Open Space Areas and Trails

Thousand Oaks is bounded by the Santa Monica Mountains to the south and the Simi hills to the north, which create a natural ring of open and undevelopable space around the city. Through the preservation of this open space, Thousand Oaks has maintained its scenic beauty and natural resources. Open space provides valuable habitat for wildlife and vegetation, as well as areas for recreation. It also delineates the urban edge, which helps prevent urban sprawl and provides economic benefit. The City has worked with private landowners to ensure that private and public open space is preserved.

The Thousand Oaks open space system includes natural open space lands, existing parks, future parks, golf courses, and a system of equestrian, hiking, and bicycling trails, linking with regional trail systems. There are approximately 15,250 acres of open space in the City's Planning Area, with 55% owned by the Conejo Open Space Conservancy Agency; 17% owned by the City; 10% owned by the Conejo Recreation and Parks Department (CRPD); 10% owned by other public agencies including the National Parks Service (NPS), the Mountains Recreation and Conservation Authority (MRCA), Ventura County, and the state of California; and 8% under private ownership. Table 2.3 provides an inventory of open space in the City, which is also mapped in Figure 2.4 along with the Thousand Oaks trail system.

Table 2.3 Thousand Oaks Open Space

Open Space Area	Acres
Alta Vista	43
Arroyo Conejo	302
Conejo Canyons	1,673
Conejo Ridge	407
Deer Ridge	188
Dos Vientos	1,206
Fireworks Hill	49
Glider Hill	57
Hope Nature Preserve	359
Knoll	21
La Jolla	15
Labisco Hill	24
Lake Eleanor	592
Lang Ranch	915
Los Padres	187
Los Robles	358
Los Vientos	28
Lynmere	114
McCrea	173
Mt. Clef Ridge	217
North Ranch	2,604
Oakbrook Regional Park	436
Old Conejo	38
Old Meadows	49
Potrero Ridge	202
Rancho Potrero	303
Santa Monica Mountains, NRA	869
Skyline	72
South Ranch	662
Southern Ridge	3

Southshore Hills	13
Summit House	50
Sunset Hills	410
Tarantula Hill	45
Vallecito	67
Ventu Park	141
Vista Del Mar	9
Walnut	9
Wildwood	1,732
Woodridge	608
Zuniga Ridge	1
Total	**15,250**

Conejo Open Space Conservancy Agency (COSCA)

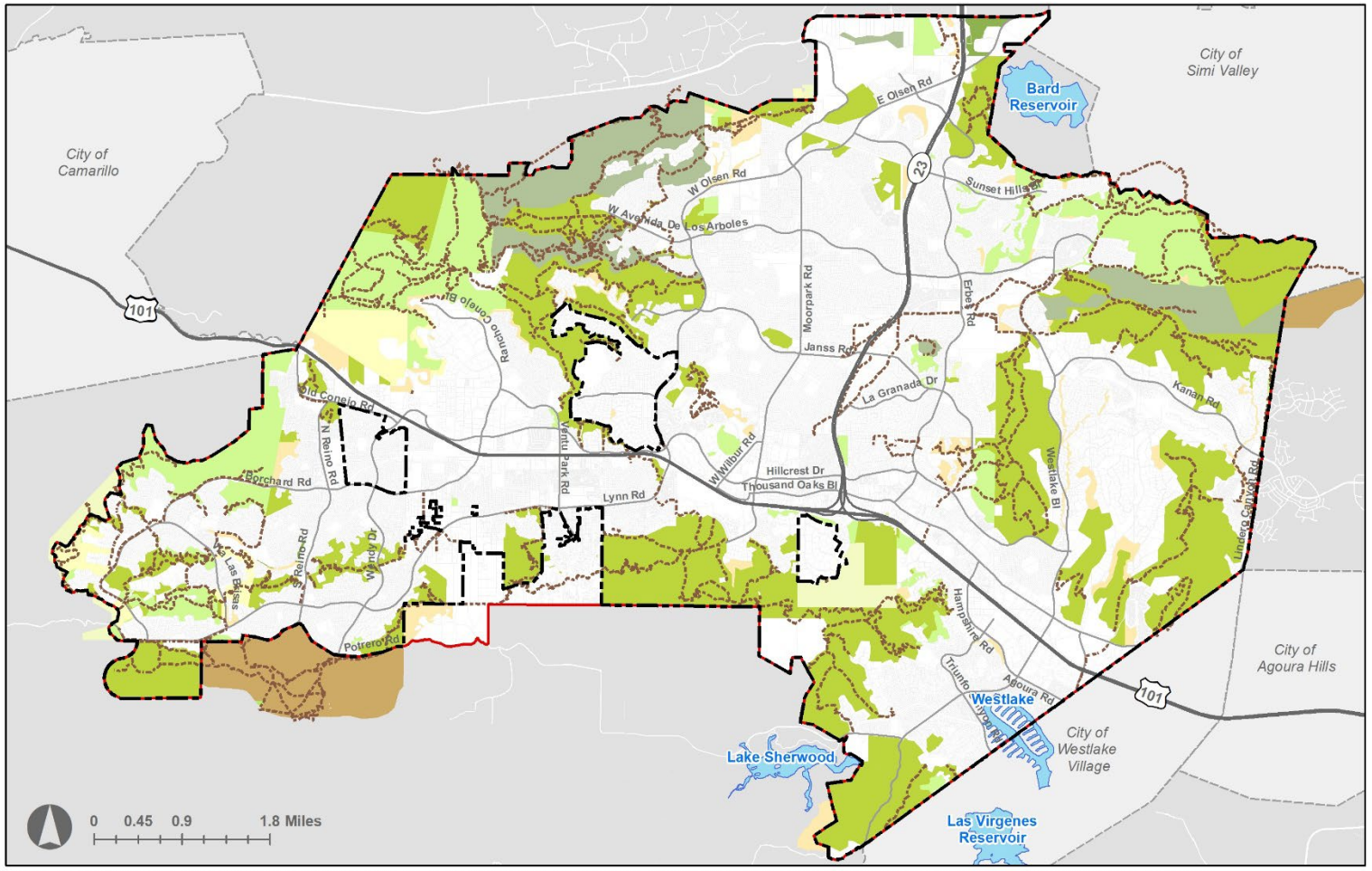
The Conejo Open Space Conservation Agency (COSCA) preserves, protects, and manages open space resources in the Conejo Valley. COSCA was created in 1977 by a joint power agreement (JPA) between the City of Thousand Oaks and the CRPD in order to coordinate land use planning and policy decisions, and facilitate open space acquisition, management, and conservation according to the goals identified in the City's General Plan. COSCA owns or manages approximately 12,500 acres of the total 15,250 acres of protected open space within Thousand Oaks' Planning Area. This includes the maintenance of over 150 miles of trails. In 2009, the COSCA Board of Directors adopted Ordinance No. 01-2009to establish rules and regulations governing public use of COSCA open space. COSCA's open space management is also guided by its Management Policies and Guidelines (2000), the Conejo Canyons Management Plan (2010), Strategic Plan (2013), as well as the Conservation and Open Space Elements (2013) of the City's current General Plan.

References

California Department of Fish and Wildlife (CDFW). 2019. CNDDB – Plants and Animals. Search 5-mile buffer around Thousand Oaks sphere of influence. https://www.wildlife.ca.gov/Data/CNDDB/Plants-and-Animals

Whitnall, Becca. 2018. Parcel no 'wetland,' per Army engineers. Thousand Oaks Acorn. February 15, 2018. https://www.toacorn.com/articles/parcel-no-wetland-per-army-engineers/

Figure 2.5 Open Space and Trails



CHAPTER 3: HYDROLOGY + WATER QUALITY

This section describes existing conditions in the City of Thousand Oaks with respect to hydrology and water quality.

Surface Water

Thousand Oaks is predominantly situated in the 343-square mile Calleguas Creek watershed, though a portion of the City—generally east of North Westlake Boulevard and southeast of Potrero Road—drains to the Malibu Creek watershed (City of Calabasas *et al.* 2015; Los Angeles Regional Water Quality Control Board [RWQCB] n.d.). Figure 3.1 shows watersheds and surface water bodies in Thousand Oaks.

Hydrology, Flooding, and Inundation

Calleguas Creek Watershed

Calleguas Creek is a primarily perennial, effluent-dominated stream, with flows fed by treated wastewater discharges, agricultural and urban runoff, and rising groundwater (Ventura County Public Works 2019). From the watershed headwaters near Santa Susana, Calleguas Creek flows approximately 30 miles west to Mugu Lagoon before draining to the Pacific Ocean. Key tributaries, including Conejo Creek/Arroyo Conejo and Lang Creek, flow through Thousand Oaks. Precipitation in the watershed is seasonal, with nearly 85 percent of annual precipitation occurring between November and March. In addition to seasonal variation, precipitation in the watershed varies annually, ranging from as low as 4 inches in dry years to as much as 38 inches in wet years (Ventura County Public Works 2019).

Flooding and Inundation

The portions of the Calleguas Creek watershed in the City of Thousand Oaks and its sphere of influence are in Ventura County Public Works Flood Zone 3. Historic floods in the watershed occurred in 1980 and 1983, when flooding caused tens of millions of dollars in damage to public and private facilities (Ventura County Flood Info 2018).

According to Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency (FEMA), portions of Thousand Oaks within the 1 percent annual chance (100-year) flood zone are generally located in the western portion of the city along Arroyo Conejo South Branch, the Greenwich Village area east of Moorpark Road and north of Thousand Oaks Boulevard, and the Newbury Park area from Rancho Conejo Boulevard to Reino Road (FEMA 2010). Flood zones in Thousand Oaks and the surrounding area are shown in Figure 6.5, *FEMA Flood Hazard Zones*, in Chapter 6, *Hazards*.

Malibu Creek Watershed

An approximately 6,300-acre portion of southeastern Thousand Oaks is in the Malibu Creek watershed. Surface waters in this portion of the City include Potrero Valley Creek, Lake Eleanor Creek, and Westlake Creek, as well as Lake Eleanor and Westlake Lake. In total, the Malibu Creek watershed drains 109 square miles of Los Angeles and Ventura Counties before emptying to the

Pacific Ocean at Malibu Lagoon, approximately 11 miles southeast of Thousand Oaks. In Thousand Oaks, the watershed consists primarily of urban/suburban development in the vicinity of Westlake Lake and north of U.S. 101, as well as undeveloped open space in the Santa Monica Mountains.

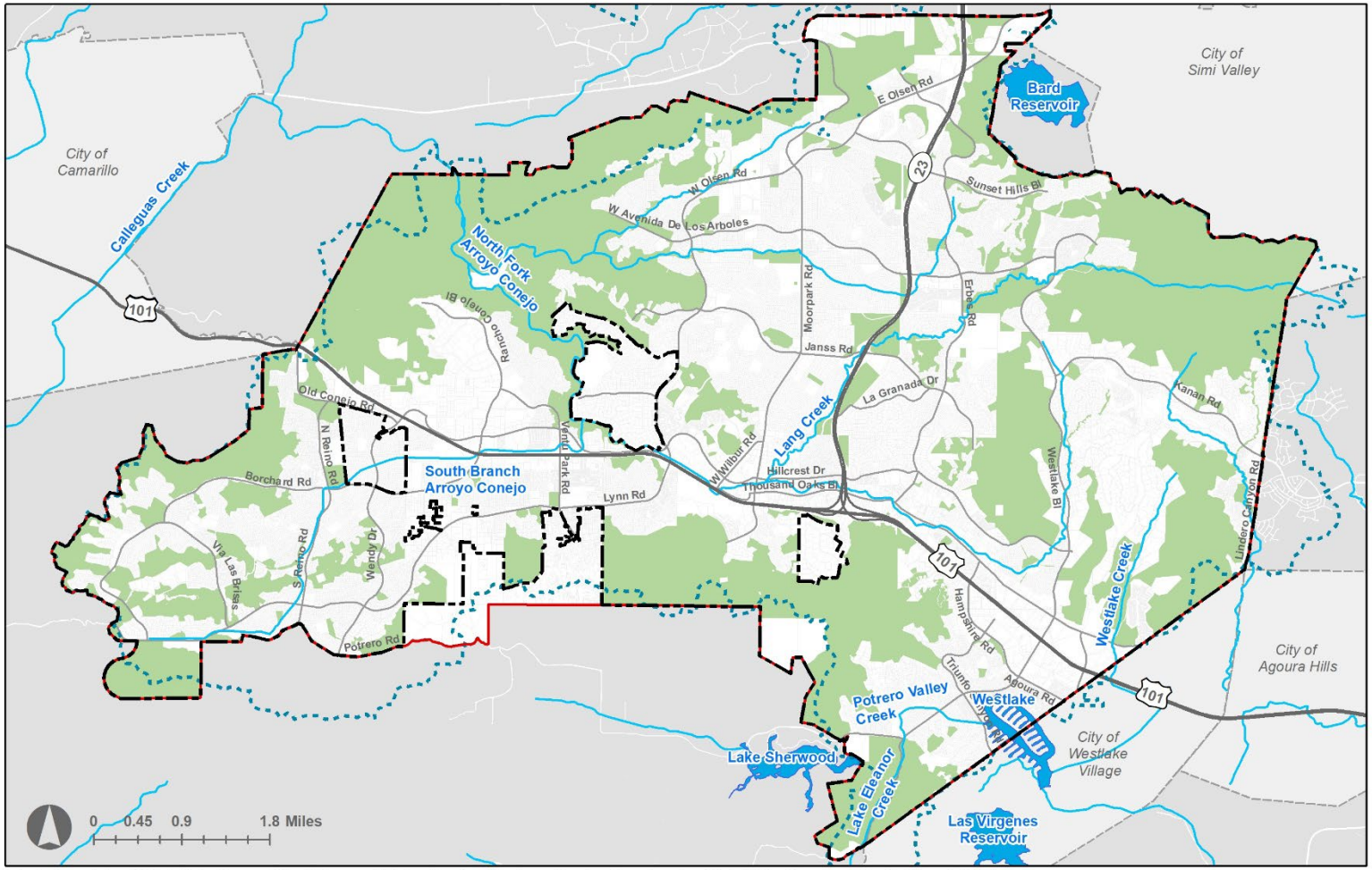
Flooding and Inundation

Portions of Thousand Oaks that are within the 1 percent annual chance (100-year) flood zone in the Malibu Creek watershed include areas immediately surrounding Lake Eleanor and Westlake Lake near the Los Angeles County line (FEMA 2018). Figure 6.5, *FEMA Flood Hazard Zones*, in Chapter 6, *Hazards,* shows flood zones in the City.

Surface Water Quality

Thousand Oaks is under the jurisdiction of the Los Angeles Regional Water Quality Control Board (RWQCB) (Region 4). The RWQCB sets water quality objectives and monitors surface water quality through the implementation of the Water Quality Control Plan for the Los Angeles Region (Basin Plan), adopted in 1994 and updated through regular amendments. The Basin Plan designates beneficial uses for surface waters in the region and associated water quality objectives to fulfill such uses. Table 3.1 describes designated beneficial uses and water quality impairments for waters in Thousand Oaks.

Figure 3.1 Surface Waters and Watersheds



Raimi + Associates 2019 | Data Source: City of Thousand Oaks, County of Ventura, County of Los Angeles; State Water Resources Control Board, 2019

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- CitySphere
- WaterBodies
- Watershed Boundaries
- Major Creeks
- Other Creeks and Streams
- Freeways
- Major Roads
- Parks and Open Space
- Unincorporated Counties Land
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Table 3.1 Beneficial Uses and Impairments for Surface Waters

Water Body	Beneficial Uses	Impairments
Malibu Creek Watershed		
Westlake Lake	MUN[1], NAV, WARM, WILD, REC1, REC2	Algae, Ammonia, Eutrophic, Lead, Organic Enrichment/Low Dissolved Oxygen
Lake Eleanor	MUN[1], GWR, WARM, WILD, RARE, WET, REC1, REC2	Not impaired
Potrero Valley Creek	MUN[1], GWR[2], WARM[1], WILD, REC1[2], REC2[2]	Oxygen, Dissolved
Lake Eleanor Creek	MUN[1], GWR[2], WARM[2], WILD, REC1[2], REC2[2]	Not impaired
Westlake Creek	Not designated	Not impaired
Lindero Creek	Warm Freshwater Habitat	Bacteria, Trash, Algae, Scum/Foam-unnatural, Trash, Selenium
Calleguas Creek Watershed		
Conejo Creek South Fork (Calleguas Creek Reach 13)	MUN[1], GWR[2], FRSH[2], WARM[2], WILD, REC1[2], REC2[2]	Ammonia, ChemA(tissue), Chlordane, Chloride, DDT (tissue), Dieldrin, Endosulfan (tissue), PCBs, Sulfates, Total Dissolved Solids, Toxaphene (tissue and sediment), Toxicity
Conejo Creek/Arroyo Conejo North Fork (Calleguas Creek Reach 12)	MUN[1], AGR, GWR, WARM, WILD, SPWN; REC1, REC2	Chlordane (tissue), DDT (tissue), Dieldrin, PCBs, Sulfates, Total Dissolved Solids, Toxaphene
Conejo Creek/Hill Canyon (Calleguas Creek Reach 10)	MUN[1], GWR[2], FRSH[2], WARM[2], WILD, RARE, REC1[2], REC2[2]	Ammonia, ChemA (tissue), Chlordane, Chloride, Chlorpyrifos, DDT (tissue), Diazinon, Dieldrin, Indicator Bacteria, Malathion, Nitrogen (nitrite), PCBs, Sulfates, Total Dissolved Solids, Toxaphene (tissue and sediment), Toxicity, Trash
Unnamed Tributary at Olsen Road (Calleguas Creek Reach 12)	MUN[1], AGR, GWR, WARM, WILD, SPWN; REC1, REC2	Not impaired
Lang Creek	Not designated	Not impaired

Notes: *DDT = Dichlorodiphenyltrichloroethane; PCBs = polychlorinated biphenyls; ChemA = group of chemicals including Aldrin, Dieldrin, Chlordane, Endrin, Heptachlor, Heptachlor Epoxide, HCH, Endosulfan, and Toxaphene*

MUN = Municipal and Domestic Supply; AGR = Agricultural Supply; GWR = Groundwater Recharge; FRSH = Freshwater Replenishment; WARM = Warm Freshwater Habitat; WILD = Wildlife Habitat; RARE = Rare, Threatened, or Endangered Species; SPWN = Spawning, Reproduction, and/or Early Development; REC1 = Water Contact Recreation; REC2 = Non-Contact Water Recreation [1] Potential Beneficial Use [2] *Intermittent Beneficial Use*

Sources: State Water Resources Control Board 2019; Los Angeles RWQCB 2019.

Groundwater

Hydrology

The city predominantly overlies the Conejo Groundwater Basin, but also spans portions of five other groundwater basins designated by the California Department of Water Resources (DWR). Figure 3.2 shows groundwater basins in the vicinity of Thousand Oaks.

Conejo Basin

The 45.2-square mile Conejo Groundwater Basin (Basin 4-010) underlies a substantial portion of the city, generally west of SR-23. Simi Hills and Conejo Hills bound the basin to the east and west, respectively. Primary sources of recharge to the basin include mountain front recharge, recharge in Arroyo Conejo, and percolation of irrigation water.

Due to rapid population growth and associated increases in groundwater extraction in Thousand Oaks following World War II, groundwater elevations declined by as much as 300 feet in the early 1960s. Following the availability of imported surface water in 1963, pumping in the basin effectively ceased, and water levels have since rebounded. Groundwater elevations in the basin generally range from 600 to 900 feet above mean sea level, with higher elevations in the eastern portion and lower elevations in the west, similar to pre-development levels (City of Thousand Oaks 2016).

Thousand Oaks Area Basin

The 3,110-acre Thousand Oaks Area Groundwater Basin (Basin 4-019) underlies non-mountainous areas of the city generally east of SR-23 and south of Hillcrest Drive. The basin has an estimated storage capacity of 130,000 acre-feet (AF), with groundwater flowing from the Thousand Oaks area to the south. Groundwater elevations in the basin are generally around 880 feet above mean sea level, or approximately 20-30 feet below ground surface (Ventura County Watershed Protection District 2015). While groundwater levels have remained relatively stable, elevations vary seasonally on the order of 10 to 20 feet (DWR 2004a).

Tierra Rejada Basin

The Tierra Rejada Groundwater Basin (Basin 4-015) spans 6.9 square miles between Simi Valley and Moorpark. Although the basin is generally outside the Plan Area, portions of the city north of Sunset Hills Boulevard overlie the aquifer. The basin has an estimated storage capacity between 40,000 and 80,000 AF and is primarily recharged by percolation of rainfall, stream flow, and irrigation. Monitoring between 1995 and 2001 indicated relatively stable groundwater levels (DWR 2004b).

Russell Valley Basin

The Russell Valley Groundwater Basin (Basin 4-020) underlies a small portion of Thousand Oaks west of Lindero Canyon Road. This relatively small basin is recharged predominantly by percolation of rainfall (DWR 2004c).

Arroyo Santa Rosa Valley and Hidden Valley Basins

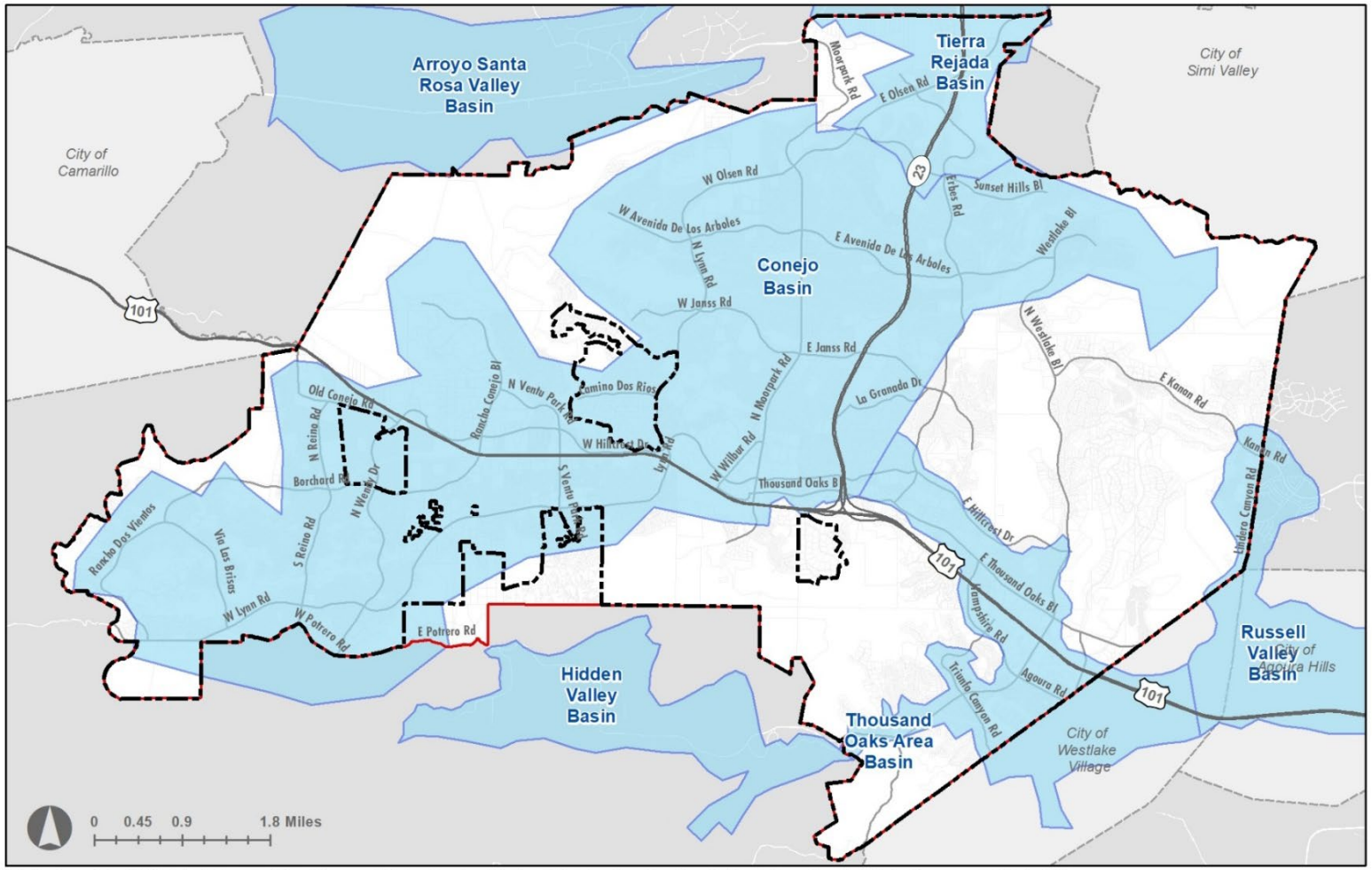
The Arroyo Santa Rosa Valley Groundwater Basin (Basin 4-007) underlies a largely agricultural region situated between Thousand Oaks and Moorpark. Undeveloped regions along the city's northern border may contribute to recharge in this basin. Similarly, the Hidden Valley Groundwater Basin (Basin 4-016) underlies the unincorporated Hidden Valley and Lake Sherwood communities south of Thousand Oaks. Portions of the City's Sphere of Influence may recharge this basin through runoff or percolation.

Groundwater Quality

Groundwater quality in the Thousand Oaks area is generally characterized by high concentrations of total dissolved solids (TDS). In some portions of the Conejo, Thousand Oaks Area, and other surrounding groundwater basins, localized TDS concentrations as high as 2,800 milligrams per liter (mg/L) have been reported (DWR 2004c). Most recently, TDS concentrations of 847 mg/L in the Conejo basin and 1,500 mg/L in the Thousand Oaks Area basin were reported in 2015 (Ventura County Watershed Protection District 2015). These values exceed the secondary maximum contaminant level (MCL) drinking water standard of 500 mg/L. Due to high TDS concentrations, groundwater in the area may be unsuitable for potable or irrigation uses (City of Thousand Oaks 2016).

In addition to TDS, groundwater basins in the vicinity of Thousand Oaks have been subject to elevated concentrations of sulfates, nitrate, and dissolved iron. Additionally, a trichloroethylene (TCE) plume associated with the former TFX Aviation site, an approximately 13-acre property along Old Conejo Road, has impaired groundwater in the western portion of the Conejo basin. The site has since been redeveloped, and remediation activities, including groundwater extraction and treatment, are ongoing (Department of Toxic Substances Control 2019; City of Thousand Oaks 2016).

Figure 3.2 Groundwater Basins



Raimi + Associates 2019 | Data Source: City of Thousand Oaks, County of Ventura, County of Los Angeles; California Department of Water Resources, Bulletin 118

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- rooted in community -

City Limits
CitySphere
Groundwater Basins
Freeways
Major Roads
Unincorporated Counties Land
Adjacent cities

Stormwater

Runoff of stormwater during precipitation events can be a substantial contributor of pollutants—including sediment, sediment-bound pesticides, nutrients, and bacteria—to waterbodies. The diffuse nature of stormwater pollution renders it particularly challenging to regulate and control.

The City of Thousand Oaks is a co-permittee under the Waste Discharge Requirement for Stormwater (Wet Weather) and Non-Stormwater (Dry Weather) Discharges from the Municipal Separate Storm Sewer Systems within the Ventura County Watershed Protection District, County of Ventura and the Incorporated Cities Therein (Order R4-2010-0108, "MS4 Permit") issued by the Los Angeles RWQCB. The MS4 Permit requires implementation of construction-era and post-construction control measures for new development and significant redevelopment projects, requiring such projects to capture, retain, and treat on-site runoff. The MS4 Permit also promotes low impact development (LID) techniques, such as constructed greenspaces, native landscaping, and bioretention and infiltration best management practices (BMPs) (Los Angeles RWQCB 2010). Chapter 8 of the Thousand Oaks Municipal Code implements the requirements of the MS4 Permit by requiring preparation of stormwater pollution control plans for projects in the city.

In addition to the MS4 Permit, construction projects in the city are subject to the requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, "Construction General Permit"). For all projects exceeding one acre of disturbance area, the Construction General Permit requires construction site operators to prepare and implement a Stormwater Pollution Prevention Plan (SWPPP) that outlines project-specific best management practices to control erosion, sediment release, and otherwise reduce the potential for discharge of pollutants in stormwater.

Dams and Levees

In Thousand Oaks, Banning Dam (also known as Lake Eleanor Dam) forms Lake Eleanor in the southeastern portion of the city. The 37-foot tall, constant radius arch dam was constructed in 1889 and has been designated a County Historical Landmark. The facility is owned by the Conejo Open Space Conservation Agency. Additionally, the Lang Ranch Detention Basin is a designated state-size dam, according to the Ventura County Multi-Hazard Mitigation Plan (County of Ventura 2015).

Although not located in the city, the 40-foot tall Potrero Dam forms the 125-acre Westlake Lake, which extends into eastern Thousand Oaks (City of Thousand Oaks 2014). Other dams in the vicinity of Thousand Oaks include Wood Ranch Dam (Bard Lake) to the northeast, Lake Sherwood Dam to the south, and Westlake Dam (Las Virgenes Reservoir) to the southeast.

In addition to the dams specified above, the city contains four debris basins and five above-ground detention basins intended to provide flood control and protection to the community. These facilities are generally located in the southern and western portions of the city, near the Santa Monica Mountains (County of Ventura 2015). Many smaller surface and below-grade basins are

also located throughout the city, including California Lutheran University's bio-basin and numerous buried pipe basins.

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CHAPTER 4: UTILITIES AND SERVICES

Potable Water

Potable water service in Thousand Oaks is available for the nearly 135,000 residents of the City of Thousand Oaks and residents of unincorporated areas in the Sphere of Influence. Water service is delivered by multiple providers, including: City of Thousand Oaks, California-American Water Company, California Water Service Company, Camrosa Water District, and Newbury Park Academy Mutual Water Company. Table 4.1 shows the percentage of water users in the city that are serviced by each provider. The City of Thousand Oaks also provides potable water service to the unincorporated areas south of the city in the Kelley Estates and Ventu Park area (Ventura Local Agency Formation Commission 2018). Nearly all potable water distributed in the city by the five water service providers listed above is imported water purchased from Calleguas Municipal Water District, which receives its supply from the Metropolitan Water District of Southern California. This water is sourced almost entirely from the State Water Project during normal municipal operations (Calleguas Municipal Water District 2015). During drought conditions, Metropolitan Water District blends some State Water Project water with Colorado River Project water. Additionally, the local Lake Bard Water Filtration Plant, run by Calleguas, is used for a few weeks each year as a local water supply.

Table 4.2 Potable Water Service

Water Service Provider	Portion of City Users
California-American Water Company	48%
City of Thousand Oaks	36%
California Water Service Company	16%
Camrosa Water District	<1%
Newbury Park Academy Mutual Water District	<1%

Source: Ventura Local Agency Formation Commission. 2018. City of Thousand Oaks Municipal Service Review. https://s29450.pcdn.co/wp-content/uploads/Thousand-Oaks-MSR-Resolution-2018-02-21reduced.pdf

Potable Water Demand and Supply

According to the 2015 Urban Water Management Plan (UWMP) for the City of Thousand Oaks, the City's water system consists of approximately 232 miles of transmission and distribution pipelines, 15 pump stations, and 16 reservoirs with a total capacity of 35.5 million gallons. The City water service served a population of 53,347 at approximately 17,000 accounts and purchased approximately 9,600 acre-feet of water in 2015. The UWMP projects that the City of Thousand Oaks water service area will have a population of 55,242 and water demand of 11,500 acre-feet per year in 2040. The Calleguas Municipal Water District projects having enough supplies through 2040 to meet City imported water demands under average and dry conditions (City of Thousand Oaks 2015).

Wastewater

The City of Thousand Oaks provides its own wastewater collection for residents and businesses of Thousand Oaks. The City's Public Works Department, Wastewater Division, is responsible for the planning, administration, operation, and maintenance of the wastewater collection and interceptor systems. Structured as an enterprise function of the City, revenues for the Division's activities are funded by existing and new system users through service and connection charges. The system consists of 382 miles of separate sanitary sewers ranging from 6 inches to 48 inches in diameter. Some of the oldest sewers in the system date back to 1958, when the area was first sewered. In 2002, the City developed the Wastewater Interceptor Master Plan, which established a capital improvement program for the wastewater collection system, as well as an assessment of the operations and maintenance program in comparison with other agencies (Thousand Oaks 2002).

The majority of wastewater generated in Thousand Oaks, around 90 percent, undergoes tertiary treatment at the Hill Canyon Treatment Plant, while wastewater generated in the easternmost portion of the City is collected and treated by the Las Virgenes Municipal Water District. Hill Canyon Treatment Plant (HCTP) has the capacity to treat some 14 million gallons of wastewater per day (currently averaging around 8 million gallons a day), which arrives to the plant via two main lines fed from the City's network of dedicated pipelines. Sewer (or wastewater) lines bring in untreated water from toilets and drains in homes, businesses and industrial sites throughout the City. This water is confined in pipes and for the most part is gravity fed, which saves City residents thousands of dollars annually in avoided pumping costs. Two lift stations located throughout the City are employed to move a small portion of the wastewater uphill where necessary. At the treatment plant wastewater is treated to a level of cleanliness which renders it suitable for unrestricted reuse and is then discharged into Conejo Creek joining untreated stormwater (Thousand Oaks 2018).

The combined effluent flows northwards out of Hill Canyon to the Santa Rosa Valley, from where it travels west and downhill into the Oxnard Plain. Approximately 7 miles downstream of the Plant, Camrosa Water District pumps some of the water from the Conejo Creek into storage ponds for eventual distribution to agriculture customers for irrigation. Through this process an average of 9,000 AF per year of treated wastewater is provided for various beneficial uses. The unpumped water continues and joins with Calleguas Creek which flows to the Pacific Ocean through Mugu Lagoon. By the time the treated water is discharged, it is completely suitable for reclamation, is low in nitrogen and crystal clear in appearance (Thousand Oaks 2018).

HCTP is the highest user of energy in the City due to the energy intensity of the water treatment process. The Plant has worked to reduce its consumption over the past ten to fifteen years and has invested heavily in onsite generation and energy-saving technologies. It utilizes anaerobic digestion within a series of three large tanks (digesters) to generate methane gas, the primary constituent of natural gas, which is then burned in a co-located co-generation facility. This facility has a potential total electricity generating capacity of 1,120 kW although the current generator installation is only permitted for 666 kW output; its construction was largely funded by a grant from the California Public Utility Commission (CPUC) Self-Generation Incentive Program (SGIP). The co-gen facility is operated under a Power

Purchase Agreement (PPA) by CHP Clean Energy to whom the City pays $0.075/kWh for electricity produced In addition to the co-generation facility, the HCTP facility includes a 584 kW DC (500 kW AC) single axis tracking PV array. The system was installed in 2006-2007, beginning operation in April 2007, and is operated under a 20-year Power Purchase Agreement (PPA) with Solar Star TO, LLC (now MMA Energy Capital) in which the City pays $0.1686/kWh for the generated electricity. The system operates under a net metering agreement with Southern California Edison, in which excess generation is banked for credit to be used when the sun goes down or at other times when onsite production does not meet the Plant's demand and energy from the grid is needed (Thousand Oaks 2018).

Stormwater

Land development in Thousand Oaks and the rest of Ventura County has caused an increase in impervious surfaces, which has increased the amount of runoff and pollutants entering stormwater conveyance systems. The County of Ventura and the incorporated cities each have separate stormwater conveyance systems, which transport stormwater directly to receiving waters, including local channels, rivers and the ocean. This stormwater is not treated in a wastewater treatment plant and therefore can potentially contain pollutants that decrease surface water quality (VCSQMP 2010).

The City of Thousand Oaks provides stormwater and control services to comply with the Ventura Countywide Municipal Stormwater National Pollutant Discharge Elimination System (NPDES) permit. The NPDES Permit Program, authorized by the Clean Water Act, controls water pollution by regulating sources that discharge pollutants into waters of the United States. By cooperating with other jurisdictions through the Ventura Countywide Stormwater Quality Management Program (VCSQMP), permittees under the Ventura Countywide Municipal Stormwater NPDES ensure information and workloads are shared, economies of scale are achieved, and the VCSQMP is realized efficiently and effectively. Members of the VCSQMP include the County of Ventura and the incorporated cities of Camarillo, Fillmore, Moorpark, Ojai, Oxnard, Port Hueneme, Santa Paula, Simi Valley, Thousand Oaks, and Ventura (VCSQMP 2018).

Efforts by Thousand Oaks to control stormwater pollution include the requirement for preparation of a Storm Water Pollution Control Plan (SWPCP) by owners of construction projects that require clearing, grading or excavation. SWPSPs are submitted for review to the Thousand Oaks Public Works Department and must be approved prior to issuance of grading permits. The purpose of the SWPCP is to identify potential pollution sources that may affect the quality of stormwater discharges and to design the use and placement of Best Management Practices to effectively prohibit the entry of pollutants from the construction site into the storm drain system. SWPCPs must be developed and implemented in accordance with the VSQMP (City of Thousand Oaks N.D.).

Solid Waste

Solid waste collection service in Thousand Oaks is managed exclusively by contract through Waste Management and EJ Harrison. EJ Harrison provides residential trash and recycling service to Newbury Park and the Dos Vientos areas, while Waste Management provides commercial service for all of Thousand

Oaks and the remainder of residential in Thousand Oaks and Westlake Areas. The current contracts include "zero waste" support for City special events, and a requirement that 80% of street sweeping debris is recycled. Recyclables collected by EJ Harrison go to Gold Coast Recycling in Ventura, while trash and green waste for both haulers go to the Simi Valley Landfill and Recycling Center (SLVCR) for processing and then Agromin for composting (City of Thousand Oaks 2018).

The SVLCR is owned and operated by Waste Management Company and accommodates nearly 60 percent of Ventura County's daily landfill disposal needs. SVLCR is permitted as a Class III non-hazardous landfill. The has a permitted total area of 887 acres, with 368 acres permitted for disposal. The facility is permitted to accept 9,250 tons of waste per day and allow a traffic volume of 892 vehicles per day. The landfill's current permitted capacity is 119.6 million cubic yards (MCY). In 2016 the SVLCR landfill contained 31.3 MCY of waste with a remaining capacity of 88.3 MCY, which is estimated to be reached in the year 2068 (CalRecycle 2018).

The passage of Senate Bill 1016 in 2008 established a 50 percent per capita disposal rate goal for jurisdictions, normalized by both the number of residents and the number of employees in the jurisdiction. In 2017, the City of Thousand Oaks disposed of 114,533 tons of mixed solid waste. This equated to a per capita disposal rate by population of 4.80 pounds per person per day (PPD) and a per capita disposal rate by employee of 9.30 PPD, which are below the State disposal target for population of 7.50 PPD and the State disposal target for employees of 14.80 PPD (CalRecycle 2019).

The City of Thousand Oaks encourages reuse of solid waste through ordinances and programs designed to reduce the amount of waste, including hazardous materials, entering landfills. Thousand Oaks operates a Hazardous Waste Material Reuse Program which takes usable household products collected at the City's Household Hazardous Waste Facility. The Program encourages the reuse of hazardous materials which reduces the City's costs from hazardous material disposal. Additionally, in 2017 Thousand Oaks passed the Construction and Demolition Debris Recycling Ordinance (No. 1639-NS) which requires that construction and/or demolition projects divert a minimum of 65 percent of their construction and demolition waste from landfill disposal through recycling and reuse. To ensure compliance, the City requires that building permit applicants submit a Waste Management Plan for approval before receiving a permit and a Final Report at the time of Final Inspection of their project.

Energy

Energy in Thousand Oaks is provided solely by the investor owned utilities Southern California Edison (SCE) and Southern California Gas (SCG). In 2017, SCE provided approximately 29 percent of the total electricity in California while SCG provided approximately 41 percent of all-natural gas used in the state (CEC 2017a, CEC 2017b). Unexpected outages in the SCE service area occur on occasion. Most recently, two separate outages on July 15, 2019 left 13,900 customers in Fullerton and 1,400 customers in Valencia without power for nearly four hours (Orange County Register 2019). To reduce strain on the electricity grid, SCE has offers time-of-use billing, which requires customers to pay higher rates when energy demand is highest, encouraging customers to

reduce use during high consumption times. The energy suppliers construct and maintain their own energy conveyance infrastructure.

In efforts to reduce reliance on fossil fuel energy, Thousand Oaks provides expedited processing for installation of small solar photovoltaic systems on one- and two- family dwellings. As the price of solar and photovoltaic energy systems continue to decrease, it is likely that energy will be produced on-site for an increasing number of homes and businesses in Thousand Oaks.

Telecommunications

Telecommunications services in Thousand Oaks are provided by private vendors and agencies.

Wireless, Voice over Internet Providers (VoIP) and traditional landline phone service is available in Thousand Oaks. Wireless service is provided through multiple providers who lease or operate four wireless cell facilities within Thousand Oaks, as well as facilities in surrounding jurisdictions. At least four VoIP service providers operate in Thousand Oaks, including: VoIPLY, COIPI, ITP and AXvoice. Thousand Oaks also is served by at least two traditional landline phone service providers, including ECG and Pioneer Telephone (Wirefly 2019).

There are 20 internet service and five mobile internet providers in Thousand Oaks, nine of which offer residential service. These include three cable providers, three fiber optic providers, four DSL providers, two satellite providers, three fixed wireless providers and six copper wire providers. Mobile internet is provided by AT&T, T-Mobile, Verizon, Sprint and Metro (Broadbandnow 2019). Publicly funded internet access is available at the Grant R. Brimhall and Newbury Park Branch Libraries.

In March 2019, the Thousand Oaks City Council established an Urgency Ordinance (Municipal Code Amendment 2018-70719) to set a process for expedited processing of permits for "small wireless facilities." The ordinance is in response to FCC Rule 18-133, published in October of 2018, which requires jurisdiction to process permits for "small wireless facilities" in 90 days. The FCC rule was established to ensure the rapid implementation of new data technology, including 5G technology. By establishing the Urgency Ordinance, Thousand Oaks can set aesthetic guidelines and preferential siting of proposed "small wireless facilities."

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CHAPTER 5: PUBLIC SERVICES

This section addresses the public services needed to support and protect the Thousand Oaks community. Subcategories include police services, fire protection services, and emergency response. Police and fire service levels depend largely on staffing, facilities, and equipment. Several measures can be used in assessing staffing level adequacy, such as the ratio of fire fighters or police officers per 1,000 population and response times. Public safety services need to be regularly evaluated to ensure that present and expected future local needs are being met. Public facilities in Thousand Oaks, including police stations and fire stations, are shown in Figure 5.1. Schools, public facilities, and libraries are described in the Land Use + Urban Design Report and shown in Figure 5.1 for reference.

Police Services

Police protection in Thousand Oaks is provided on a service contract basis by the Ventura County Sheriff's Office (VCSO) for all services, including administration, patrol, and investigation services. The City has a separate agreement with the VCSO, wherein the City's police force allocated by the Sheriff's office is responsible for the first response to unincorporated areas of Newbury Park to the southwest of the City. In fiscal year 2017-18, the Ventura County Sheriff's Office allocated 108 police positions to the city, including 93 sworn officers (Ventura Local Agency Formation Commission, 2018). According to the City's Municipal Services Review, based on February 2018 staffing levels and the city's estimated 2017 population of 129,000, the City provides one sworn officer for every 1,195 residents (American Community Survey, 2017). In order to maintain the current staffing-to-population ratio in the future, one additional sworn officer will be required for each additional 1,423 residents. For the maximum projected population of 160,260 in 2040, a total of 113 officers would be required (Ventura Local Agency Formation Commission, 2018). *(Note: we are waiting to hear back from the Ventura County Sherriff Department re. service ratio goals.)*

Police response times can vary significantly, depending on the location of patrol cars at the time of a call. The response time goal is 10 minutes for emergency calls and 20 minutes for non-emergency calls. According to the Ventura County Sheriff's Office, the average response time in 2017 was 7.96 minutes for emergency calls and 21.2 minutes for non-emergency calls. During 2016 and 2017, the emergency call response goals were met 76% of the time and the non-emergency call response goals were met 68% of the time (Ventura Local Agency Formation Commission, 2018).

The budgeted operational cost for the City to provide police service for fiscal year 2017-18 is $30,683,004, a per capita cost (based on the City's estimated 2016 population of 132,365) of approximately $232 (Ventura Local Agency Formation Commission, 2018).

Fire Protection Services

Fire poses hazards to life and property. Fire emergency response services in Thousand Oaks are provided by the Ventura County Fire Protection District (VCFPD). Eight fire stations serve the city and surrounding unincorporated area. The City anticipates the relocation of Station 34 about one mile west from Moorpark Rd and Avenido de los Arboles to Mountclef Blvd and Avenido de los Arboles (Ventura County Fire Department Public Information Office, 2019).

VCFPD's response time goals and response statistics are based on population density, with different response time goals and statistics for suburban and rural areas throughout its service area. VCFPD's service area includes unincorporated County areas and the cities of Camarillo, Moorpark, Ojai, Simi Valley, and Thousand Oaks. Thousand Oaks contains both suburban and rural areas.

VCFPD's response time goal is 8.5 minutes 90 percent of the time in suburban areas and 12 minutes 90 percent of the time in rural areas. VCFPD's average response time during 2016 and 2017 was 8.5 minutes 92 percent of the time in suburban areas and 12 minutes 90 percent of the time in rural areas in 2016 and 2017. VCFPD is responsible for all fire response dispatch in the County. According to a mutual aid agreement between the cities and the VCFPD, the closest available personnel responds to emergency calls for service, regardless of whether the service need is in the responding agency's jurisdiction (Ventura Local Agency Formation Commission, 2018).

Emergency Response

The goal of emergency preparedness and response is to protect the health, safety, and welfare of the general public before, during, and after natural and man-made emergencies. These emergencies include natural events such as earthquakes, wildfires, flooding, and man-made events, such as mass shootings. In November 2018, the City of Thousand Oaks experienced three tragic events within 24 hours of each other, the Hill and Woolsey Fire, which collectively burned almost 100,000 acres in Ventura and Los Angeles County; and a mass shooting that took place at the Borderline Bar and Grill, killing 13 people and injuring more than 10 others. Due to the severity and timing of these tragedies, emergency response was a multi-agency effort.

The VCFPD, which provides fire protection to Thousand Oaks, also maintains a Fire Hazard Reduction Program that works with property owners, local government and other District programs to reduce negative impacts to life, property and infrastructure from destructive fires in the Wildland Urban Interface areas (Ventura County Fire Department, N.D.). When additional support is needed, Los Angeles City and County Fire Departments from Los Angeles County are engaged, such as in the case of the Hill and Woolsey Fire.

The City adopted an Emergency Operations Plan (EOP) on May 27, 2008 and 2014; and is currently updating the plan (to be completed in early 2020.). The EOP describes the process and guidelines for responding to emergency incidents. Depending on the size of incident, large-scale incidents may involve mutual aid from other agencies. The City follows the States Standardized

Emergency Management System (SEMS) and the National Incident Management System (NIMS) to ensure standard operating procedures and effective coordination across all levels of government are used during an emergency. The Emergency Operation Center is used to manage incident response and is located at City Hall (City of Thousand Oaks, 2014).

The City of Thousand Oaks Public Works Department plays a large role in all local emergency incidents. After the mass shooting, Public Works staff coordinated traffic control and road closures surrounding the site to ensure safety. Following the start of the Hill and Woolsey Fires, staff monitored water infrastructure vulnerability and established and managed evacuation shelters with assistance from the American Red Cross. The City's Emergency Operations Center (EOC) was activated less than one hour after the Woolsey Fire ignited near Simi Valley. By this time, the City's staff and resources had already been impacted by the Borderline mass shooting the day before. Due to the unavailability of designated personnel to support the EOC, staff not previously assigned an EOC role filled the positions and performed well despite having minimal or no formal EOC training. The event emphasized the need for a more robust City EOC organization chart with supplemental back-up staff for several positions and more EOC staff training. Due to many fire related emergencies in Los Angeles and Ventura Counties, American Red Cross resources were limited. This emphasized the need to establish a countywide Care and Shelter Plan that identifies roles of agencies in opening and managing shelters during emergencies (City of Thousand Oaks, 2019).

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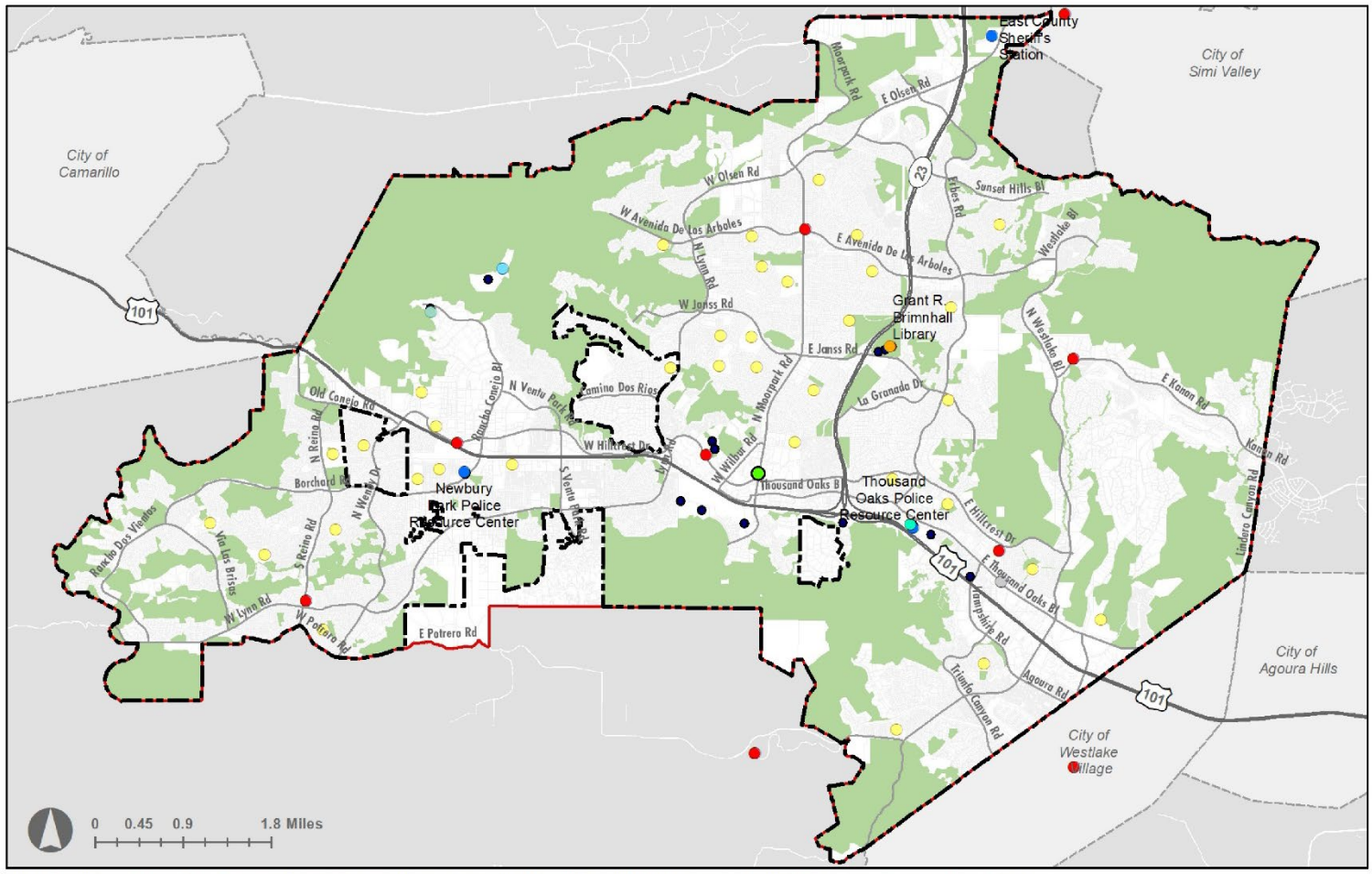
Figure 5.1 Public Facilities



Raimi + Associates 2019 | Data Source: City of Thousand Oaks 2019, County of Ventura, County of Los Angeles; State Water Resources Control Board, 2019

THOUSAND OAKS GENERAL PLAN 2045
rooted in community

- City Limits
- CitySphere
- Freeways
- Major Roads
- City Hall
- Police Stations
- Fire Stations
- Schools
- Libraries
- Post Offices
- Hill Canyon Water Treatment Plant
- Municipal Service Center
- Parks and Open Space
- Unincorporated Counties Land
- Adjacent cities
- Other Public Facilities

CHAPTER 6: HAZARDS

Hazardous Materials

A wide variety of products, chemical and purified chemical compounds, and elements considered hazardous or toxic are used in households, commercial businesses, and industrial operations and processes. These include home and pool related chlorine products, chemical fertilizers, herbicides and pesticides, stored fuels and waste oil, chemical solvents and lubricants, and a variety of medical materials. The improper use and management of hazardous materials can pose a potential threat to the community and the environment.

Leaking underground storage tanks (LUST) and former industrial and commercial sites can expose the community and environment to hazardous materials. Gasoline storage tanks from former or current gas stations are subject to leaking over time, which can contaminate soil, groundwater and/or surface water. Leaks require immediate action upon detection to reduce the spread of contaminants and reduce potential harm. Industrial and commercial activities sometimes utilize hazardous and toxic chemicals for operations, and spills or mishandling of these materials can result in site contamination. These sites are known as "brownfields", and their clean-up and revitalization are regulated by the U.S. Environmental Protection Agency (USEPA).

Thousand Oaks is a suburban community that does not contain a high concentration of hazardous material sites such as LUST sites, contaminated groundwater sites under the jurisdiction of the State Water Resources Control Board (SWRCB) Site Cleanup Program, and hazardous waste sites under the Department of Toxic Substances Control (DTSC) Site Cleanup Program. There are 15 open or active cleanup sites in the City and its Sphere of Influence that have not been remediated or closed. These sites are listed in Table 6.1 and their locations are shown in Figure 6.1. There are also approximately 12 inactive DTSC sites, 31 inactive or closed SWRCB Site Cleanup Program Sites, and 229 inactive or closed LUST sites in the City and its Sphere of Influence.

Because of the widespread use of hazardous materials in our communities, minor and major hazardous materials spills and incidents occur. Most of these incidents are related to transport of chemicals over roadways or through industrial accidents. U.S. Highway 101 and State Route 23 are major transportation corridors through Thousand Oaks. The California Highway Patrol estimates (based on data obtained from inspection station at the top of the Conejo Grade) that about 105 trucks carrying hazardous materials or waste travel northbound through Thousand Oaks on a given day. Accounting for southbound traffic and traffic on State Route 23, the total number of trucks passing through the City is likely 200 or more.

To reduce impacts associated with hazardous material incidents, Ventura County has developed a Hazardous Materials Emergency Response Plan. The goal of the plan is to protect life, property, and the environment from the effects of a hazardous material release to air, land or water or a hazardous material fire. Procedures to be used in the event of an incident and specific agency responsibilities are identified within the plan. The plan is activated by the designated Incident Commander at the scene. Depending on the nature of the incident, this could be either the appropriate law enforcement authority (Ventura County Sheriff's

Department or California Highway Patrol) or the Ventura County Fire Department (City of Thousand Oaks, 2014).

The Ventura County Environmental Health Division is the Certified Unified Program Agency (CUPA) that provides regulatory oversight over hazardous materials and hazardous waste programs in Thousand Oaks, unincorporated areas as well as other cities in Ventura County. The following programs are operated by the Environmental Health Division:

- Hazardous Materials Inventory and Business Plan
- Hazardous Waste Generator
- Onsite Hazardous Waste Treatment
- Underground Storage Tank
- Above-ground Storage Tank Spill Prevention Control and Countermeasure
- California Accidental Release Prevention

Every business that handles hazardous materials above certain thresholds must file a Hazardous Materials Business Plan and Emergency Response/Contingency Plan with the Ventura County Environmental Health Division. The Environmental Health Division provides this information to the Ventura County Fire Protection District for its use in responding to emergencies at these businesses. The County Hazardous Materials Emergency Response Plan is supplemented by individual Business Plans for businesses/facilities that store or handle hazardous materials and wastes.

State Assembly Bill 2948 (Tanner 1986) mandates that each local government have a hazardous waste management plan for dealing with hazardous waste generated within the community. In 1986, the County Board of Supervisors adopted the Ventura County Hazardous Waste/Materials Management Plan (CHWMP). It identifies sources of hazardous waste, transportation routes needed to remove the waste and areas for potential treatment and disposal. On July 10, 1990, the City of Thousand Oaks adopted the Policy and Implementation Document of the CHWMP as a separate element of the Thousand Oaks General Plan (City of Thousand Oaks, 2014).

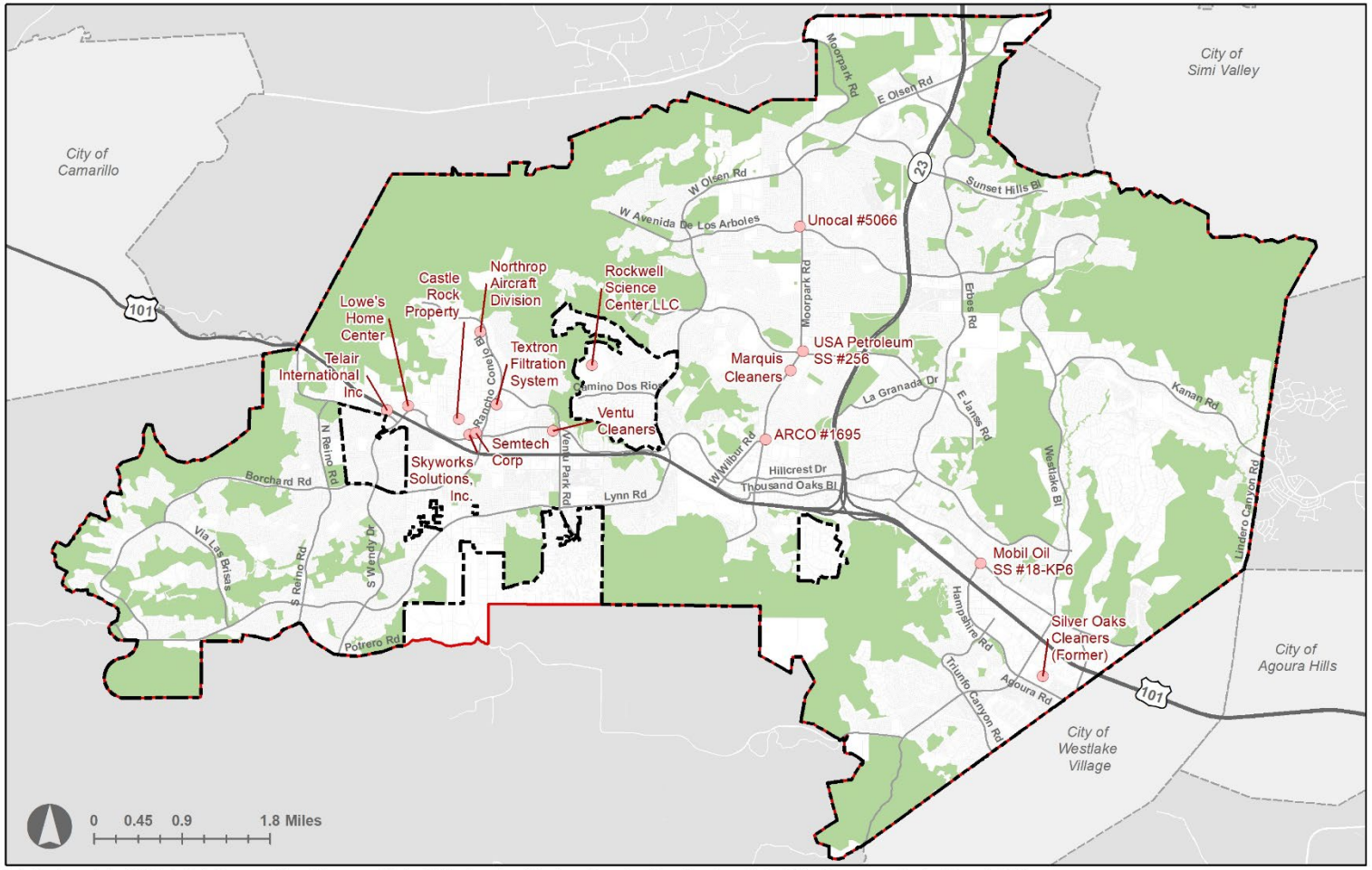
Table 6.3 Active and Open Hazardous Material Sites

Site Name	Site ID	Site Type	Site Status	Address	Contaminants Present
Rockwell Science Center LLC	SL204BR2359	Cleanup Program Site	Open - Site Assessment as of 6/21/2000	1049 Camino Dos Rios, Thousand Oaks	PCE
Unocal #5066	T0611100298	LUST Cleanup Site	Open - Remediation as of 7/16/2008	2861 Moorpark Rd, Thousand Oaks	Gasoline
USA Petroleum SS #256	T0611101067	LUST Cleanup Site	Open - Remediation as of 9/14/2006	1640 Moorpark Rd, Thousand Oaks	Gasoline
Marquis Cleaners	T10000010482	Cleanup Program Site	Open - Site Assessment as of 6/24/2018	1334 N. Moorpark Rd, Thousand Oaks	PCE
ARCO #1695	T0611100292	LUST Cleanup Site	Open - Remediation as of 2/14/2013	600 Moorpark Rd, Thousand Oaks	Gasoline
Mobil Oil SS #18-KP6	T0611100188	LUST Cleanup Site	Open - Remediation as of 5/8/2008	3102 E. Thousand Oaks Blvd, Thousand Oaks	Gasoline
Silver Oaks Cleaners (Former)	SL599992899	Cleanup Program Site	Open - Remediation as of 5/22/2018	2772 Townsgate Rd, Thousand Oaks	PCE, TCE
Ventu Cleaners	T10000011997	Cleanup Program Site	Open - Active as of 8/20/2018	587 N Ventu Park Rd, Newbury Park	PCE
Textron Filtration System	SL204141496	Cleanup Program Site	Open - Assessment & Interim Remedial Action as of 5/22/2018	950 Rancho Conejo Blvd, Thousand Oaks	PCE, TCE
Northrop Aircraft Division	SL204711661	Cleanup Program Site	Open - Remediation as of 6/30/2002	1515 Rancho Conejo Blvd, Newbury Park	Perchlorate, Petroleum, VOCs
Castle Rock Property	SL2044B1587	Cleanup Program Site	Open - Site Assessment as of 9/1/1998	810 Lawrence Dr, Newbury Park	TCA, PCE, TCE, Xylene
Skyworks Solutions, Inc.	SLT4L4231815	Cleanup Program Site	Open - Remediation as of 6/30/2002	2421 W. Hillcrest Dr, Newbury Park	VOCs
Semtech Corp	SL204EY2422	Cleanup Program Site	Open - Site Assessment as of 12/26/2000	652 Mitchell Rd, Newbury Park	Freon, Nitrate, PCE, TCE

Lowe's Home Center	60002398	DTSC - Site Cleanup Program	Land Use Restrictions Only as of 7/29/2019	NW Corner Grande Vista & Academy Dr, Thousand Oaks	Arsenic, PCE, TCE
Telair International Inc	80001576	DTSC - Site Cleanup Program	Active as of 1/1/2008	3085 Old Conejo Rd, Newbury Park	Metals, Cyanide, Chlorinated Solvents

Notes:
PCE = Tetrachloroethylene; TCE = Trichloroethylene; TCA = 1,1,1 – Trichloroethane; VOCs = Volatile Organic Compounds
Source: State Water Resources Control Board. 2019. GeoTracker. https://geotracker.waterboards.ca.gov/

Figure 6.6 Hazardous Material Sites Map



Raimi + Associates 2019 | Data Source: City of Thousand Oaks 2019, County of Ventura, County of Los Angeles; State Water Resources Control Board, 2019

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- CitySphere
- Active Hazardous Material Sites
- Freeways
- Major Roads
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- Adjacent cities

Natural Hazards

Geologic Hazards

Thousand Oaks is in a seismically active region at risk from hazards associated with earthquakes, including fault rupture, seismic shaking, and liquefaction. Depending on the properties of the fault from which an earthquake originates, proximity to the fault, and ground and soil characteristics; damage to property and structures can range from minimal to catastrophic. Faults in Ventura and Los Angeles Counties can produce large earthquakes that could impact the entire region, including Thousand Oaks. Ongoing earthquake research has resulted in improved construction standards for buildings, roadways, and other structures. The State has also pushed to increase earthquake hazard awareness by requiring that local governments address seismic safety issues in their General Plans [Government Code Section 65302(g)].

Notable earthquakes in recent history caused substantial damage to property and loss of life in Los Angeles and Ventura Counties. The San Fernando Earthquake of 1971, a magnitude 6.7 earthquake, caused hospitals and schools to collapse, severely damaged the Van Norman Dam, and cost 64 people their lives. In 1994, the Northridge Earthquake, another 6.7 magnitude earthquake that caused widespread liquefaction[1], resulted in $20 billion in damage costs, $40 billion in economic loss, and at least 57 fatalities. Fault systems in the region are expected to produce damaging earthquakes in the future, with the San Andreas Fault expected to be capable of producing potentially catastrophic earthquakes of magnitude 8.0 or greater.

To address seismic hazards, the 2014 General Plan, *Safety Element* Policy A-1 requires site-specific geologic and engineering investigations for development proposals, where deemed necessary by the City Engineer. Additionally, all construction in Thousand Oaks must adhere to the latest California Building Code, as outlined in section 8.01 of the City's Municipal Code, which implements strict regulations for constructions to reduce the risk of seismic hazards.

Fault Rupture

Fault rupture occurs when displacement along a fault reaches the ground surface. Fault rupture can cause several inches or greater of ground movement with potentially devastating effects to the integrity of a structure. Fault rupture can be unpredictable, as it may not always occur along existing fault ruptures, and there can be multiple ruptures that occur along a single earthquake fault.

The Alquist-Priolo Earthquake Fault Zoning Act, signed into law in 1972, addresses development in areas prone to faulting. Under the Act, the State Geologist is required to delineate earthquake fault zones (also known as Alquist-Priolo zones or special study areas) along active faults in California. The act defines an active fault as one that has "had surface displacement within the Holocene epoch (approximately the last 11,000 years)." Cities and Counties with Alquist-Priolo zones must regulate certain development in these zones.

[1] *Saturated soil that behaves like liquid when shaken.*

Thousand Oaks has two potentially active faults in its sphere of influence: the Sycamore Canyon fault and the Boney Mountain fault. These faults are northeast trending breaks, extending from the Point Mugu and South Coast Area to the Thousand Oaks Area. The risk of seismically induced ground rupture from these faults is expected to be minor and they are not included as Alquist-Priolo special study areas. No Alquist-Priolo special study areas are present in Thousand Oaks. Known earthquake faults in the Thousand Oaks Sphere of Influence, which are primarily inactive, are shown in Figure 6.2.

Seismic Shaking

Ground shaking generated by earthquakes is the greatest cause of widespread damage during a seismic event. Ground shaking is the shockwave produced when there is a sudden movement created by an earthquake rupture. In general, the intensity of ground shaking diminishes as the distance from the point of rupture, or epicenter, increases. Local conditions can also greatly influence the intensity of ground shaking. Soil type, depth to bedrock, depth to groundwater, and orientation of the fault all influence the intensity of ground shaking.

The Sycamore Canyon and Boney Mountain faults are expected to be capable of generating earthquakes up to a magnitude 6.0, which could produce substantial ground shaking within Thousand Oaks. In addition to these faults found in the Sphere of Influence, Thousand Oaks is near multiple active faults that have produced, and can produce, destructive seismic shaking. The Northridge Earthquake of 1994 produced massive ground shaking in Thousand Oaks, even though the epicenter was located about 20 miles from the city. Over 850 building permits were issued by the City to repair damage from the Northridge Earthquake.

Liquefaction

Liquefaction occurs when soil that exists below the water table temporarily loses strength during an earthquake and changes to a near-liquid state. Depending on specific soil conditions, such as density, uniformity of grain size, and saturation of soil materials, a certain intensity of seismic shaking is required to trigger liquefaction. Liquefaction is typically associated with medium to fine-grained sands in a loose to medium-dense condition. Liquefaction can cause large movements of the ground, and the resettling of soils after a liquefaction event can damage buildings and buried utilities. The Northridge Earthquake of 1994 caused liquefaction to occur in Ventura County near the mouth of the Santa Clara River in Oxnard and Ventura, in Simi Valley, and along the Santa Clara River between Fillmore and Newhall.

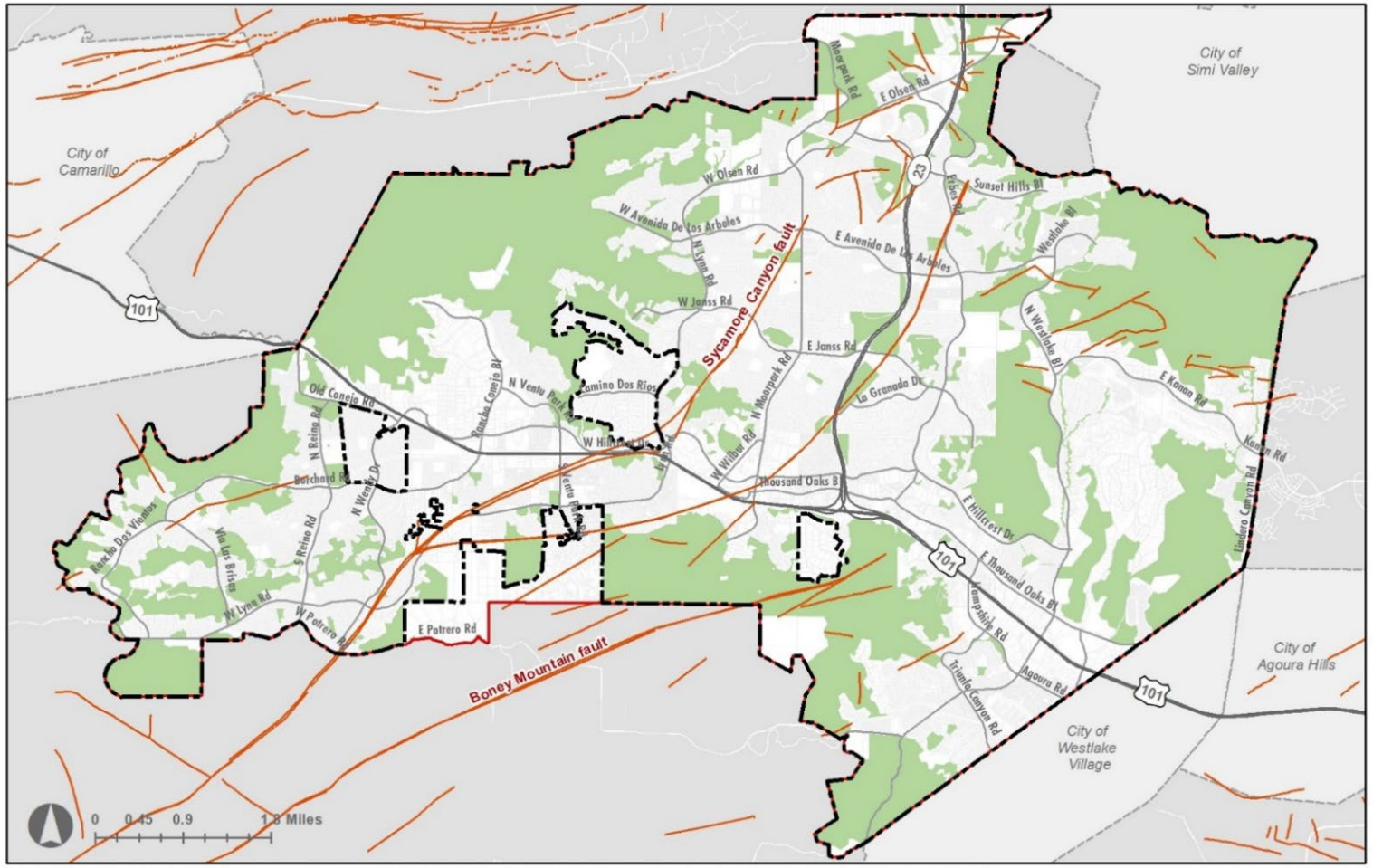
Liquefaction risk zones are present along Lang Creek, which runs southwestward from Oakbrook Regional Park, crossing SR- 23, and junctions with the Arroyo Conejo. Liquefaction zones then run along US-101 into Newbury Park. Another liquefaction zone is present in the northwest corner of the City's Sphere of Influence, along Hill Canyon Road, near where North Fork Arroyo Conejo meets Conejo Creek. Liquefaction risk zones are shown in Figure 6.3.

Landslides

"Landslide" is a general term for the dislodging and fall of a mass of soil or rocks along a sloped surface. Many landslides have resulted from indiscriminate modification of sloping ground or the creation of slopes from cut and fill in geologically unstable areas. Some previous landslides could have been prevented by recognition of potentially unstable soils or incorporation of design standards prior to grading and construction.

The 2014 General Plan Safety Element provides policies adopted by the City to reduce the risk of hazards associated with landslides. These policies include requiring setbacks from potentially unstable areas, designing sites so that drainage does not create landslide hazards, and requiring geotechnical guidance for sites and projects that have experienced landslides. Figure 6.4 shows the areas of Thousand Oaks that have experienced or are susceptible to future landslides. These landslide risk zones are generally located in areas of steeper slopes around the periphery of the community, usually in areas of parks and open space.

Figure 6.7 Seismic Faults



Raimi + Associates 2019 | Data Source: City of Thousand Oaks 2019, County of Ventura, County of Los Angeles; CA Department of Conservation, 2010

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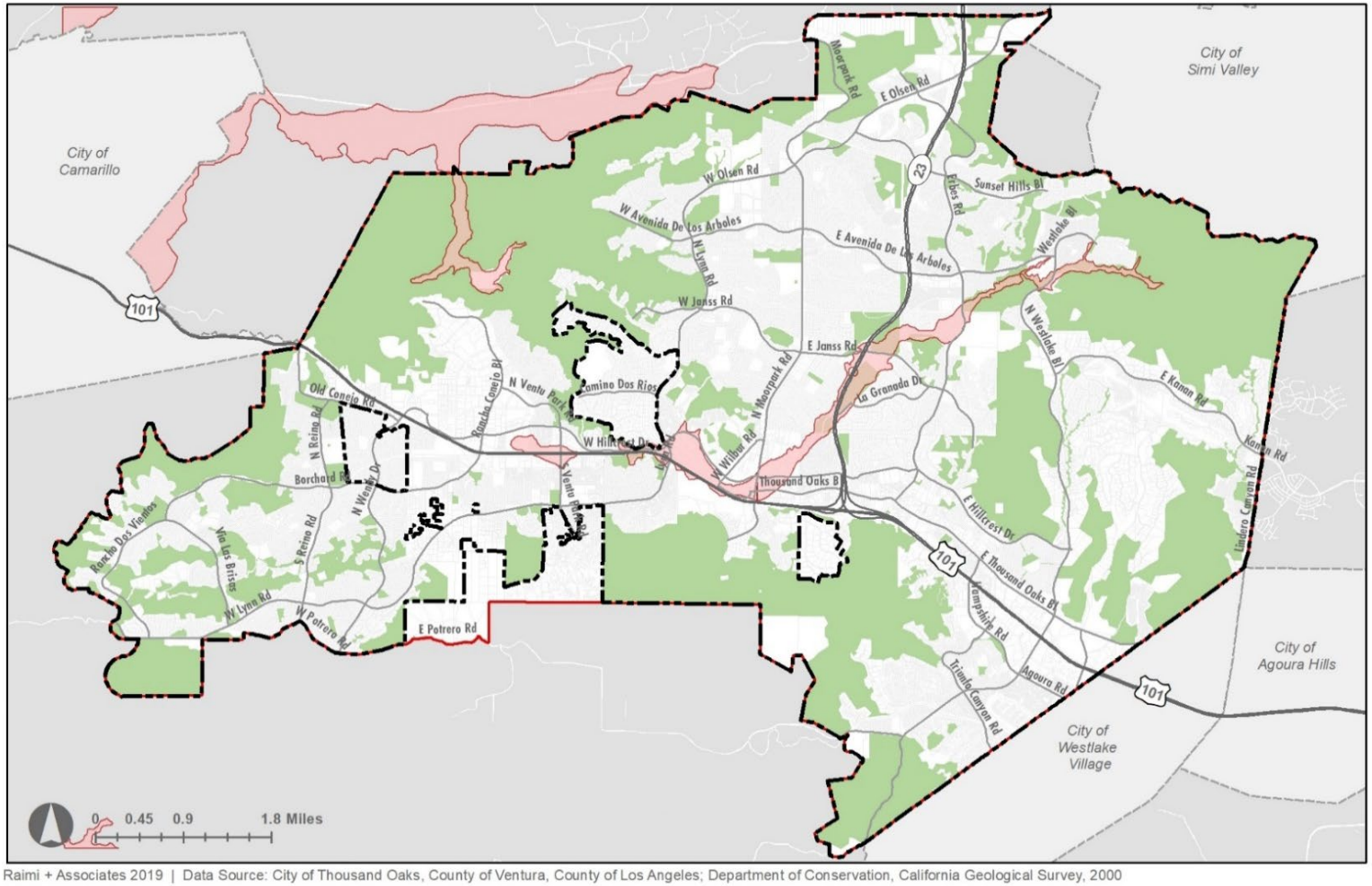
Major Roads
Parks and Open Space
Unincorporated Counties Land
Adjacent cities

Figure 6.8 Liquefaction Risk Zones



Raimi + Associates 2019 | Data Source: City of Thousand Oaks, County of Ventura, County of Los Angeles; Department of Conservation, California Geological Survey, 2000

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Liquefaction Zones
Freeways
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Parks and Open Space
Unincorporated Counties Land
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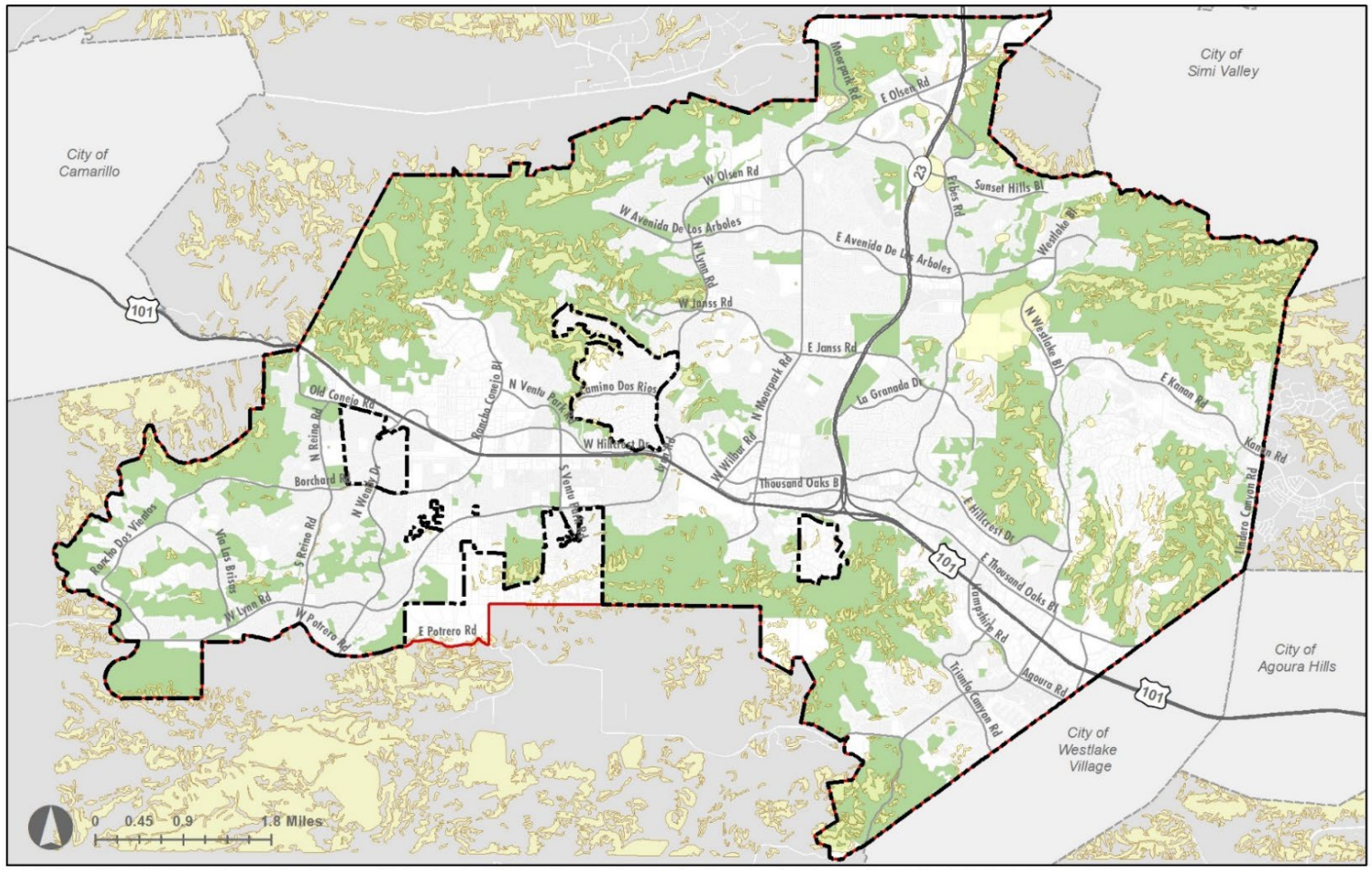
Figure 6.9 Landslide Risk Zones



Raimi + Associates 2019 | Data Source: City of Thousand Oaks, County of Ventura, County of Los Angeles; Department of Conservation, California Geological Survey, 2000

Dam Failure

The State of California is responsible for supervising dams for the purpose of safeguarding life and protecting property. Accordingly, annual safety inspections are conducted by the State, from which operational and safety recommendations are provided and required to be adhered to by dam owners. These regulations were established as result of multiple dam failures within California, including the 1928 failure of the St. Francis Dam and the 1963 failure of the Baldwin Hills Reservoir.

The Thousand Oaks area has six dams, which are described in Table 6.2. Lake Sherwood and Lake Eleanor have the potential to result in inundation or a disruption in water supply in the City in the result of a dam failure. Failure of the Lake Sherwood Dam would flood the Westlake area of Thousand Oaks, while failure of the Banning Dam at Lake Eleanor would result in minor flooding of the Westlake Boulevard Area of Westlake. Failure of the remaining three dams in the area would not flood any portion of Thousand Oaks.

Table 6.4 Dams in Thousand Oaks Area

Name	Year Built	Type of Dam	Storage Capacity (Ac-ft)	Height (Feet)
Lake Eleanor (Banning Dam)	1889	Concrete Constant Radius Arch	104	37
Lake Sherwood	1904	Concrete Constant Radius Arch	2,600	45
Wood Ranch (Lake Bard)	1965	Earth Embankment	11,000	146
Potrero Dam (Westlake Lake)	1967	Concrete Gravity	791	40
Westlake (Las Virgenes) Reservoir	1972	Earth Embankment	9,200	158
Lang Creek Dam	2003	Debris and Detention Basin	N/A	N/A

Source: Department of Water Resources, Division of Safety of Dams, 2012

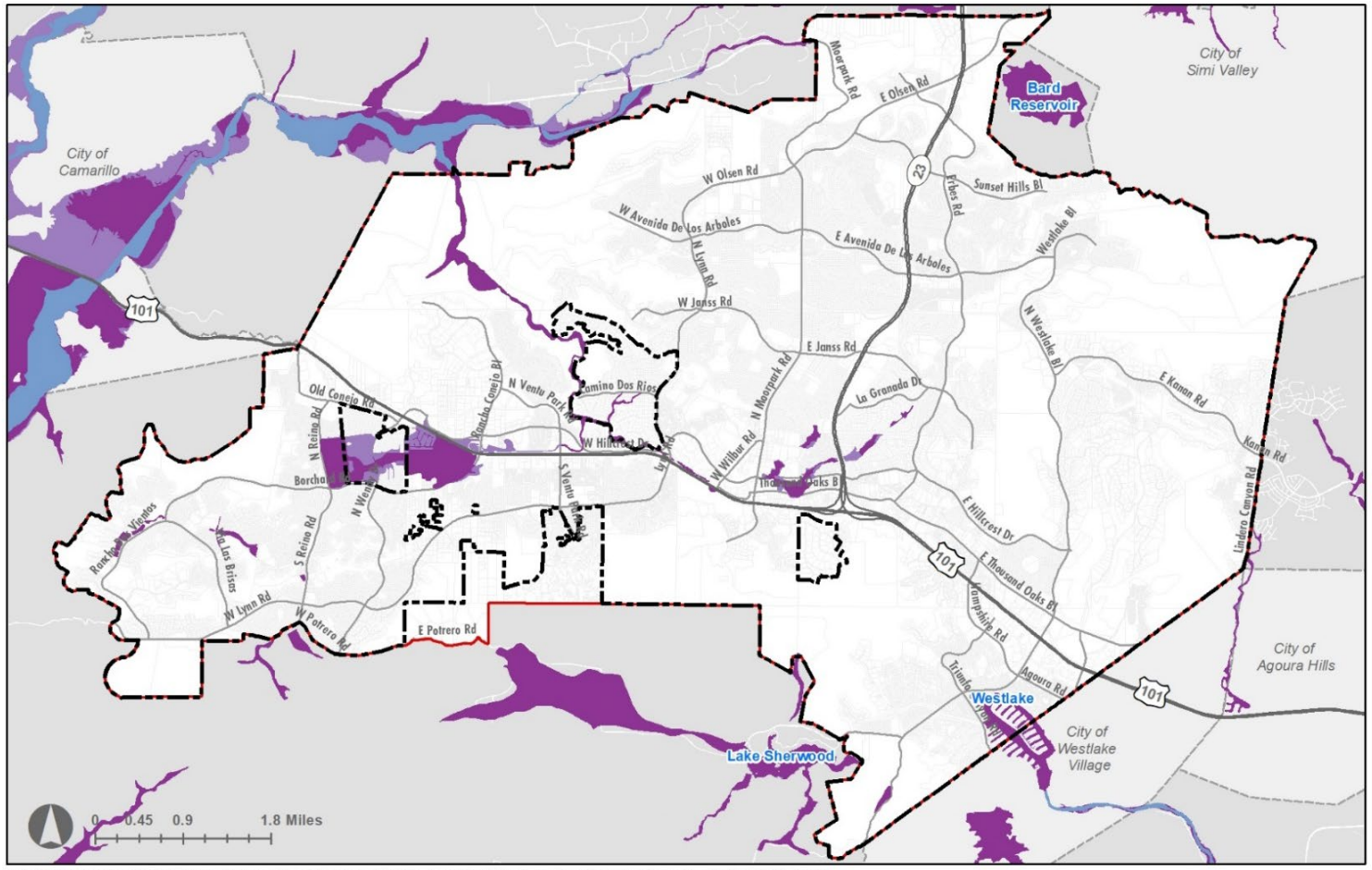
Flooding

Thousand Oaks is primarily located in the Conejo Valley, which is part of the Calleguas Creek Watershed. Heavy rainfall in this watershed can result in runoff that inundates the stormwater conveyance system, resulting in flooding. The Thousand Oaks area is subject to periodic inundation from flooding in certain areas, which can result in destruction of property, loss of life, and creation of health and safety hazards. Heavy rains during winter storms has caused several flooding events in Thousand Oaks. In 1992, high water flow in Conejo Creek resulted in flooding of the Conejo Recreation and Park District Offices and some nearby homes. In 1995, floodwaters washed away a section of sewer main and released raw sewage into Arroyo Conejo.

Flood hazard zones in and near Thousand Oaks, as shown on Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs), are mapped in Figure 6.5. FEMA identifies flood hazard areas in order to provide information about locations of floodplains for insurance and health and safety purposes. These flood hazard areas include 100-year floodplains, which have a 1 percent annual chance of inundation by floodwaters; and 500-year floodplains, which have a 0.2 percent annual chance of inundation by floodwaters. 100-year floodplains will typically overlap portion of the 500-year floodplains.

Floodplains in Thousand Oaks generally align with natural drainages, with some flat and low-lying areas also being susceptible to inundation by floodwaters. The areas along Arroyo Conejo and North Fork Arroyo Conejo are within a 100-year floodplain. Another significant floodplain in Thousand Oaks is the region surrounding and including the Casa Conejo unincorporated island, bordered by US-101 to the northeast, Borchard Road to the south, and North Reino Road to the west.

Figure 6.10 FEMA Flood Hazard Zones



Raimi + Associates 2019 | Data Source: City of Thousand Oaks, County of Ventura, County of Los Angeles; FEMA/ESRI, 2019

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Freeways
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1% Annual Chance Flood Hazard
0.2% Annual Chance Flood Hazard
Regulatory Floodway
Unincorporated Counties Land
Adjacent cities

Wildfire

Wildfire risk is determined by a combination of factors including precipitation, winds, temperature, and landscape and vegetation conditions. Thousand Oaks is subject to wildfire, as shown with the devastating impacts of the Woolsey Fire in November 2018. The fire, fueled by strong and dry northeasterly Santa Ana winds, impacted the eastern portion of Thousand Oaks, damaged approximately48 homes, as well as facilities at Oakbrook Regional Park.

Utility providers in California are turning to cutting power to their above ground power lines during high-wind events in order to decrease the risk of sparking wildfires. As recent wildfires have been attributed to faulty electrical transmission lines (including the 2018 Camp Fire), Public Safety Power Shut-off (PSPS), or "de-energizing", is becoming increasingly common during Santa Ana wind events. Utility providers will turn off power to high fire risk areas if the utility provider believes there is an imminent and significant risk that strong winds will topple power lines or cause major vegetation related issues leasing to increased risk of fire. In 2019, Sothern California Edison initiated eight PSPS events (CPUC 2019a).

As a result of massive wildfires in 2007, the California Public Utilities Commission (CPUC) initiated Rulemaking (R.) 08-11-005 to consider and adopt regulations to protect the public from potential fire hazards associated with overhead powerline facilities and nearby aerial communication facilities. Accordingly, in 2012, statewide fire-threat maps were adopted that were designed specifically for the purpose of identifying areas where there is an increased risk for utility associated wildfires.

Thousand Oaks lies within an "Extreme" fire-threat area as designated by the CPUC Fire-Threat Map (CPCU 2019b).

A substantial portion of Thousand Oaks is designated as a Very High Fire Hazard Severity Zone by the California Department of Forestry and Fire Protection (CAL FIRE). This can be partially attributed to the abundance of open space and vegetated hills throughout the city. Areas in Thousand Oaks that are at lower risk of wildfire are generally more heavily urbanized. Regions of unincorporated Ventura County, just outside of Thousand Oaks, are also primarily designated by CAL FIRE as Very High Fire Hazard Severity Zones. Areas within Thousand Oaks' City limits are designated Local Fire Responsibility Areas, meaning their management is the responsibility of the Ventura County Fire Department. Many of the unincorporated Very High Fire Hazard Severity Zones surrounding Thousand Oaks are designated State Responsibility Areas, meaning their management is the responsibility of CAL FIRE. Areas that fall into these categories are shown in Figure 6.6.

California environmental law and legislation requires discussion of fire impacts in planning documents. Senate Bill 1241 requires cities and counties to address fire hazard impacts in a general plan safety element, specifically highlighting state responsibility areas and very high fire hazard severity zones. Senate Bill 1241 also requires agencies to ensure that adequate fire protection and suppression services are available before approving new developments. Additionally, the California Environmental Quality Act (CEQA) requires lead agencies to address the potential impacts of placing development in or near very high fire hazard severity zones.

Emergency and Evacuation Routes/Access

The City of Thousand Oaks adopted an Emergency Operation Plan (EOP) in 2014. The EOP outlines the City's planned response to extraordinary emergency situations associated with natural disasters, technological incidents, and national security emergencies. It also outlines the responsibilities of each agency in the event of an emergency, with distinct evacuation routes determined by the nature of a potential event. Evacuation implementation is ultimately the responsibility of the Ventura County Sheriff's Department. The primary evacuation routes in Thousand Oaks are outlined in Table 6.3. In the event of an actual emergency, particular routes may not be appropriate due to the nature or location of the event and guidance from the Ventura County Sheriff's Department should be followed.

Table 6.5 Primary Evacuation Routes

Roadway	Direction of Travel
US-101	North towards Oxnard or South towards Agoura Hills
SR-23	North toward Kanan Rd. or South towards US-101
Santa Rosa Rd.	West towards Camarillo
East Thousand Oaks Blvd.	East towards Agoura Hills
South Westlake Blvd.	South towards Westlake
Potrero Rd.	West towards Oxnard

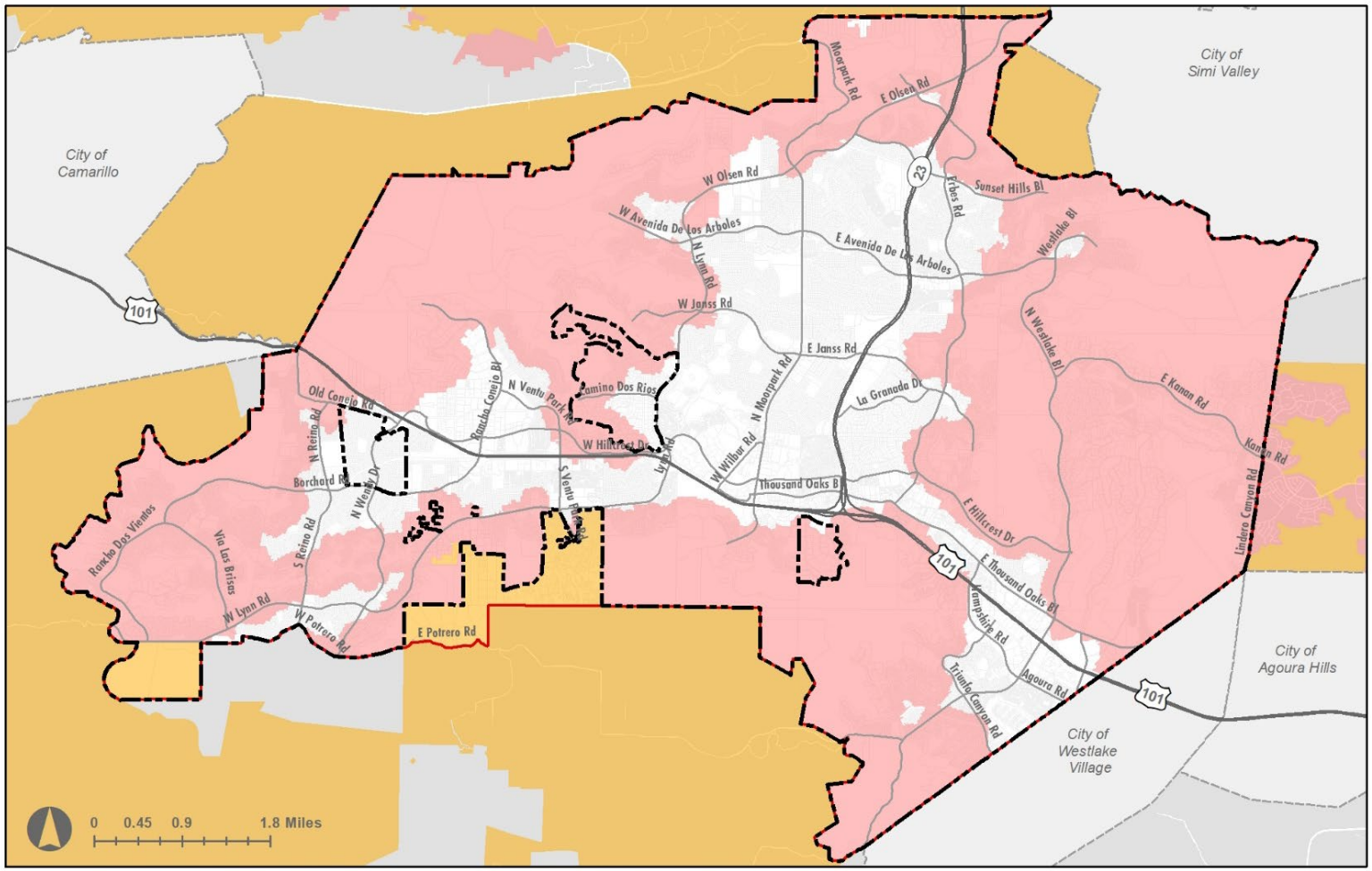
References

California Public Utilities Commission (CPUC). 2019a. De-Energization (PSPS). https://www.cpuc.ca.gov/deenergization/. Accessed December 19, 2019.

CPUC. 2019b. CPUC Fire Safety Rulemaking Background. https://www.cpuc.ca.gov/FireThreatMaps/. Accessed December 19, 2019.

Thousand Oaks, City of. 2014. *General Plan, Safety Element*. March 2014. Available at: https://www.toaks.org/home/showdocument?id=344 . Accessed August 2019.

Figure 6.11 Very High Fire Hazard Severity Zones



Raimi + Associates 2019 | Data Source: City of Thousand Oaks 2019, County of Ventura, County of Los Angeles; CAL FIRE, 2010

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City Limits
CitySphere
Local Fire Responsibility Area
State Responsibility Area
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CHAPTER 7: NOISE

This section describes existing noise conditions, major noise sources, and the regulatory framework related to noise levels in Thousand Oaks. It is essential for the City to identify the community's primary noise sources, and areas with high noise levels, to plan for new noise-sensitive uses in quieter areas or require that project applicants take appropriate measures to reduce exposure to ambient noise.

Noise Background

Noise is defined as loud, unpleasant, unexpected, or undesired sound. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise level (or volume) is generally measured in decibels (dB) using the A-weighted sound pressure level. The A-weighting scale is an adjustment to the actual sound pressure levels to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz). When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the "A-weighted" levels of those sounds. Therefore, the A-weighted noise scale is used for measurements and standards involving the human perception of noise. In this analysis, all noise levels are A-weighted and "dB(A)" refers to the A-weighted decibel.

Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner like the Richter scale used for earthquake magnitudes. A 10-dB increase represents a 10-fold increase in sound intensity, a 20-dB change represents a 100-fold difference, a 30-dB change represents a 1,000-fold difference, etc. Thus, a doubling of the energy of a noise source, such as a doubling of traffic volume, would increase the noise level by 3 dB, and a halving of the energy would result in a 3-dB decrease.

In addition to the actual instantaneous measurement of sound levels, the duration of sound is important because sounds that occur over a long period of time are more likely to be a nuisance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (L_{eq}). The L_{eq} is essentially the average noise level over a period. Typically, L_{eq} is summed over a one-hour period. L_{max} is the highest RMS (root mean squared) sound pressure level within the measuring period, and L_{min} is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important because noise that occurs at night tends to be more disturbing than that which occurs during the day. Community noise is usually measured using the Day-Night Average Level (Ldn), which is the 24-hour average noise level with a 10-dB(A) penalty for noise occurring during nighttime hours (10:00 p.m. to 7:00 a.m.), or the Community Noise Equivalent Level (CNEL), which is the 24-hour average noise level with a 5-dB(A) penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a 10-dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. Noise levels described by Ldn and CNEL usually do not differ by more than 1 dB.

Human perception of noise has no simple correlation with acoustical energy. The perception of noise is not linear in terms of dB(A) or in terms of acoustical energy. Two equivalent noise sources do not sound twice as loud as one source. It is widely accepted that the average healthy ear can barely perceive increases or decreases of 3 dB(A); that a change of 5 dB(A) is readily perceptible; and that an increase (decrease) of 10 dB(A) sounds twice (half) as loud (Caltrans 2013). To help relate noise level values to common experience, Table 7.1 shows typical noise levels from various sources.

Noise Sources

Major sources of noise in a community generally include motor vehicles, railways, airports, and construction activities. The most widespread and predominant noise source is traffic noise from motor vehicles driving along roadways. Traffic noise is of concern because it is characterized by a high number of individual events, which often create a sustained noise level.

Traffic Noise

Traffic noise is the primary noise source in Thousand Oaks. The highest noise levels occur along high traffic volume roadways, including freeways, highways, and arterials. These roadways in Thousand Oaks include US-101 and SR-23, as well as major streets such as North Westlake Boulevard, Thousand Oaks Boulevard, North Moorpark Road, Hillcrest Drive, Janss Road, Avenida de los Arboles, and Lynn Road.

Aircraft Overflights

Aircraft overflights are a minor source of noise in Thousand Oaks. The nearest airports are the Camarillo Airport and Naval Air Station Point Mugu, located approximately 5 miles west and 6.5 miles southwest of the city, respectively. Thousand Oaks is located outside of the mapped noise contours associated with aircraft approaches and departures at these airports (Ventura County Airport Land Use Commission 2000). Thousand Oaks is also located beneath flight paths for aircraft approaches and departures from Los Angeles International Airport, Hollywood Burbank Airport, Oxnard Airport, Santa Monica Municipal Airport, and Van Nuys Airport; however, due to the distance of the city from these airports, aircraft overflights do not result in substantial noise in Thousand Oaks.

Table 7.1 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Flyover at 1,000 ft.		
	100	
Gas Lawnmower at 3 ft.		
	90	
Diesel Truck at 50 ft., at 50 mph		Food Blender at 3 ft.
	80	Garbage Disposal at 3 ft.
Noisy Urban Daytime		
	70	Vacuum Cleaner at 10 ft.
Commercial Area		Normal Speech at 3 ft.
Heavy Vehicular Traffic at 300 ft.	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher in the Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2013

Stationary Noise

Noise generated by stationary noise sources contributes to the ambient noise environment in its immediate vicinity. Stationary noise may be generated by any land use. However, industrial and service commercial uses typically generate the highest levels of stationary noise from heating, ventilation, and air conditioning (HVAC) systems, loading docks, and machinery, all potentially on a continual basis depending on the nature of the activity. Industrial land uses in Thousand Oaks, as shown on the City's existing General Plan Map, are primarily clustered along the US-101 corridor in areas along Rancho Conejo Boulevard north of US-101, between Old Conejo Road and US-101 north of the terminus of North Reino Road, between Hampshire Boulevard and US-101 west of Westlake Boulevard, along Conejo Ridge Avenue, and between Thousand Oaks Boulevard and US-101 east of Westlake Boulevard. Many of these industrial areas are located adjacent to or near noise-sensitive residential areas.

Other stationary noise sources include residential, commercial, and school uses. Stationary noise generated by these uses is generally intermittent. Residential uses generate noise from landscaping, maintenance activities, and HVAC systems. Commercial uses generate noise from building operations such as HVAC systems and loading docks as well as from commercial activity associated with restaurants, bars, outdoor dining, and parking garages/lots. Consequently, potential noise concerns can arise when new mixed-use development is proposed. In addition, outdoor activities at school campuses throughout Thousand Oaks can generate noticeable levels of noise. While it is preferable to have schools in residential areas to support the neighborhood, noise generated on both weekdays (by physical education classes and sports programs) and weekends (by use of the fields by youth organizations) can elevate ambient noise levels.

Construction Noise

Construction activity typically generates substantial short-term increases in ambient noise levels in the immediate vicinity of construction sites, which can be disruptive to nearby noise-sensitive receivers. Each phase of demolition and construction has its own noise characteristics; some will generate higher continuous noise levels than others, and some may generate substantial intermittent noise levels from high-impact activities (e.g., pile driving) depending on the type and number of equipment used.

Vibration

Ground borne vibration consists of the oscillatory waves that move from a source through the ground to adjacent structures. It is typically measured in peak particle velocity (ppv) or vibration decibels (VdB). Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as ground borne noise (Federal Transit Administration 2018). Typical vibration sources in Thousand Oaks include construction activities and heavy manufacturing. Vibration is also generated by rail lines, but there are no rail lines in Thousand Oaks. Vibration significance ranges from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, the general threshold where minor damage can occur in fragile buildings (Federal Transit Administration 2018).

Existing Noise Conditions

In order to help characterize existing noise conditions in Thousand Oaks, 15 noise measurements were taken in various locations throughout the city on Tuesday, August 27, 2019. These noise measurement locations are shown in Figure 7.1. Table 7.2 identifies the sound level measurement locations and measured noise levels. As shown in Table 7.2, noise levels are highest adjacent to freeways, highways and arterial roadways.

Noise-Sensitive Land Uses

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. The existing General Plan defines noise-sensitive land uses as residential uses, schools, libraries, churches, hospitals, nursing homes, outdoor spectator sports facilities, performing arts facilities, meeting halls, hotels, and motels. The general locations of noise-sensitive land uses in Thousand Oaks are shown in Figure 7.2.

Table 7.2 Sound Level Measurement Results

Measurement Location	Primary Noise Source	Sample Time	L_{eq}	L_{max}
1. Rancho Conejo Boulevard between Teller Road and West Hillcrest Drive	Traffic along Rancho Conejo Boulevard	7:08 – 7:23 p.m.	65	77
2. South Reino Road between Kimber Drive and Maurice Drive	Traffic along South Reino Road	8:00 – 8:15 p.m.	69	81
3. Old Conejo Road between Lois Avenue and North Wendy Drive	Traffic along U.S. 101	7:35 – 7:50 p.m.	71	87
4. Lynn Road between Camino Manzanas and Portofino Place	Traffic along Lynn Road	4:26 – 4:41 p.m.	72	81
5. East Hillcrest Drive between North Moorpark Road and Hodencamp Road	Traffic along East Hillcrest Drive	5:29 – 5:44 p.m.	70	86
6. Janss Road between North Moorpark Road and Montgomery Road	Traffic along Janss Road	4:58 – 5:12 p.m.	75	84
7. North Moorpark Road between Thousand Oaks High School and Calle Entrar	Traffic along North Moorpark Road	3:02 – 3:17 p.m.	71	80
8. Olsen Road between Calle Contento and Erbes Road	Traffic along Olsen Road	10:12 – 10:27 a.m.	68	81
9. SR 23 North between Bridgegate Street and Triunfo Canyon Road	Traffic along SR 23 North	6:31 – 6:46 p.m.	68	86
10. Rolling Oaks Drive between South Moorpark Road and Los Padres Drive	Traffic along U.S. 101	6:00 – 6:15 p.m.	64	75
11. Golf Course Drive between Royal Saint George Drive and Tam O Shanter Drive	Traffic along Golf Course Drive	11:27 – 11:42 a.m.	52	71
12. Thousand Oaks Boulevard between Fairview Road and Hampshire Road	Traffic along Thousand Oaks Boulevard and U.S. 101	1:53 – 2:08 p.m.	66	78
13. East Avenida de las Flores between SR 23 North and Bamboo Court	Traffic along SR 23 North and East Avenida de las Flores	10:47 – 11:02 a.m.	61	76
14. North Westlake Boulevard between Valley Spring Drive and Cresthaven Drive	Traffic along Westlake Boulevard	1:07 – 1:22 p.m.	72	86
15. West Janss Road between Lynnmere Drive and Hopewell Court	Traffic along Lynnmere Drive	3:46 – 4:01 p.m.	51	72

Noise Regulation

Existing Plans and Policies

Thousand Oaks General Plan Noise Element

California Government Code Section 65302(f) requires all General Plans to include a Noise Element that addresses noise-related impacts in the community. The City of Thousand Oaks General Plan outlines goals and policies to maintain and improve the noise environment of residential areas and other noise-sensitive land uses by minimizing the adverse impacts of noise.

The Noise Element includes noise/land use compatibility guidelines, which are used during planning and when the City makes development decisions in order to identify and avoid noise/land use conflicts to the greatest extent possible (see Table 7.3). The General Plan also includes an extensive summary of various noise control techniques and outlines the City's Quiet City Program, which includes specific implementation programs to achieve the goals and policies of the Nosie Element.

The Noise Element also establishes thresholds of significance for the City to use when evaluating projects under the California Environmental Quality Act (see Table 7.4).

Thousand Oaks Municipal Code

Title 5, Chapter 21 of the City's Municipal Code contains the City's noise ordinance, including provisions aimed at limiting excessive noise from specific sources, including sound amplifying devices, powered equipment, and loud or unruly assemblages. The Municipal Code also limits loud, unnecessary, and unusual noise that would disturb neighborhoods or other sensitive uses, stating that "It shall be unlawful for any person to willfully make or continue to make or cause or to be made or continued, or allow any animal which is kept by that person on the property which is the source of the noise to make any loud, unnecessary, or unusual noise..." None of the provisions of the noise ordinance contain specific noise level limits; therefore, the City's ability to use this noise ordinance to regulate noise is limited because it does not provide specific standards for determining if noise is excessive.

Title 8, Chapter 11 of the Municipal Code restricts construction activities to the hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday. No construction is permitted outside of these hours or on Sunday unless a permit has been issued by the Public Works Director

Table 7.3 City of Thousand Oaks Standards for Land Use Compatibility with Urban Noise Environments

Land Use Category	Community Noise Equivalent Level (CNEL) or Day-Night Level (Ldn), dB				
	Clearly Acceptable	Normally Acceptable	Conditionally Acceptable	Normally Unacceptable	Clearly Unacceptable
Residential - Low-Density Single-Family, Duplex, Mobile Homes	< 55	55-60	60-65	65-75	< 75
Residential – Multi-Family	< 55	55-60	60-65	65-75	< 75
Commercial – Motels, Hotels, Transient Lodging	< 60	60-65	65-70	70-80	< 80
Schools, Libraries, Churches, Hospitals, Nursing Homes	-	< 60	60-70	70-80	< 80
Amphitheaters, Concert Halls, Auditoriums, Meeting Halls	-	-	< 65	65-70	<70
Sports Arenas, Outdoor Spectator Sports	-	-	< 70	70-75	> 75
Playgrounds, Neighborhood Parks	< 55	55-67	67-75	-	> 75
Golf Courses, Riding Stables, Water Recreation, Cemeteries	< 55	55-75	75-80	-	>80
Office Buildings, Business, Commercial and Professional	< 60	60-65	65-75	< 75	-
Industrial, Manufacturing, Utilities, Agriculture	< 65	65-70	70-80	< 80	-

Clearly Acceptable *= The noise environment is suitable for this use.*
Normally Acceptable *= Noise may be considered a problem by some people, but normal building construction will usually provide adequate protection of interior spaces.*
Conditionally Acceptable *= New construction or development should be undertaken only after a detailed analysis of noise reduction requirements is made and needed noise insulation features included in design. Conventional construction, but with closed windows and fresh air supply or air conditioning, will normally suffice.*
Normally Unacceptable *= New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in design.*
Clearly Unacceptable *= New construction or development should generally not be undertaken.*

Table 7.4 Thresholds of Significance for Noise Impact

If the annual average noise level with the proposed project, cumulative projects and General Plan buildout in an area currently used for or designated in the General Plan for a noise-sensitive land use1 is expected to be:	A significant project or cumulative impact may result if the change in annual average noise levels from existing conditions due to all sources in an area currently used for or designated in the General Plan for a noise-sensitive land use[1] is:	The project alone may be considered to make a substantial contribution to a significant cumulative impact if the change in annual average noise levels due to the project is:
Less than 55 dB CNEL	Not significant for any change in noise level	Not significant for any change in noise level
55 to 60 dB CNEL	Equal to or greater than 3.0 dB	Equal to or greater than 1.0 dB
60 to 70 dB CNEL	Equal to or greater than 1.5 dB	Equal to or greater than 0.5 dB
Greater than 70 dB CNEL	Equal to or greater than 1.0 dB	Equal to or greater than 0.5 dB

Note:

[1] A noise-sensitive land use is a use for which the lower limit of the noise level considered "normally unacceptable" for development because of noise impact is 70 dBA CNEL or lower. In identifying land use areas, areas which are undevelopable for noise-sensitive uses because of slope, development restriction, easement, etc., or which are used for non-noise-sensitive components of a multiple-use or mixed-use project, should not be considered noise-sensitive.

Exception: Development of single-family or multi-family residential uses in an existing residential area which is designated for development for residential uses in the General Plan, and for which a sound insulation study has been prepared by a qualified acoustical engineer or other sound insulation specialist, and for which sound insulation is included in the proposed project to meet state standards for interior noise levels for multi-family residential development, shall not be considered to have a significant adverse effect when considering the exposure of the project itself to noise levels exceeding the standards of the Noise Element. (Off-site impacts of such projects should still be considered in determining the potential significance of noise impacts.)

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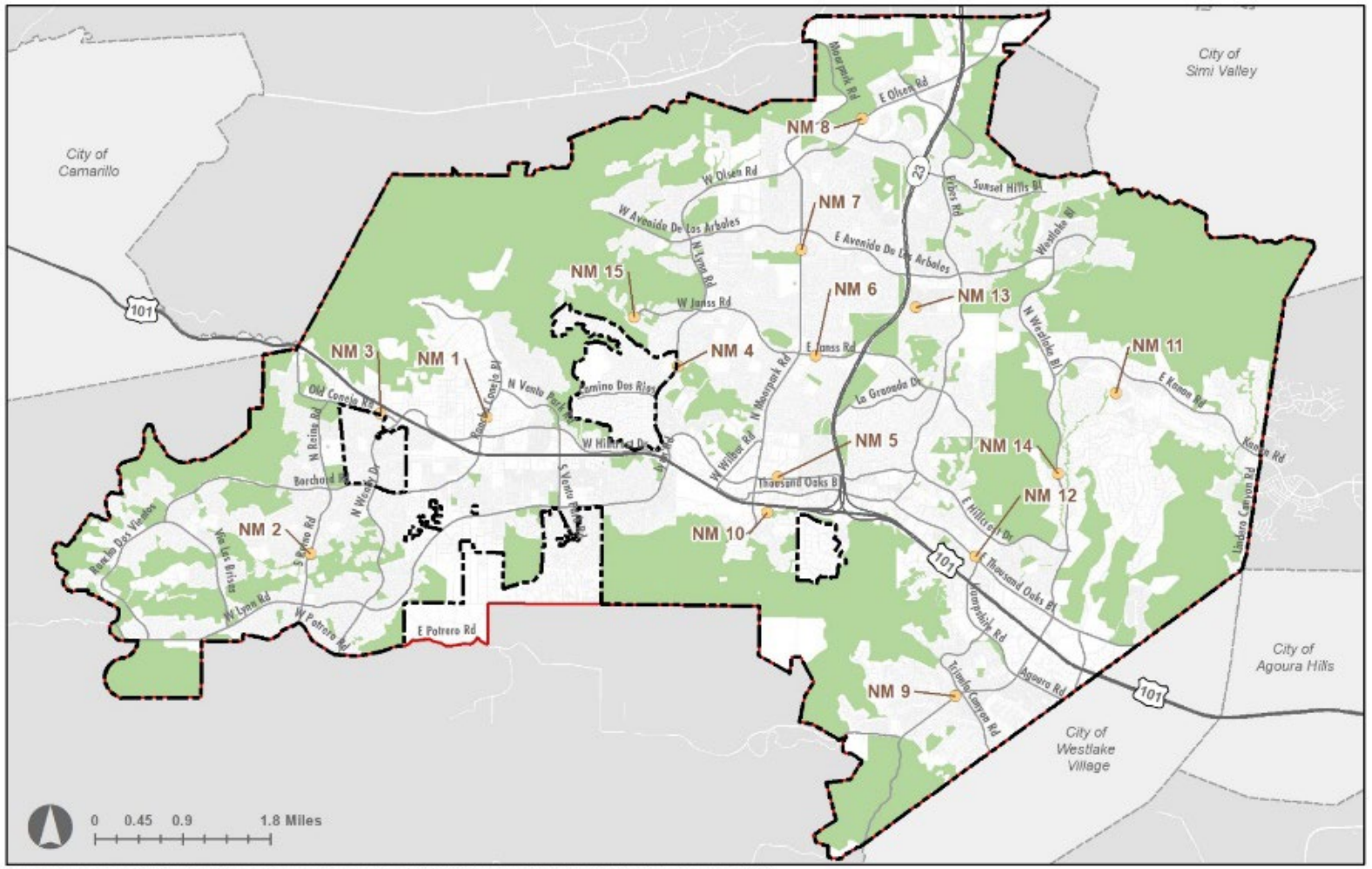
Figure 7.1 Community Noise Monitoring Survey Measurement Locations

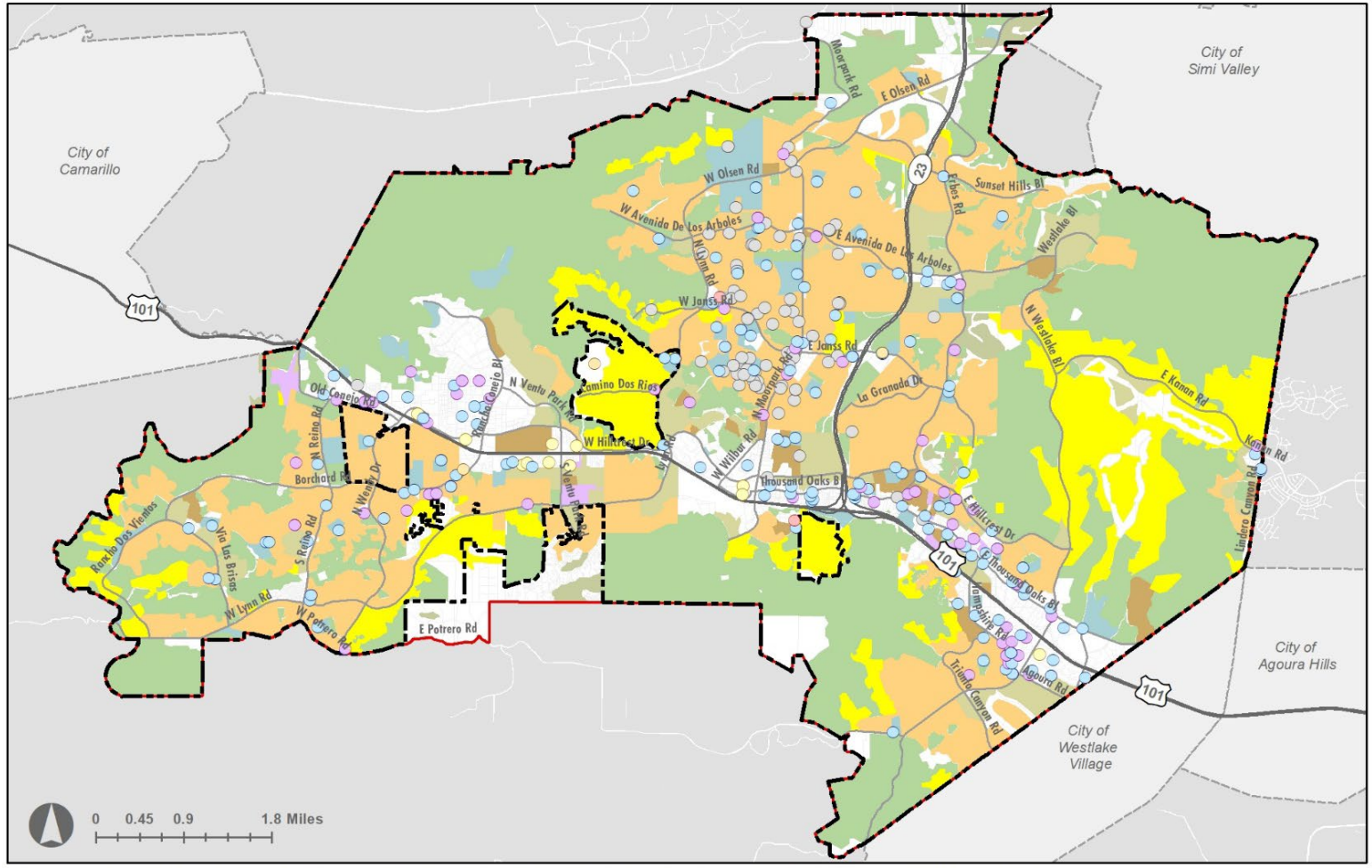


Raimi + Associates 2019 | Data Source: City of Thousand Oaks 2019, County of Ventura, County of Los Angeles 2019

THOUSAND OAKS GENERAL PLAN 2045

City Limits
CitySphere
Noise Measurement Locations
Freeways
Major Roads
Parks and Open Space
Unincorporated Counties Land
Adjacent cities

Figure 7.2 Noise-Sensitive Land Uses in Thousand Oaks



CHAPTER 8: GREENHOUSE GASES

This section describes existing conditions in the City of Thousand Oaks with respect to greenhouse gases (GHGs).

Scientific and Regulatory Framework

Scientific Framework

Gases that absorb and re-emit infrared radiation in the atmosphere are called greenhouse gases (GHGs). Human activities such as the burning of fossil fuels for energy, and other activities such as the decomposition of waste and industrial processes, release carbon dioxide and other GHGs into the atmosphere and contribute to climate change. Climate change is the observed increase in the average temperature of the Earth's surface and oceans along with changes in other aspects of climate (such as wind patterns, precipitation, and storms) over an extended time.

The term "climate change" is often used interchangeably with the term "global warming," but "climate change" is preferred to "global warming" because it helps convey that there are other changes in addition to rising temperatures. The baseline against which these changes are measured originates in historical records identifying temperature changes that have occurred in the past, such as during previous ice ages. The global climate is continuously changing, as evidenced by repeated episodes of substantial warming and cooling documented in the geologic record. The rate of change has typically been slow, with warming or cooling trends occurring over the course of thousands of years. The past 10,000 years have been marked by a period of gradual warming as glaciers have steadily retreated across the globe. However, scientists have observed a marked acceleration in the rate of warming during the past 150 years. Per the United Nations Intergovernmental Panel on Climate Change (IPCC 2014), the understanding of anthropogenic warming and cooling influences on climate has led to a high confidence (95 percent or greater chance) that the global average net effect of human activities has been the dominant cause of warming since the mid-twentieth century (IPCC 2014).

While a variety of gases contribute to climate change, CO_2 (carbon dioxide) and CH_4 (methane) are the two GHGs emitted in the greatest quantities from human activities. Emissions of CO_2 are largely by-products of fossil fuel combustion, whereas CH_4 results from off-gassing associated with agricultural practices and landfills.

CO_2 is the most abundant anthropogenically-produced GHG. According to the Intergovernmental Panel on Climate Change (IPCC), in the last 150 years, atmospheric carbon dioxide levels have increased from 280 parts per million to 400 parts per million due to human activities. Of anthropogenic GHGs, CO_2 accounted for 76 percent of total 2010 emissions, CH_4 emissions accounted for 16 percent of 2010 emissions, and nitrous oxide and fluorinated gases accounted for 6 and 2 percent of 2010 emissions, respectively (IPCC 2014).

GHGs trap different amounts of heat, which can be expressed as their global warming potential (GWP) relative to CO_2. With CO_2

defined as having a 100-year GWP of one, CH_4 has a GWP of 25, meaning its global warming effect is approximately 25 times greater than CO_2 on molecule per molecule basis (IPCC, 2007). In order to compare the heating effects of different gases, they are commonly expressed in terms of their "carbon dioxide equivalent" (CO_2e) the concentration of CO_2 that would cause the same amount of heating.

The accumulation of GHGs in the atmosphere regulates the earth's temperature. Without the natural heat-trapping effect of GHGs, Earth's surface would be about 34 degrees Celsius cooler (CalEPA 2006). However, emissions from human activities, particularly the consumption of fossil fuels for electricity production and transportation, have elevated the concentration of these gases in the atmosphere beyond the level of naturally occurring concentrations. GHG emissions contribute to climate change on a global scale and climate change affects numerous environmental resources through impacts related to temperatures and precipitation patterns.

The City's ability to meaningfully affect global climate change is limited but through its policies and practices, can significantly affect greenhouse gas emissions in the region. With coordinated efforts by cities throughout California and indeed, throughout the world, meaningful emissions reductions can be realized. Aside from mitigation efforts, climate adaptation will be critical in protecting the Thousand Oaks community from climate change impacts to which it will be particularly susceptible such as heat waves, droughts, extreme precipitation events, and wildfires. Climate change impacts and climate resiliency in Thousand Oaks are further described in Chapter 9.

Regulatory Framework

GHG emissions and the impacts of global warming are a serious threat to public health, the environment, economic well-being, and natural resources (IPCC 2018). The State of California has taken an aggressive stance to mitigate the State's impact on climate change through the adoption of legislation and policies. The California Air Resources Board (CARB) is responsible for the coordination and oversight of GHG reduction programs in California. Executive Order (EO) S-3-05 established statewide emissions reduction targets, including reducing emissions to 2000 levels by 2010, reducing emissions to 1990 levels by 2020, and reducing emissions to 80% below 1990 levels by 2050. AB 32 (2006) mandates these reduction levels. SB 32, which took effect January 1, 2017, establishes an interim 2030 threshold of 40% below 1990 levels. These mandates have led to a collection of State programs and regulations intended to achieve emissions targets, including:

- SB 375 (2008), which requires coordinated regional transportation and land use planning through cities' participation in Metropolitan Planning Organizations (MPOs). SB 375 requires each of the state's 18 major MPOs to prepare a Sustainable Communities Strategy (SCS) that contains a growth strategy to meet AB 32's emission targets. In turn, each region's Regional Transportation Plan (RTP), must be consistent with this growth strategy
- Low Carbon Fuel Standard (2007, re-adopted 2015), which calls for a reduction of at least 10% in the carbon intensity of California's transportation fuels by 2020 and provides mechanisms for reducing transportation emissions

- AB 1826 (2014), which mandates organic waste recycling for commercial entities
- AB 2188 (2014), which mandates expedited permitting for residential rooftop solar energy systems
- SB 350 (2015), which increases the Renewable Portfolio Standard to require electric utilities to generate 50% of their power from renewables by 2030
- AB 802 (2015), which creates a building energy use benchmarking and disclosure program
- SB 1383 (2016) which, requires citywide organics collection and recycling plus the recovery of edible food
- AB 262 (2017), which requires public contracts to utilize materials that meet global warming potential specifications
- Executive Order B-55-18 (2018), which expands upon EO S-3-05 by creating a statewide GHG goal of carbon neutrality by 2045. EO S-55-18 identifies the California Air Resources Board (CARB) as the lead agency to develop a framework for implementation and progress tracking toward this goal in the next Climate Change Scoping Plan Update
- SB 100 (2018), which revises SB 350 targets and requires electric utilities to generate 60% of their power from renewables by 2030
- SB 1000 (2018), which requires all cities and counties in California to address environmental justice and climate adaptation and resiliency in their general plans, either in a separate element or distributed throughout other elements (Adaptation Clearinghouse, 2011)

Greenhouse Gas Emissions Inventories

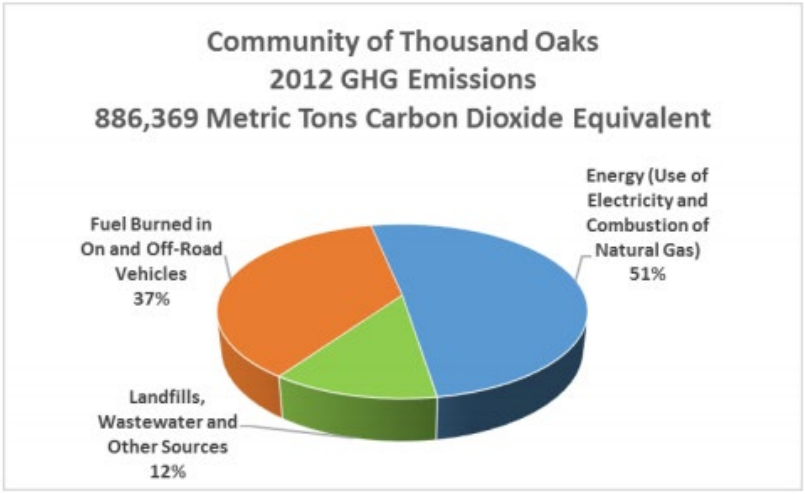
State laws impact the City of Thousand Oaks either directly by requiring local government to implement programs (e.g. recycling, solar permitting, energy benchmarking, waste food diversion) or indirectly by intelligently planning for a changing landscape (e.g. electrification of transportation, increased food waste recycling). Planning and development decisions have long-term impacts on the community of Thousand Oaks, and the City intends to keep up with current State regulations while paying close attention to the future direction of State policy (City of Thousand Oaks 2018).

In 1998, the Ventura County Regional Energy Alliance (VCREA) was founded as a joint project of the municipalities in Ventura County to promote good energy stewardship. In 2015, the VCREA released "Climate on the Move", a community-wide GHG emissions inventory and climate action plan templates for each of the local government member organizations in Ventura County. In partnership with the VCREA, Thousand Oaks developed its own 2010-2012 GHG emissions inventory in 2015. According to this inventory, energy use is the largest source of GHG emissions for the City (51% of all emissions) and transportation is the second largest source (37% of all emissions) (see Figure 8.1). The inventory also includes 2020 forecasts and reduction target options for the City.

The City's 2010-2012 GHG emissions inventory was the basis for the development of other sustainability documents, such as the

City's Sustainability Plan for Municipal Operations. Completed in 2018, the Sustainability Plan was motivated by the desire of the City Council to support and lead efforts towards creating a clean, efficient, environmentally friendly, fiscally responsible, and sustainability-focused City. In August 2018, City Council adopted a Municipal Energy Action Plan focused on energy conservation and efficiency for City-owned facilities and operations. Additionally, the City is currently working on an updated Communitywide GHG Inventory, Municipal GHG Inventory, Community Energy Action Plan and other planning documents in preparation for developing a Climate Action Plan and Sustainability Element of the General Plan (City of Thousand Oaks, N.D.).

Figure 8.1 City of Thousand Oaks 2012 GHG Emissions[2]



[2] *Source: Ventura County Regional Energy Alliance, "Climate on the Move", 2015.* https://www.toaks.org/home/showdocument?id=4647

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CHAPTER 9: CLIMATE CHANGE + CLIMATE RESILIENCY

Climate change is already affecting California, as seen by the rise in average temperatures, extreme heat days, and sea levels. These impacts come in response to an increase in greenhouse gas (GHG) emissions. Climate-driven changes have many consequences that affect California's health and prosperity such as the increased frequency and severity of wildfires, pressure on water supplies, shifts in growing seasons, agricultural pests, and the increase in populations that will be exposed to intense heat waves. This section describes projected climate change impacts and climate resilience in Thousand Oaks.

Greenhouse Gas Effect and Climate Scenarios

Climate change results from the addition of excess GHGs to the atmosphere which traps energy (heat) and causes changes to temperature, wind patterns, and precipitation (Global Climate Change: Evidence 2008). Because of human activities, atmospheric concentrations of GHGs are now higher than they have been in the past 400,000 years (Global Climate Change: Evidence 2008). Although many changes to climate are governed by natural processes, the changes have been observed in the past century cannot be explained by natural processes and are attributable to human activities that have contributed GHGs to the atmosphere at a rate that is unprecedented in earth's history.

The International Panel on Climate Change (IPCC) established several GHG emissions scenarios used to describe possible future GHG emissions and associated warming. Two of these are commonly used to compare possible futures. The Representative Concentration Pathway (RCP) 4.5 represents a "mitigation" scenario in which emissions peak around 2040 and then decline at the end of the century. This scenario assumes global agreement and implementation of GHG reduction strategies. RCP 8.5 represents a "business as usual" scenario in which emissions continue to rise throughout the 21st century. Based on current global social and political conditions, RCP 8.5 is the more likely emissions scenario; therefore, the discussion in this chapter reflects emissions and warming associated with the RCP 8.5 scenario (Oakley et al. 2019).

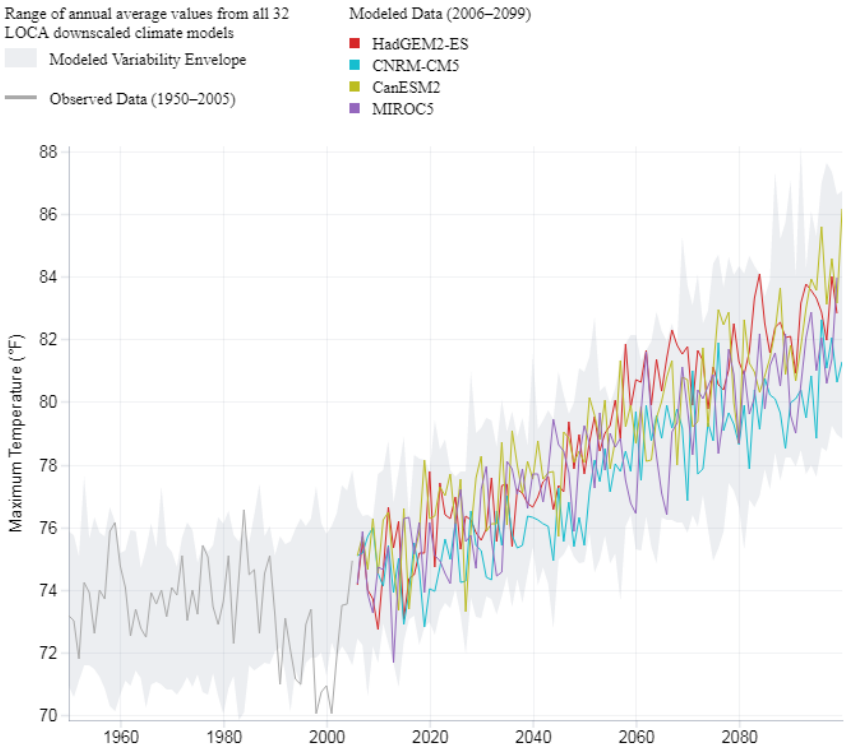
Temperature

Average Minimum and Maximum Temperature

Average maximum temperatures in Thousand Oaks are expected to rise between 4.5°F and 7.2°F by the end of the century, depending on the emissions scenario (refer to Figure 9.1, Cal-Adapt 2019 – shows RCP8.5). Additionally, average minimum temperatures in the City are expected to rise between 4.9°F and 7.9°F by the end of the century (Cal-Adapt 2019). Historical climate data has already demonstrated increasing maximum and minimum temperatures in Ventura County (Oakley et al. 2019). The projected continued warming of average minimum and maximum temperatures as well as more frequent temperature

extremes may have severe impacts related to water and energy demand, as well as public health and ecosystem function in the region (Oakley et al. 2019).

Figure 9.1 Historical and Projected Maximum Temperatures in Thousand Oaks (Cal-Adapt, 2019)[3]

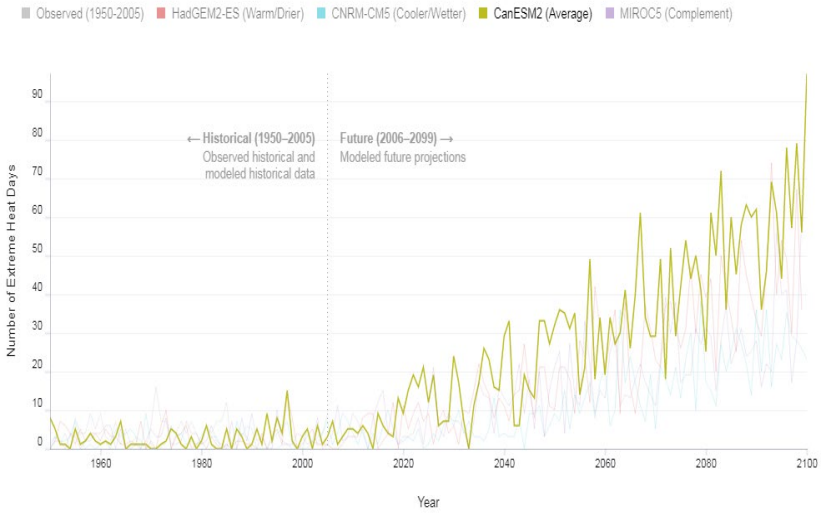


Extreme Heat Events

Thousand Oaks is projected to experience more extreme heat conditions. The annual number of heat waves, defined as four or more days over the extreme heat threshold of 94.1°F, is projected to increase from 0.3 to 4.4 by the end of the century, based on the business as usual scenario emissions scenario (RCP 8.5, Cal-Adapt 2019). Additionally, the annual number of extreme heat days with temperatures greater than 94.1°F, is projected to increase from approximately 9 in 2015 to roughly 56 by the end of the century (refer to Figure 9.2, Cal-Adapt 2019). This will result in longer heat waves. From 1961 to 1990, the observed average number of days in the longest heat wave was 2.5, by the end of the century the business as usual emissions scenario projects the average number of days in the longest heat wave to be 8.6 (Cal-Adapt 2019).

[3] *The data in this graph is based on RCP 8.5, in which emissions continue to rise through 2050 and plateau around 2100*

Figure 9.2 Number of Days with Extreme Heat in Thousand Oaks (Cal-Adapt, 2019)[4]



Precipitation

Projections show little change in total annual precipitation in California, with no clear or consistent trend during the next century (refer to Figure 9.3). However, even small changes in precipitation can lead to significant impacts. Models do show evidence for precipitation intensification, projecting an increase in the annual number of dry days and a decrease in the number of wet days. This suggests that the same amount of precipitation will fall in fewer days, increasing the magnitude of daily precipitation (Oakley et al. 2019).

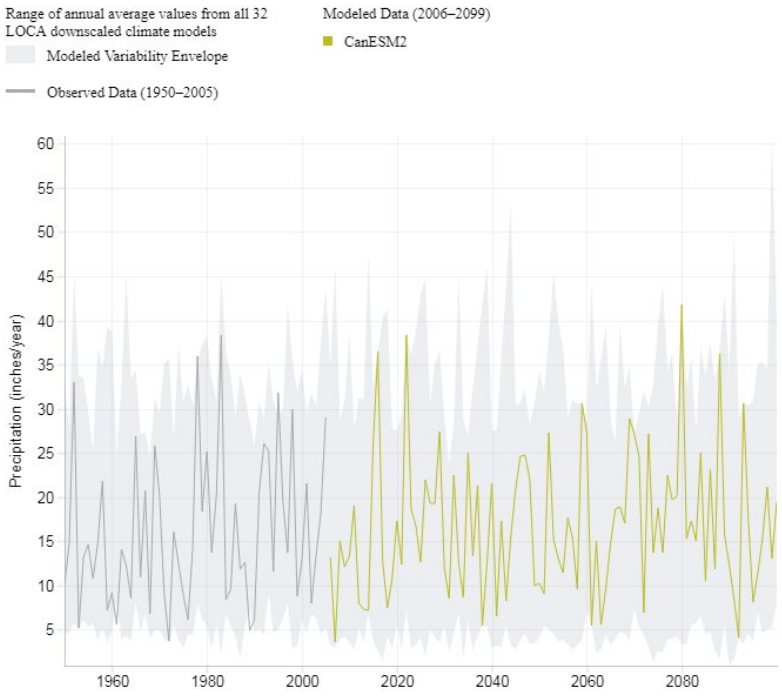
Drought

Climate change will increase the probability that low precipitation years will coincide with above-average temperature years (Oakley et al. 2019). This increases the likelihood of drought due to decreased supply of moisture and increased atmospheric demand for moisture as evaporation from bare soils and evapotranspiration from plants increase (Oakley et al. 2019). Global climate models project significantly drier soils in the future in Southern California, with greater than 80% chance of a multidecadal drought during 2050-2099 (RCP 8.5, Oakley et al. 2019).

The specifics of projected drought conditions, such as their magnitude and duration, are not currently available. In addition to evidence of increased drought severity, there is also evidence for occasional wet years. Because precipitation is projected to be variable, some years will be less drought prone than others due to more frequent and possibly stronger storms (Oakley et al. 2019). Even if there is greater precipitation, the projected increase in evaporative demand from higher temperatures implies that more water could be lost to the atmosphere and increase the possibility of drought.

[4] *This chart shows number of days in a year when daily maximum temperature is above the extreme heat threshold of 94.1°F. Data is shown for Grid Cell (34.21875, -118.84375) under the RCP 8.5 scenario in which emissions continue to rise strongly through 2050 and plateau around 2100. Source: Cal-Adapt. Data: LOCA Downscaled Climate Projections (Scripps Institution of Oceanography Gridded Historical Observed Meteorological and Hydrological Data (University of Colorado, Boulder). CanESM2(Average) is an average simulation.*

Figure 9.3 Historical and Projected Annual Average Precipitation in Thousand Oaks (Cal-Adapt, 2019)[5]



Heavy Precipitation Events

Both increased temperatures and altered precipitation patterns can lead to altered seasons and intense rainstorms in Thousand Oaks. Forecasts for these phenomena are currently unavailable in Cal-Adapt but are acknowledged as possible outcomes. Intense rainstorms could result in increased flooding, which could impact infrastructure and human health and safety in Thousand Oaks.

Urban Flooding

Ventura County has a long history of damaging floods, with evidence indicating flooding long before humans inhabited the area (Oakley et al. 2019). Flooding can occur by rivers and creeks following persistent precipitation, when soils become saturated and runoff is increased; but flash floods resulting from short-duration, high intensity rainfall does not require saturated soils (Oakley et al. 2019).

Both increased temperatures and more frequent short-duration, high intensity rainfall could increase the potential for flash flooding and debris flows, particularly post-fire. These events have the potential to pose a major threat to life and property in Thousand Oaks (Oakley et al. 2019).

Wildfire

Wildfire is a common occurrence in Southern California. Extreme heat, drought, and variable precipitation can result in increased frequency and duration of wildfires, posing a significant risk to public health. Wildfire frequency and intensity is expected to grow as temperatures increase and vegetation dries accompanied by longer dry seasons, especially in chaparral-dominated ecosystems such as those in Thousand Oaks.

[5] *The data in this graph is based on RCP 8.5, in which emissions continue to rise strongly through 2050 and plateau around 2100*

In addition to the direct risk of infrastructure destruction and fatalities from wildfires, exposure to wildfire smoke can lead to immediate and long-term adverse public health problems (State of California Natural Resources Agency 2009). Wildfire smoke consists of carbon dioxide, water vapor, carbon monoxide, hydrocarbons and other organic chemicals, nitrogen oxides, trace metals, and fine particulate matter from burning trees, plants and built structures (State of California Natural Resources Agency 2009). During wildfires, communities can be exposed to a combination of these pollutants, which can lead to acute and chronic health impacts. In addition, exposure to wildfire smoke can irritate the eyes, harm the respiratory system, and worsen chronic heart and lung disease, including asthma (State of California Natural Resources Agency 2009).

In November of 2018, the Woolsey Fire ignited and burned 94,949 acres in Los Angeles and Ventura Counties. The fire destroyed 1,643 structures, killed three people and required the evacuation of more than 295,000 people (County of Los Angeles Fire Department 2019). Further details regarding wildfire in Thousand Oaks are described in Chapter 6: Natural Hazards.

Air Quality

Thousand Oaks is in the South-Central Coast Air Basin (Basin), which encompasses Ventura, Santa Barbara, and San Luis Obispo counties. Increases in temperature extremes and precipitation variability in the Basin and City may be detrimental to public health in a variety of ways including worsening air quality. As described in the 2009 California Climate Adaptation Strategy by the California Natural Resources Agency, climate change can affect exposure to air pollution in the following ways:

- Increasing air temperatures increase ozone levels, which are formed by reactions between nitrogen oxides and hydrocarbons released from motor vehicle combustion of fuel
- Increasing temperatures can change human behavior in ways that increase air pollution – for example, through increased fuel combustion to meet electricity demand for increased air conditioner use
- Changes in patterns of air mixing and air flow can alter the transport of pollutants
- Increased temperatures can increase the emission of pollutants called volatile organic compounds from plants and vegetation.

Increases in allergens and air pollutants resulting from changing environmental conditions could lead to hazardous conditions, such as heat stroke and respiratory ailments for athletes, children playing outdoors, and construction laborers or others working outdoors (State of California Natural Resources Agency 2009).

Climate Resilience

The City of Thousand Oaks Sustainability Plan for Municipal Operations (City of Thousand Oaks 2018) proposes 150 strategies to improve sustainability, efficiency and resilience in City operations. The strategies cover a wide range of topics, including improving resilience to drought and water emergencies and increasing resilience from power outages. The plan explains that though it is unclear how the City's extensive open space will respond to climate change, these spaces provide the best

opportunity for native species to thrive. Additionally, the street trees in the City provide benefits through protection from the sun and remove pollutants from the air. This document initiated the process of addressing climate change adaptation and resiliency within the City.

Future sustainability efforts such as the communitywide greenhouse gas inventory and the Climate Action Plan (both further discussed in Chapter 8: Greenhouse Gases, of this Existing Conditions Report) will help increase the City's resilience to climate change.

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CHAPTER 10: ISSUES AND OPPORTUNITIES

This section describes key issues and opportunities for the community of Thousand Oaks, based on the information contained in each chapter of this Existing Conditions Report. The description of key issues and opportunities for each chapter begins with a bullet-list summary of the key issues, followed by further discussion of the importance of these issues to the community.

Cultural Resources

- The city has a variety of historical landmarks and landscapes, which require preservation, maintenance, and sometimes restoration to help preserve and promote the history of Thousand Oaks.
- The City contains local archaeological and Native American tribal resources, and conservation and management of these resources through continued coordination with local Native American representatives is necessary to help preserve these resources and promote public knowledge.

Natural Resources

- The city's open spaces and natural resources (including native plant communities, protected plant and animal species, and wildlife corridors) are defining features of the community. A key challenge for the City will involve protecting these resources while simultaneously planning for future development and achieving other community goals and values (such as preventing urban sprawl by delineating the community's urban edge).

Hydrology and Water Quality

- Portions of the city are subject to flood hazards, but exposure to these hazards can be reduced through means such as discouraging new development in flood zones and preserving the hydrological capacity of creeks and other waterways.
- The city includes a variety of surface waters such as lakes and creeks, and the beneficial uses of these surface waters (such as habitat value, aesthetic value, flood control, water storage and irrigation, and private recreation) need to be balanced with one another.
- Groundwater beneath the city has beneficial uses such as extraction for irrigation, but these beneficial uses need to be balanced with the need to avoid negative impacts such as groundwater overdraft, subsidence, and water quality impairment.

- The city's dams, levees, and debris basins function as water storage facilities, flood control facilities, and in some cases historic resources, but require ongoing maintenance to ensure they continue to function in a safe and efficient manner.

Utilities and Services

- While current provision of utilities and services (including water supply, stormwater control, solid waste disposal and recycling services, energy, and telecommunications) is generally adequate, the City needs to plan for the continued availability of affordable, high quality utilities and services to current and future residents and businesses. The City must also encourage resource conservation and compliance with regulatory requirements.

Public Services

- While public services provision (including police, fire protection, and emergency response) is currently adequate to meet the needs of the community, the City must plan ahead to ensure the continued availability of high-quality public services to meet the future needs of the community while also considering the potential expenses and other impacts of providing these services.
- While City staff and first responders generally performed well and met the community's needs during the simultaneous emergencies of the Borderline Bar and Grill shooting and the Woolsey Fire, these events emphasized the need for a clearer delineation of responsibilities among City Emergency Operation Center (EOC) staff, supplemental back-up staff for several positions, and more EOC staff training.
- Energy consumption is the largest source of GHG emissions (51%), followed by vehicle emissions (37%); then landfills, wastewater, and other sources (12%). Membership in Clean Power Alliance with a community-wide default of 100% renewable energy has significantly reduced the city's GHG emissions from energy use, beginning in 2019.
- Because the city's emissions make up only a small part of State, national, and global GHG emissions, the City's ability to meaningfully affect global climate change is limited. However, the combined efforts of cities throughout the State, nationally and globally to reduce their own local GHG emissions cumulatively has a meaningful impact on emissions and their related climate change effects.
- To help reduce GHG emissions, the City has adopted a Municipal Sustainability Plan and Municipal Energy Action Plan, and is currently updating GHG Inventories, Community Energy Action Plan and other planning documents in preparation for developing a Climate Action Plan and Sustainability Element of the General Plan.
- State laws aimed at reducing GHG emissions impact the City of Thousand Oaks either directly by requiring local government to implement programs or indirectly by intelligently planning for a changing landscape. The City

plans to stay abreast of current State regulations while paying close attention to the future direction of State policy.

Climate Change and Climate Resiliency

- Climate-driven changes have many consequences that may affect the health and prosperity of Thousand Oaks, such as increased wildfires, pressure on water supplies, drought and its impact on vegetation, open space and City trees, increased exposure to intense heat waves, and reduced air quality.
- The City of Thousand Oaks Sustainability Plan for Municipal Operations proposes 150 strategies to improve sustainability, efficiency, and resilience in City operations.
- Future City sustainability efforts such as the Climate Action Plan will help increase the City's resilience to climate change.