

A. OVERVIEW

1. PURPOSE AND LEGAL REQUIREMENTS

The purpose of the Hazards chapter of the General Plan is to convey the City’s approach to minimize the hazards to public health and safety, and to reduce damage to the built and natural environments. It describes natural and human-caused hazards affecting the City and identifies policies and programs to mitigate potential impacts through preventive and response measures. Some hazards can be minimized with emergency planning, while others are reduced by application of development standards and land use planning.

State law (California Government Code §65302(g)) requires that the General Plan include an element that addresses several topics to protect the community against natural and human-caused hazards including seismic activity, landslides, flooding, and wildfire. In 2015, Senate Bill 379 was signed into law, which requires local jurisdictions to address climate change and specifies that local jurisdictions must conduct a vulnerability assessment to identify the risks of climate change and develop a set of goals, policies, and objectives to address the identified risks. In 2016, Senate Bill 1000 was signed into law, which requires local jurisdictions that have disadvantaged communities to incorporate environmental justice policies into their general plans. Environmental justice addresses inequitable exposure to pollutants and other impacts, and the lack of infrastructure and amenities to equitably serve vulnerable populations. “Vulnerable populations” include disadvantaged communities based on geographic, socioeconomic, public health, and environmental hazards criteria. “Equity” means that all people are justly and fairly treated according to their circumstances. Westlake Village does not have any disadvantaged communities that meet the criteria to be considered a vulnerable population, and accordingly, the City is not required to prepare an Environmental Justice Element; however, the City remains committed to the principles of environmental justice and equity.

This Hazards chapter, together with related topics in other chapters of the General Plan, addresses the legal requirements for the safety elements as set forth in state planning law. State law topics applicable to Westlake Village are addressed in **Table 14**.

Table 14. Guide to General Plan Safety and Climate Change Policies

State Law Requirements	Chapter Addressed	Topics/Policies Covered
Geologic Hazards	IV – Hazards	Seismicity, geologic constraints to development
Flood and Storm Water	II – Infrastructure and Community Services	Storm drains, including adequacy and coordination of maintenance schedules with other agencies
	I – Community Development	Resource Management Overlays to mitigate flood risk in flood areas
	IV – Hazards	Flood hazard areas
Wildfire	I – Community Development	Resource Management Overlays to mitigate fire hazards risk in hillside areas
	II – Infrastructure and Community Services	Fire services provided by the County of Los Angeles Fire Department and mutual aid agreements
	IV – Hazards	Existing and historical fire hazard; provides policies and programs
	Appendices C, D and E	Incorporates City’s Emergency Response Plan, the Las Virgenes-Malibu Council of Governments’ Hazard Mitigation Plan, and the County of Los Angeles Fire Department’s Strategic Fire Plan
Water Quality and Supply	I – Community Development	Resource Management Overlays to protect water quality in watershed areas
	II – Infrastructure and Community Services	Water supply with consideration for risk of drought
	III – Natural Resources	Watershed preservation including conservation practices to protect Las Virgenes Reservoir and Westlake Lake
Climate Change Adaptation and Resiliency	IV – Section D and Appendix D	Goals, policies, and measures to adapt to and build resilience to climate change impacts
Emergency Preparedness	II – Infrastructure and Community Services	Circulation system including adequate road width
	Appendices C, D and E	Incorporates City’s Emergency Response Plan, the Las Virgenes-Malibu Council of Governments’ Hazard Mitigation Plan, and the County of Los Angeles Fire Department’s Strategic Fire Plan
	IV – Hazards	Disaster response map and evacuation routes options map
Energy and Greenhouse Gas Emissions	III – Natural Resources	Energy conservation, green technologies, mixed-use development and transit-oriented design, and air pollutant control

2. EXISTING FRAMEWORK

The Las Virgenes-Malibu Council of Governments (LVMCOG) is located in the northwest area of Los Angeles County and includes five cities: Agoura Hills, Calabasas, Hidden Hills, Malibu, and Westlake Village. It was established by its members under a Joint Powers Agreement to provide a vehicle for members to engage in regional and cooperative planning and coordination of government services and responsibilities. The LVMCOG also provides a regional organization for the review of federal, state, and regional projects and studies that involve the use of federal, state, and regional funds.

In 2018 the LVMCOG completed a Multi-Jurisdictional Hazard Mitigation Plan, as the cities within the LVMCOG experience similar hazards. Combining efforts, identifying common threats, and establishing regional mitigation strategies were collaborative tasks that allowed mutual participation and more effective use of resources, and a more thorough Hazard Mitigation Plan. The plan covers earthquake, wildfire, climate change, landslide and debris flow, windstorm, flood and severe winter storm threat, and terrorism and mass violence. The Hazard Mitigation Plan meets the requirements of the Disaster Mitigation Act of 2000. It also provides information on climate change vulnerability and adaptation in compliance with Government Code §65302 (g)(4), and is incorporated into this General Plan as Appendix D.

Los Angeles County Coordination

The Los Angeles County Office of Emergency Management (OEM) was established by County code to organize and direct the preparedness efforts of the Emergency Management Organization of Los Angeles County. OEM responsibilities include Planning and Coordination, Operations, Training, Technical Operations, and Public Education. The cities within the LVMCOG are an integral part of Los Angeles County Disaster Management Area B, which comprises the five LVMCOG cities plus Lancaster, Palmdale, and Santa Clarita. As members of Area B, the LVMCOG cities are able to incorporate County hazard mitigation and emergency response activities and programs into their local strategies. Examples include the Los Angeles County Fire Department's wildfire prevention efforts, the Community Emergency Response Teams (CERT) programs, and the Alert LA County emergency notification system. In addition, the City contracts with Los Angeles County for fire services, and has incorporated the County of Los Angeles Fire Department's Strategic Fire Plan as Appendix E to the General Plan.

The City will also benefit from development of a Climate Vulnerability Assessment (CVA) currently being prepared by the County of Los Angeles. This CVA will be a countywide analysis of the effects of climate change hazards that all 88 cities in Los Angeles County can access and use. This technical data will supplement the VMCHMP, and the City shall connect residents with outreach events and opportunities to facilitate access and understanding of the CVA.

B. GEOLOGIC, SEISMIC AND FLOODING HAZARDS

1. GEOLOGIC AND SEISMIC SETTING

The City of Westlake Village is located in the Transverse Ranges Geologic Province, a system of east-west trending valleys and mountain ranges that extends from Cajon Pass on the east to Point Conception on the west. These major physiographic features are controlled by the trends of major faults and folds in the rock units that also trend east-west. This orientation is in striking contrast to the northwest-southeast trend in most of the remainder of the State.

Rock and soil units within the City consist of a “basement” rock composed primarily of volcanic units but with a relatively limited area of sedimentary rocks, primarily shale and siltstone, in the hills north of the freeway. The volcanic units include basaltic lava flows and complex combinations of ash and other material ejected from ancient volcanoes. These units are overlain in the valleys by alluvium (stream deposits) composed of varying amounts of sand, silt, and clay.

The geologic structure of the rock units is only moderately complex and consists primarily of a relatively consistent north to northeast inclination of the rock layers at angles generally in the range of 20 to 30 degrees. This simple arrangement is interrupted by a moderately complex pattern of faulting, and some rock units, particularly the sediments, are more intensely deformed near the faults. There is no direct evidence to indicate that any of these faults have been active in the recent geologic past, nor is there any reason to suspect from regional relationships that any of them should be considered hazardous.

Significant earthquakes that should be expected to occur in the foreseeable future and that should be considered in the design of structures in the City are of two distinct types: (1) major events generated by movement on a very large but relatively distant fault, and (2) medium-sized events generated by movement on a closer fault.

With regard to the first types (major events), the most likely event is a Richter magnitude 8-8.5 earthquake on the San Andreas Fault within the next 100 years. The shaking that would accompany this earthquake is expected to be only moderately strong in Westlake Village, because the source fault is 42 miles away at its nearest point. The maximum ground accelerations should be in the range of only 0.1-0.2g (Young, 1981), where “g” is the decimal fraction of the acceleration of gravity. However, because of the length of the

fault break and the way in which ruptures propagate, the shaking will probably last for at least 1 minute. For comparison purposes, the duration of the 1971 San Fernando earthquake was 12 to 15 seconds.

More intense but shorter-duration shaking should be expected from one of the active faults closer to the City. One possibility is the San Fernando Fault located approximately 20 miles to the northeast. This fault ruptured in 1971 resulting in the damaging earthquake of that year in the Sylmar/San Fernando area. Because active segments of this fault zone extend to the east of the 1971 break but not to the west, the shaking from future movements on this fault should not exceed, and would likely be less than what occurred in Westlake Village in 1971.

A more likely candidate for the maximum-intensity earthquake shaking that should be taken into account in the design of structures in the City is the offshore Malibu Fault. Movement on this fault zone generated the Richter magnitude 6.0 Point Mugu earthquake of 1973, and the future movement of a segment more southerly of Westlake Village could generate higher intensities of shaking than what occurred in 1973. Little is known about the earthquake history of this fault zone, but considering that a magnitude 6.0 has occurred within the recent historic past, a design magnitude of 6.5 is reasonable¹.

An important consideration for estimating earthquake shaking that this fault could generate in Westlake Village is its northerly inclination at depth. Studies of the aftershocks of the 1973 earthquake (Stierman and Ellsworth) demonstrate that while the surface trace of this fault is located about 3 miles offshore (south) of Point Dume, the fault plane is inclined to the north at angles approaching 45 degrees. Therefore, the earthquake-generating portion of the fault plane, which lies primarily at depths of 5 to 10 miles, is only a few miles south of the City. Maximum ground accelerations that should be expected from a magnitude 6.5 event on this fault should be in the range of 0.3-0.4g (Schnabel and Seed, 1973).

In addition to the above, it should be noted that other active or potentially active faults may be considered capable of generating strong earthquake shaking in the City. However, the levels of shaking that can reasonably be postulated as resulting from

1 The Lake Eleanor Hills EIR (McClelland Consultants, December, 1990) cites a maximum credible earthquake magnitude of 7.5 and a maximum probable earthquake magnitude of 5.75 on the Malibu Coast Fault. Peak ground accelerations are estimated to be .5g and .2g, respectively.

movement on these faults is less than that for the faults discussed above, and design for these identified events should accommodate lesser levels of shaking from other faults.

2. GEOLOGIC CONSTRAINTS TO DEVELOPMENT

Constraints related to soil and rock types present in the City and actions that will be required prior to development are shown on **Figure 27**. The individual hazards and conditions are discussed below.

a. Seismicity

Earthquake shaking that should be expected even with the most adverse event that it is reasonable to postulate (i.e., magnitude 6.5 earthquake on the offshore Malibu Fault) would most likely be in the range of 0.3 to 0.4g. Because construction under the provisions of the International Building Code generally takes into account shaking up to approximately 0.5g, no additional action is required beyond implementation of this code.

b. Liquefaction

The potential for liquefaction in areas of alluvium and shallow groundwater has been previously identified by the County of Los Angeles and more recently by the California Division of Mines and Geology (Davis et al., 1982). However, for liquefaction to actually occur, strong earthquake shaking, shallow groundwater, and poorly consolidated soils are all required. Because the latter can only be determined by detailed soils investigations on individual sites, the evaluation and mitigation of this potential hazard should occur as a part of the soils engineering investigation required for all development sites.

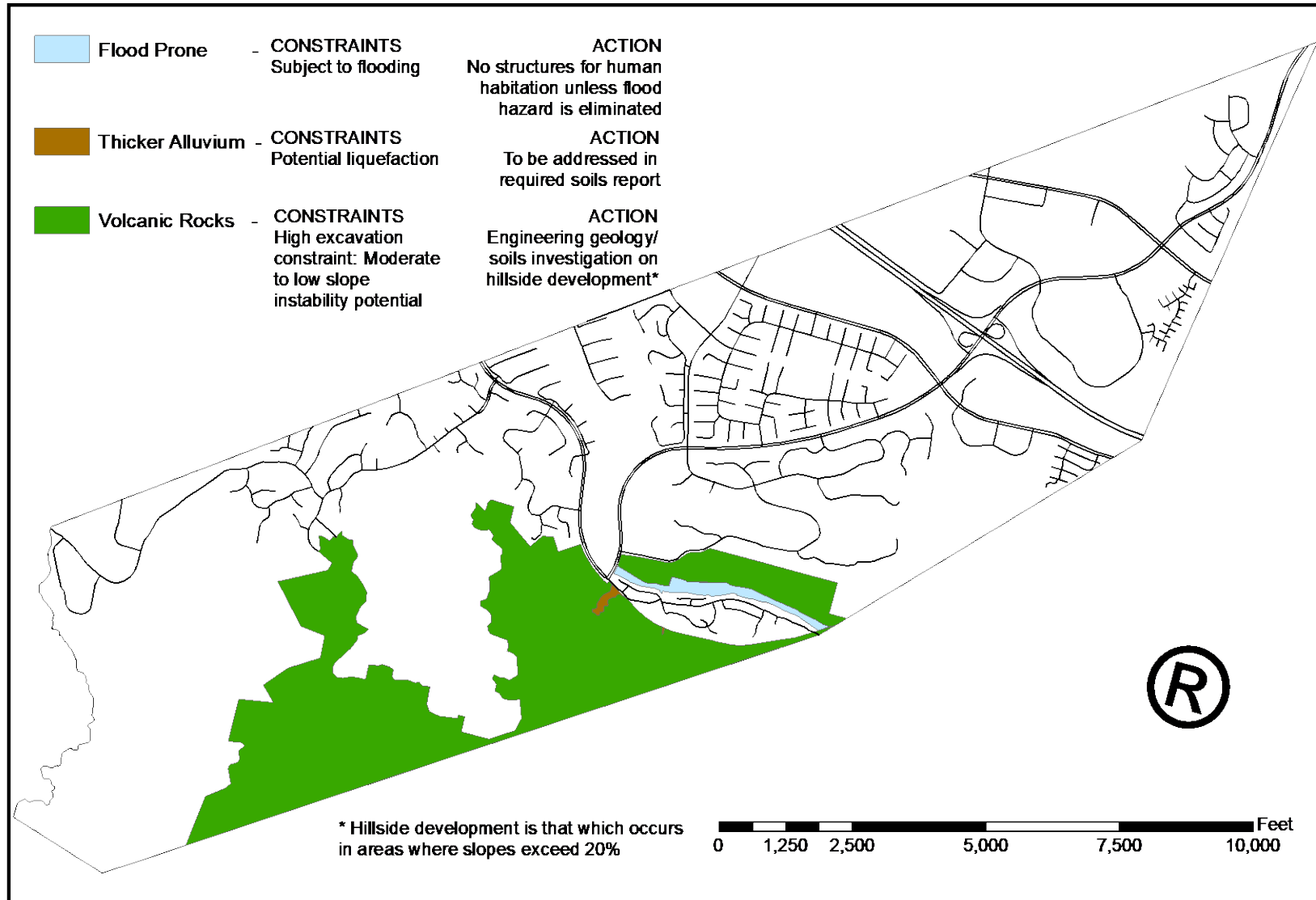
c. Landslides

Potential landslide hazards are primarily limited to the areas of sedimentary rocks in the northeast tip of the City. Thorough geologic investigations will be important in this area prior to any development.

d. Volcanics

A major part of the City's undeveloped area is in volcanic rock. The major development constraint related to volcanics is excavation difficulty; blasting may be required, which results in higher grading costs.

Figure 27. Geologic, Seismic, and Flooding Constraints



e. Shrink-Swell Potential

The thick alluvial soils within the valley areas contain a significant amount of “expansive-type” clays. Within the hilly portions of the City, thin residual soils overlying bedrock also commonly contain considerable amounts of expansive clays. However, within those hilly areas, grading generally removes the expansive materials or results in the mixing-in of nonexpansive materials such that no additional design and construction measures are required. The significant shrink-swell potential in the valley areas can be mitigated by proper design and construction of floor slabs and footings as determined in a soils investigation.

f. Erosion

Erosion is not a significant problem for the City, as the hillside areas are underlain by very resistant volcanic bedrock. Implementation of erosion control measures on all graded slopes (e.g., planting of deep-rooted vegetation, terracing) will prevent accelerated erosion resulting from development of hillside areas.

g. Groundwater and Percolation

Groundwater is not a significant resource to the City or adjacent areas. Consequently, the reduction of groundwater recharge resulting from an increase in impervious ground cover accompanying future development is not expected to significantly impact groundwater resources.

Higher groundwater generally does not occur within the City. The volcanic bedrock in the area is virtually impervious to water. Consequently, water flows through fractures in the rock and locally seeps to the surface. These seeps can result in instability of fill slopes. The location of seeps and design measures to insure fill slope stability (i.e., internal drainage systems or the use of impervious fill material) should be determined in a soils investigation.

h. Subsidence

Subsidence is not a potential problem in the City. Potential settlement of compacted fill and appropriate design criteria would be addressed in a soils investigation.

i. Dam Safety

The two dams located in the City were constructed to create the Las Virgenes Reservoir and Westlake Lake. The Las Virgenes Reservoir Dam, located in the southern part of the City, was constructed in 1972 as a compacted earth fill. It is 150 feet high and 1,400 feet long at its crest, and has a capacity of 10,000 acre-feet (California Department of Water

Resources, 1974). Because its drainage area is only 0.9 square miles, runoff into the reservoir is insignificant compared to its capacity to store water delivered to it from other sources. The reservoir is owned and operated by the Las Virgenes Municipal Water District. The reservoir is inspected yearly by the Las Virgenes Water District, and a copy of the report is provided to the Department of Public Works for review. Although the dam has received no reports of failure of any kind, inundation maps have been prepared by the Office of Emergency Services to identify areas in danger of flooding if the dam should fail. Inundation maps (**Figures 11b and 11c**) show the areas identified as being at risk for substantial flooding in the unlikely event the dam fails.

Westlake Dam, which impounds Westlake Lake, was completed in 1967, and is a gravity dam operated by Westlake Lake Management. It is 40 feet in height and has a storage capacity of 791 acre-feet of water. It has a relatively large drainage area of 28.9 square miles, but because it is maintained in a near-full condition for recreational purposes, flood flows are bypassed downstream.

Failure of either dam during some catastrophic event, such as a severe earthquake, is considered very unlikely. The methods of construction that were utilized are very different than the hydraulic fill technique used on some older dams, such as Van Norman, that partially failed in the 1971 earthquake. Modern dams have performed very well in earthquakes, and failure is not expected to occur. However, it should be noted that State law requires that, for purposes of emergency preparedness, maps be prepared (**Figures 11b and 11c**) for all large dams showing the area that would be inundated if the dam fails, and the time of arrival of the flood waters. Such maps have been prepared for Las Virgenes Reservoir and Westlake Lake, but because of the extremely low probability of failure of either dam, the hazard involved is not a significant consideration in planning of the affected areas.

Because Westlake Lake has the same inundation area as Las Virgenes Reservoir after the water passes Westlake Dam, both dams' inundation areas are shown on the same figures.

Figure 11b. Las Virgenes Reservoir Inundation Area



Figure 11c. Las Virgenes Reservoir Inundation Area



j. Flood Hazard

Flood hazard areas within the City are limited to the Triunfo Canyon drainage of Triunfo Creek below Westlake Lake, the banks of the lake itself, the banks of the Las Virgenes Reservoir, and the creek along the north eastern border of the City with Agoura Hills that drains into Lake Lindero. A storm drain system has been constructed in the vicinity of the canyon to moderate the effects of storm runoff. The Federal Emergency Management Agency (FEMA) has prepared flood zone maps that define the physical limits of the flood hazard and the minimum floor elevations required for structures outside the hazard area (see Figures 11 and 11a, Chapter I).

The City has four areas that lie in flood hazard areas as identified by FEMA. The portions of Triunfo Creek and the northeastern border with Agoura Hills lie within the AE flood zone; while the banks of the Las Virgenes Reservoir and the shores of Westlake Lake lie within flood zone A. Both the A and AE flood zones are within the 100-year floodplain. Additionally, any development within the identified flood areas will be subject to the review of the flood hazards present, prior to approval.

Development on the shores of Westlake Lake has been set back several feet from the highest water level that could be expected to occur. This setback is recognized as a flood hazard area and is maintained as open space. The “spillover” design of the Westlake Dam ensures that flooding beyond the lake’s banks would not occur.

The Las Virgenes Reservoir has mitigation measures in the event of a major event that could cause the dam to overflow. A concrete spillway allows additional water above the reservoir’s capacity to exit the reservoir, travel along the hillside next to the dam, and drain into Three Springs Park. The water then flows to a storm drain system in the northeast corner of Three Springs Park that brings the water to Westlake Lake and farther into the Malibu Creek system. A brief storm event in 2017 caused the Las Virgenes Reservoir to use the concrete spillway for the first time. The Las Virgenes Municipal Water District inspected the site after the event subsided and determined that the spillway worked properly, and that there was no damage to the dam from the storm event or release of excess water down the spillway.

The flood hazard zones identified in **Figures 11 and 11a** (Chapter I) are rarely subject to flooding, but have caused flooding that resulted in damage to property in recent history.

Both the areas identified in the flood hazard zones have been inundated during storm events; however, the flooding subsided after the storm events passed.

The majority of the City of Westlake Village lies in the Very High Fire Hazard Severity Zone (see Fire Hazards in the subsequent section), and as such wildfires are a every present threat to the area. If a wildfire occurs in the open space areas of the City, any new runoff from rainfall may cause additional flooding in the City. The majority of the open space areas where that runoff may occur are within watersheds that supply the Las Virgenes Reservoir, or Triunfo Creek (**Figure 12**, Chapter I). Additionally, run off from a flood event following a wildfire would be collected by the City's storm drain system and deposited into Westlake Lake, which in turn would spill over Westlake Dam into Triunfo Creek.

In the City's largest flood hazard area (**Figure 11**, Chapter I) covers the banks of Westlake Lake, the Westlake Dam spillway, and Triunfo Creek. Development around the lake in the affected area includes three of the City's residential neighborhoods and a retail shopping center. The spillway includes the development of a residential neighborhood and the Westlake Athletic Club. Finally, the area adjacent to Triunfo Creek is the Oak Forest Estates neighborhood where a significant portion of the northern part of the neighborhood lies within the hazard area. Previous flooding along Triunfo Creek has damaged homes in the Oak Forest Estates neighborhood, and it remains a concern of the City for the potential of additional flooding that may occur in the area.

In **Figure 11a** (Chapter I) the City's other flood hazard area with development is shown along the unnamed creek that feeds Lake Lindero along the City's boundary with Agoura Hills to the north. The creek has the potential to flood and impact the Westlake Renaissance neighborhood and the adjacent commercial properties to the south. The creek also passes under Thousand Oaks Boulevard, and flood activity can cause a closure of the boulevard until drainage to Lake Lindero is able to keep up to capacity.

Although the geography and development in Westlake Village is very unlikely to change in the foreseeable future, the U.S. Army Corps of Engineers and FEMA have collectively created interactive flood hazard maps and comprehensive flood hazard information. If the data regarding flood hazards for the City is updated by any relevant agencies, this document shall be updated in accordance with the most current information available. Residents and business owners of Westlake Village are encouraged to remain current

with flood hazards outlined by FEMA and the U.S. Army Corps of Engineers, and in the event of a flood event, residents and business owners can contact the Los Angeles County Fire Department for emergency assistance.

Appendix C to this document shall supplement the information found in the this section of the General Plan in the form of the City’s Emergency Response Plan. The plan shall be updated regularly and be available to the public.

k. Summary

In summary, there are no geologic, seismic or flooding hazards that are expected to negatively affect or be affected by development within the City if the standard codes and procedures are adhered to.

3. GOALS, POLICIES, AND PROGRAMS

The following presents the goals, objectives, and policies for Geologic, Seismic and Flooding Hazards in the City of Westlake Village. At the end of each policy is a listed “I-” and number in parentheses that refers to a corresponding implementation program.

Goal *It shall be the goal of the City of Westlake Village to:*

Minimize hazards to public health, safety and welfare which may result from geologic conditions, seismic activity and flooding.

Objective *It shall be the objective of the City of Westlake Village to:*

1 Provide for an efficient and safe evacuation of the community in the event of a major disaster.

Policies *It shall be the policy of the City of Westlake Village to:*

1.1 Maintain an effective Citywide Emergency Preparedness Plan (I-1 and I-2).

1.2 Encourage community volunteers to assist police, fire and civil defense personnel during and after a major earthquake, fire or flood (I-3).

Objective *It shall be the objective of the City of Westlake Village to:*

2 Ensure that construction and development activities within the community do not expose residents to avoidable natural hazards.

Policies *It shall be the policy of the City of Westlake Village to:*

- 2.1 Require the preparation of a detailed geologic and soils report to accompany each grading permit application in all hillside management areas (I-4).
- 2.2 Prohibit the placement of structures for human habitation within flood prone areas unless the flood hazard is eliminated by measures that do not impair the carrying capacity of the watercourse (I-5).
- 2.3 Enforce the provisions of the International Building Code, specifically Chapters 18 and 23 as they relate to earthquake-resistant design and excavation and grading (I-6).

Objective *It shall be the objective of the City of Westlake Village to:*

- 3 Minimize the impacts to the public in regard to potential flooding within the City.

Policies *It shall be the policy of the City of Westlake Village to:*

- 3.1 Discourage development within flood hazard areas and ensure any proposed development is extensively reviewed and mitigated (I-5).
- 3.2 Prohibit the construction of essential public facilities outside the flood hazard areas (I-5).
- 3.3 Coordinate with local emergency services to ensure that in the event of a flood, essential public facilities and infrastructure remain operational (I-1 and I-3).

Implementation Programs

- I-1 Continue to update the Citywide Emergency Preparedness Plan as new information becomes available.
- I-2 Periodically distribute an updated pamphlet that informs individual residents of their responsibilities for emergency preparedness.
- I-3 Support training programs to train volunteers to assist police, fire protection, and civil defense personnel during and after a seismic, fire, or flooding event.
- I-4 Continue to implement the provisions of the Hillside Management ordinance and coordinate with the Los Angeles County Building and Safety Department so all applicable grading and development standards are implemented.

- I-5 Coordinate with the Los Angeles County Flood Control District to ensure that potential flooding hazards associated with proposed new development are fully mitigated.

- I-6 Coordinate with the Los Angeles County Building and Safety Department in the review of all development proposals, ensuring the International Building Code is enforced.

C. FIRE HAZARD

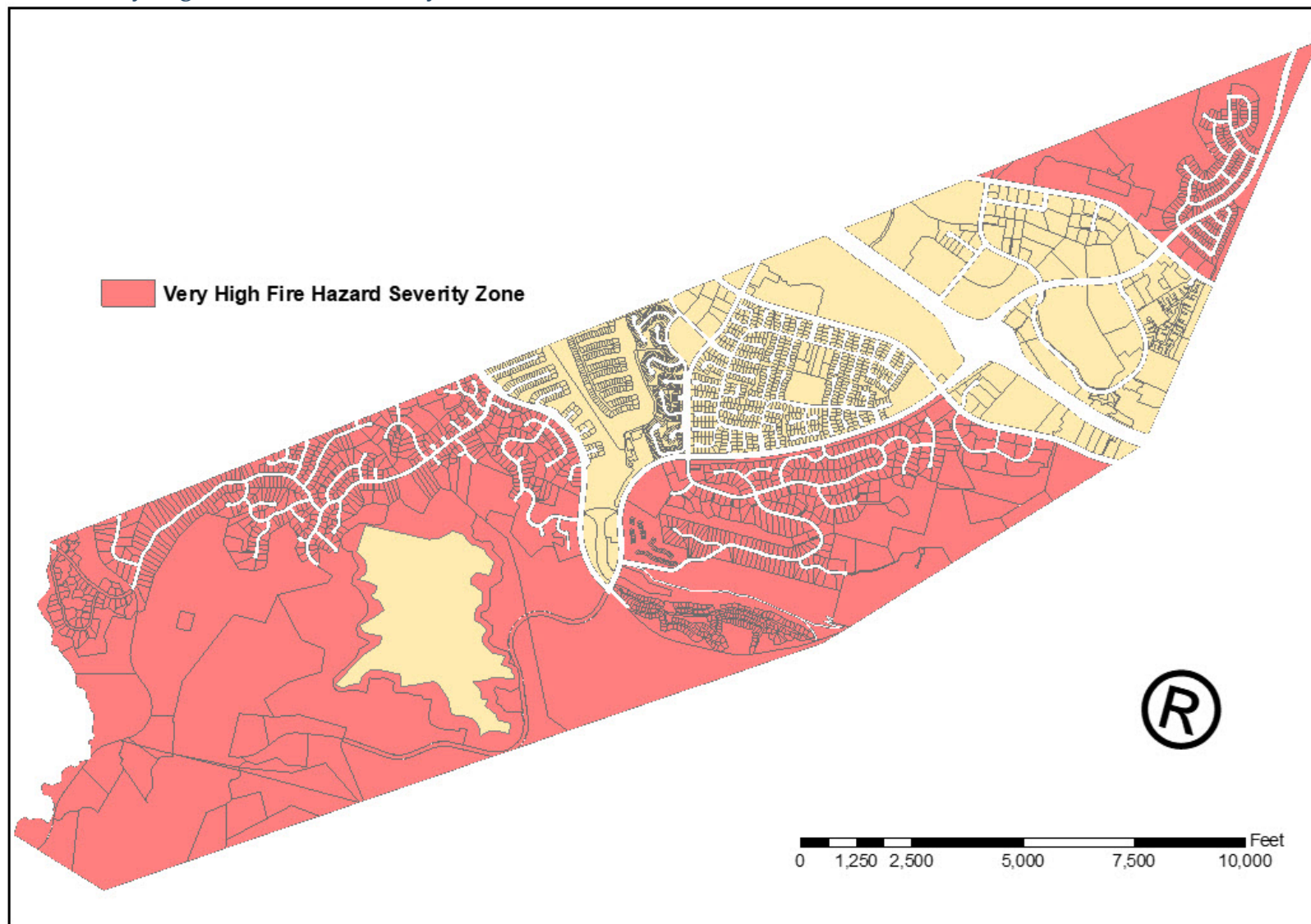
1. EXISTING FIRE HAZARD

The City is partially located in a mountainous watershed area that experiences periods of severe fire hazard when the weather is characterized by high temperatures, low humidity, and high wind velocities. Fire hazard within the City is primarily related to highly flammable brush that ignites readily, burns with intense heat, and spreads rapidly. Large destructive fires have burned through the Santa Monica Mountains and in and near the City of Westlake Village on a regular basis.

Additionally, areas of the City developed prior to the Non-Combustible Roofing Ordinance of 1977 include structures with combustible wood shingle/shake roofs. These roofs, although now uncommon in the City, present a hazard and firefighting problem during severe fire weather due to flying brands from a wildland or structure fire. This hazard will diminish as these roofs are replaced with fire-resistant roofing materials over time.

According to the Los Angeles County Fire Department and the County Building and Safety Department, the entire City lies in both Fire Zone 3 and the Very High Fire Hazard Severity Zone (VHFHSZ) areas (**Figure 28**). The areas in VHFHSZ areas are generally situated adjacent to undeveloped hillside areas and cover the majority of the open space areas within the City. Additionally, the VHFHSZ covers large amounts of areas designated for development land uses as well (see **Figure 8**, Chapter I). The likelihood of a large scale fire spreading from structures can be reduced through the use of non-combustible construction materials, the application of brush clearance and fuel modification plan requirements, administered by Los Angeles County Fire Department's Prevention Services Bureau, and ensuring adequate access around homes and accessory structures.

Figure 28. Very High Fire Hazard Severity Zone



Any construction within the City is required to abide by the regulations of both Los Angeles County Building and Safety and the Los Angeles County Fire Department who administer the building and fire codes to ensure proper fire protection is installed, including visible address numbering. The Los Angeles County Fire Department, which provides and oversees all fire protection services to the City, requires that all buildings and structures be constructed to meet the standards specified in the current edition of the International Building Code of Los Angeles County (see Fire Protection, Chapter II). State law allows the County and the Consolidated Fire Protection District of Los Angeles County (District) to adopt more restrictive building standards that are reasonably necessary because of local climatic, geological, or topographical conditions. The Los Angeles County Fire Code contains building standards that are more restrictive than State codes.

Adequate water mains, fire hydrants, and fire flows are essential for fighting structure fires and suppressing brush fires. Water availability, or “fire flow,” is the combination of water quantity and pressure, measured in gallons per minute (GPM). Fire flow requirements are based on the types of land use intended to be served. For example, single-family development may have a required fire flow of 1,250 GPM, while industrial development could have a requirement of 5,000 GPM (maximum fire flow). While this flow is adequate to service businesses and residences with fire protection, the LACFD with the support of CAL FIRE have access to additional apparatuses to supply water for fire suppression, if the available systems in the City prove to be insufficient.

Brush and dense undergrowth are a primary hazard to structures. As such, brush clearance is necessary to reduce structural exposure to flames and radiant heat, and to prevent the otherwise avoidable loss of structures and property. Property owners are currently required to maintain a firebreak around and adjacent to all buildings and structures by removing all flammable vegetation or other combustible growth for a minimum distance of 30 feet from the structure or to the property line, whichever is closer. This requirement does not apply to single specimens of trees, ornamental shrubbery, or cultivated ground cover such as green grass, ivy, succulents, or similar plants used as ground covers, provided that they do not form a means of readily transmitting fire from the native growth to any structure. Additional fuel modification may be required when it is found that, because of extra hazardous conditions, a firebreak of only 30 feet around such structures is not sufficient to provide reasonable fire safety. In the City of Westlake Village, the Los Angeles County Fire Department (LACFD) can

impose a brush clearance distance of up to 200 feet from structures up to their property line, due to much of the City being classified as within the Very High Fire Hazard Severity Zone.

The LACFD maintains community fire breaks to prevent large scale fires from spreading, while the City maintains public road landscaping and debris to prevent a large scale fire from sweeping through the City. Private streets are maintained by the respective private property owners, and private street owners are encouraged to maintain the streets to the same level of clearance as prescribed by the LACFD. LACFD also promotes and informs the public of the need for defensible spaces around all structures in the VHFHSZ for fire safety. Additionally, any newly proposed construction or landscape plans within the VHFHSZ are subject to review by Los Angeles County Fire's Prevention Services and shall be required to create and implement a fuel modification program to create defensible spaces around all structures in the VHFHSZ.

The region's transportation system consists of a grid of local streets, arterials, and other lesser thoroughfares. Regional access to Westlake Village is provided primarily through the Ventura Freeway (U.S. Highway 101). Road networks, either public or private, provide safe and ready access for emergency equipment and the evacuation of citizens during disasters. The General Plan's Circulation Element (Chapter II) identifies the minimum standard for all roadways within the City, which will be able to accommodate the flow of traffic in an emergency event. The City's Emergency Response Plan (**Appendix C**) identifies the City's ability to implement traffic control to alter traffic patterns to allow for the more efficient flow of traffic out of residential areas within the VHFHSZ. Additionally, any new development within the City and in the VHFHSZs is subject to the same minimum roadway standards to ensure that proper ingress and egress is maintained for everyday use, or use in the event of an emergency. Additionally, all residences and businesses within the City are adequately serviced by public or private streets.

The City has reviewed its circulation routes and found that all residential neighborhoods have at least two points of access to emergency evacuation routes. A map of the City's disaster and evacuation routes is provided as **Figure 28b**. In the event of an emergency requiring evacuation, the City is prepared to provide instructions to residents on which roadways should be used from **Figure 28b**, and the City would use its mass notification system, the City website, local television Channel 10, and its social media platform to instruct individuals on which roadways from this system should be used based on the type of emergency and the area affected.

As a result of the City being within the VHFHSZ, wildfires have the potential to breach the City boundary. Historical data relating to wildfire incidents within the City are catalogued by the California Department of Forestry and Fire Protection, also known as CAL FIRE. **Figure 29** shows the boundaries of historical fires that have breached the City's boundary since 1970. In addition to the VHFHSZ map produced by CAL FIRE (**Figure 28**), the U.S. Geological Survey (USGS) publishes fire hazard maps and data that are constantly updated. Upon update of the City's General Plan, consultation of the most recent USGS, and CAL FIRE data is used; however, between periods of update to the General Plan, CAL FIRE, the Los Angeles County Fire Department, and the USGS should be used by businesses and residents to obtain the most up-to-date information on fire hazards.

Fire protection in the City is primarily handled by the Los Angeles County Fire Department (see **Figure 20**, Chapter II); however, larger incidents will call for additional responses by the Ventura County Fire Department and CAL FIRE for assistance. Additionally, the City's development in the future is not anticipated to exceed the available resources of the LACFD.

Appendix C, Appendix D, and Appendix E to this document supplement the information found in this section of the General Plan in the form of the City's Emergency Response Plan, the Las Virgines-Malibu Council of Governments' Hazard Mitigation Plan, and the County of Los Angeles Fire Department's Strategic Fire Plan. However, for additional and more commonly updated information regarding fire protection and the goals of Los Angeles County Fire, please contact Los Angeles County Fire via their website, or by visiting a local television or radio station.

Figure 28b. Disaster and Evacuation Routes

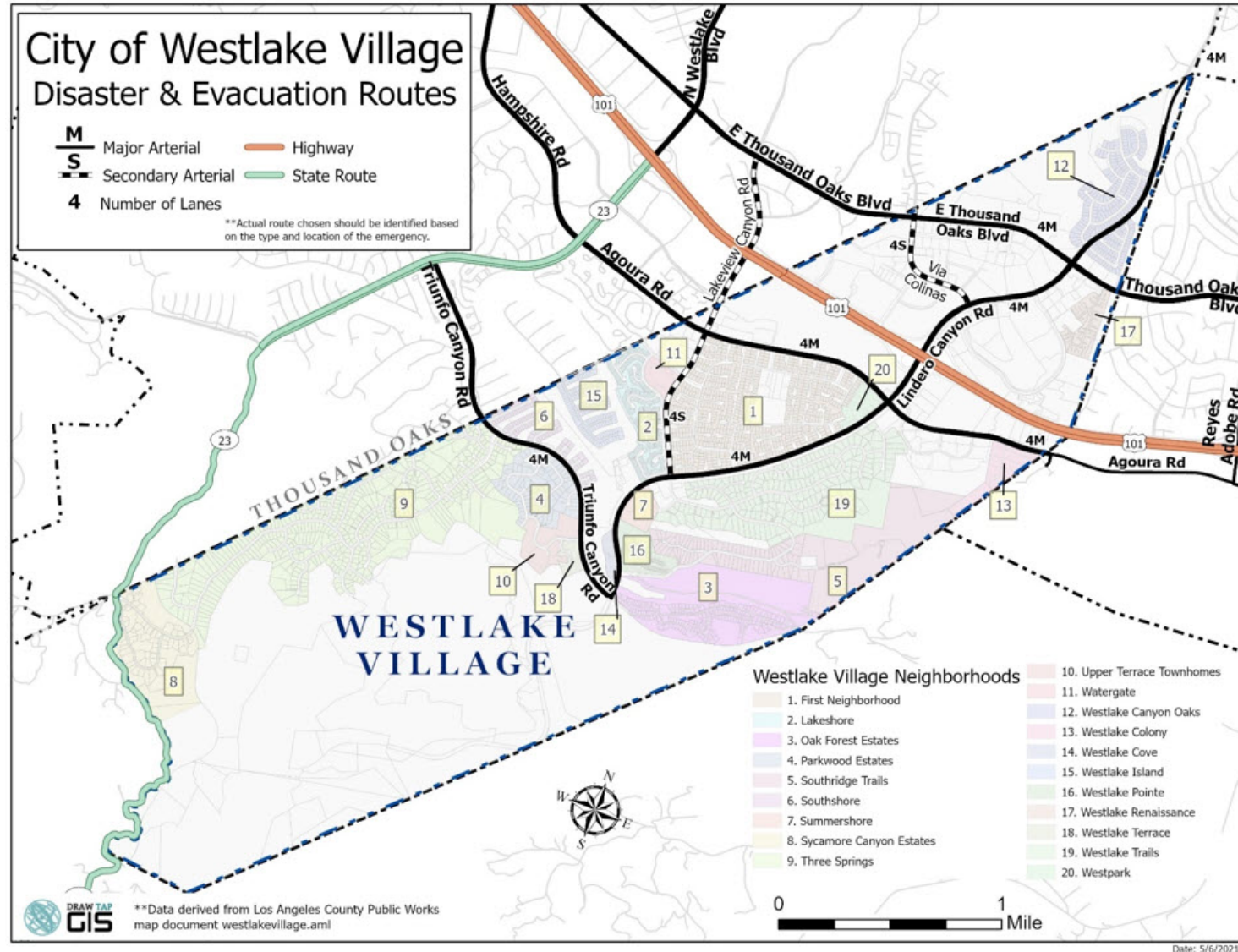
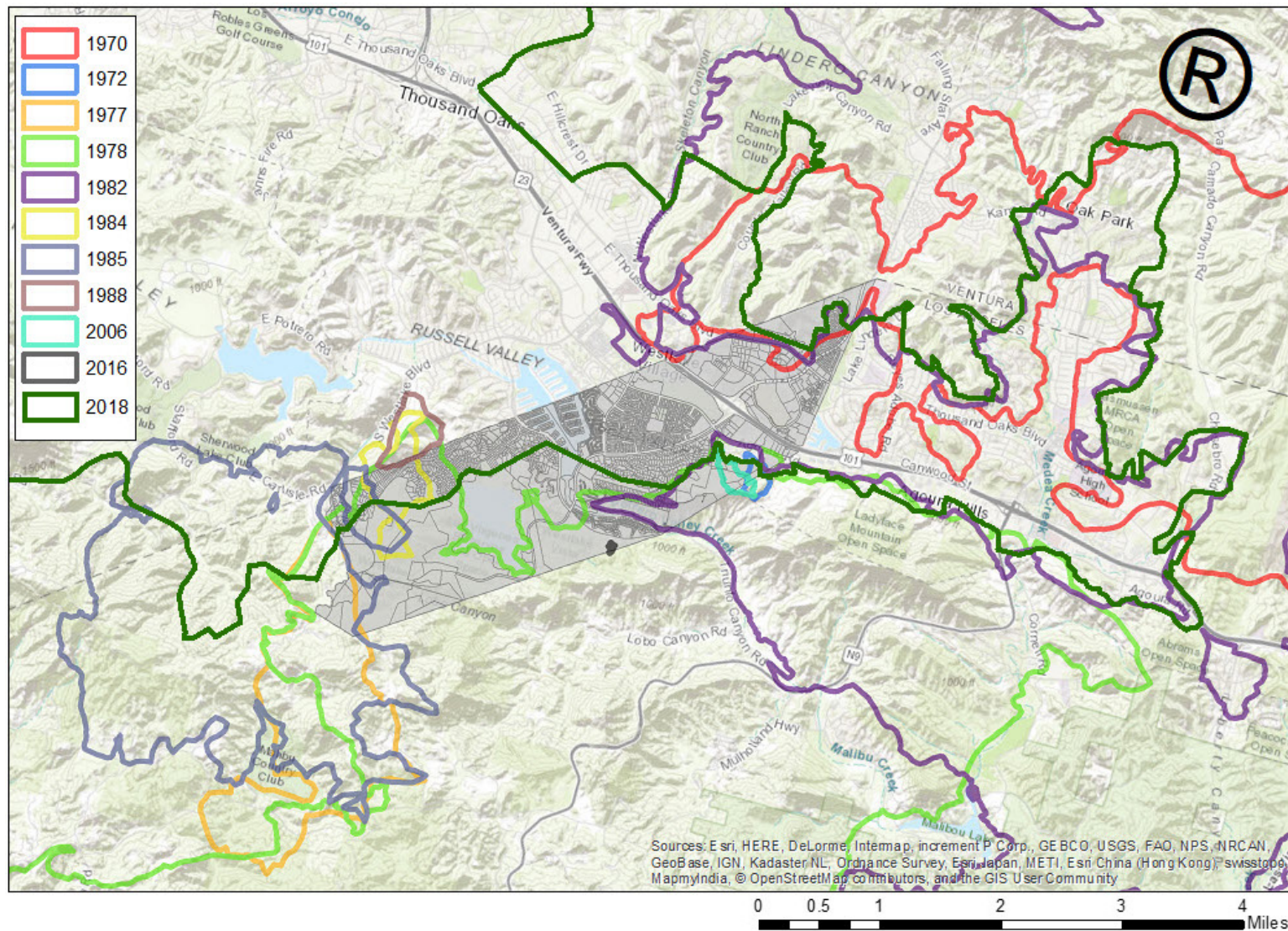


Figure 29. Historical Fire Data



2. GOALS, POLICIES, AND PROGRAMS

The following presents the goals, objectives, and policies for fire hazards in the City of Westlake Village. At the end of each policy is a listed "I-" and number in parentheses that refers to a corresponding implementation program.

Goal *It shall be the goal of the City of Westlake Village to:*

Protect the community from fire hazards to reduce potential fire damage and the loss of life.

Objective *It shall be the objective of the City of Westlake Village to:*

1 Reduce fire hazards in the community's built environment by incorporating sound fire prevention designs, materials and systems into new structures.

Policies *It shall be the policy of the City of Westlake Village to:*

1.1 Continue to require that all structures and facilities in the City adhere to City, State, and National regulatory standards such as the International Building and Fire Codes and other applicable fire safety standards (I-1).

1.2 Prohibit the use of wood shingle/shake roofs and require the use of fire retardant non-wood roofing materials (I-7).

1.3 Encourage the installation of smoke detectors in existing residences built prior to January 1, 1986 (I-2).

Objective *It shall be the objective of the City of Westlake Village to:*

2 Reduce the risk of property damage and human injury by incorporating fire safety designs into the planning of new private development and essential public facilities.

Policies *It shall be the policy of the City of Westlake Village to:*

2.1 Require adequate emergency access (i.e., two viable points of ingress and egress) for emergency vehicles and evacuation in the event of a fire (I-3).

2.2 Ensure that proposed development in hillside areas has been reviewed by the Fire Department for proper access and defensible spaces, in addition to the City's Hillside Development Standards (I-1, I-3, I-4, and I-5).

2.3 Ensure that all development within the City is adequately serviced by adequate fire protection services and infrastructure (I-1).

2.4 Continue to update the City’s Emergency Response Plan and adopt revisions to the Las Virgenes-Malibu Council of Government’s Hazard Mitigation Plan (I-1).

Objective It shall be the objective of the City of Westlake Village to:

3 Ensure that the risk of damage and injury from brush fires is significantly reduced.

Policies It shall be the policy of the City of Westlake Village to:

3.1 Require that developments located in wildland interface areas incorporate and maintain a fuel modification program, (i.e., brush clearance and the planting of slow burning and fire retardant vegetation) to reduce the threat of wildfires (I-5).

3.2 Ensure that high fuel brush vegetation in wildland areas is cleared/maintained as required to reduce the risk of brush fires (I-6).

3.3 Require all brush clearance/maintenance zones be located on the site they are intended to protect (I-8).

Objective It shall be the objective of the City of Westlake Village to:

4 Assist in the streamlining of reconstruction due to a large scale fire.

Policies It shall be the policy of the City of Westlake Village to:

4.1 Expedite plan check of reconstruction for structures lost or damaged due to a large scale fire (I-1 and I-4).

4.2 Ensure that reconstruction complies with the requirements for construction in Fire Zone 3 and the Very High Fire Hazard Severity Zone for fire safety (I-1, I-3, and I-5).

Implementation Programs

I-1 Cooperate with the Los Angeles County Building and Safety Department as well as the Fire Department to ensure all applicable fire codes and standards are enforced.

I-2 Investigate the feasibility of providing a City rebate program for residents who purchase new smoke detectors for their homes where smoke detectors are absent.

I-3 Utilize the City’s design review process to evaluate the fire safety aspects of proposed developments. Coordinate with the Los Angeles County Fire department to ensure adequate emergency access is being provided by all

proposed developments, and to require fire protection plans as needed for new proposed developments that receive discretionary review in VHFHSZs.

- I-4 Implement Section 9.17 (Hillside Development Standards) of the City's Municipal Code.
- I-5 Coordinate with the Los Angeles County Fire Department's Prevention Services to ensure that proper defensible space and an adequate fuel modification program are actively being implemented and enforced on any property within the Very High Fire Hazard Severity Zone (VHFHSZ).
- I-6 In the event of noncompliance, encourage the Los Angeles County Fire Department to enforce the required maintenance of high fuel areas, through notification and citation of violators.
- I-7 Review and revise, as needed, current building codes pertaining to fire retardant roof materials and construction techniques.
- I-8 Modify the hillside ordinance to require all brush clearance and maintenance zones be located on the site they are intended to protect.

D. CLIMATE CHANGE ADAPTATION AND RESILIENCE

1. CLIMATE CHANGE

The City of Westlake Village recognizes that climate change affects public safety and disaster management. According to “California’s Fourth Climate Change Assessment” developed by the State of California, continued climate change will have a severe impact on California. Increased temperatures, drought, wildfires, and sea level rise are several of the main concerns related to climate change in the Southwest. Other impacts anticipated from climate change include food insecurity, increases in vector-borne diseases, degradation of air quality, reduced ability to enjoy outdoors, and potential economic impacts due to uncertainty and changing conditions.

The County of Los Angeles is currently developing a countywide climate vulnerability assessment (CVA)—both for physical infrastructure and social vulnerabilities—that will provide more detailed information for this region than is found in the statewide assessment. The CVA will:

- Examine historic, current, and projected climate impacts to communities including extreme heat, wildfire, sea level rise, drought, and flooding.
- Gather data on physical infrastructure and social vulnerabilities.
- Analyze the potential cascading impacts between physical infrastructure and social vulnerabilities.
- Guide priorities for climate adaptation and resilience efforts, policies and programs.
- Inform public health preparedness, emergency preparedness, response planning, and community resiliency.

The assessment will identify equity implications, including how climate impacts and vulnerabilities are distributed across communities and sub-populations such as low-income rural neighborhoods, populations who are linguistically isolated, populations without housing, populations with limited mobility, and outdoor workers.

2. CLIMATE IMPACTS

The 2018 VMCHMP states that: “The consequences to local populations and employment of climate change and/or drought is difficult to measure. However, it is anticipated that severe heat will cause power outages, cause health problems, reduce economic output,

and lead to decreased worker productivity.” In terms of vulnerabilities, the plan states that the main climate change concerns involve the impact of:

- Excessive heat leading to:
 - Power outages
 - Heat-related health issues
- Drought and limited water supplies causing:
 - Reduced water availability to the local community and residents
 - Livestock (including horses) and domesticated animal losses
 - Damage to local natural habitats
- Sea level rise (City of Malibu only)
- Wildfire (see Wildfire section)

3. GOALS, POLICIES, AND PROGRAMS

The following presents the goals, objectives, and policies for Climate Adaptation and Resilience in the City of Westlake Village. At the end of each policy is a listed “I-” and number in parentheses that refers to a corresponding implementation program.

Goal D *It shall be the goal of the City of Westlake Village to:*

Effectively adapt to and increase the community’s resilience to climate change impacts.

Objective *It shall be the objective of the City of Westlake Village to:*

1 Reduce greenhouse gas emissions.

Policies *It shall be the policy of the City of Westlake Village to:*

1.1 Prioritize environmental stewardship and enhancement of environmental assets as a means to counteract the impacts of climate change (I-1).

1.2 Operate and maintain water quality improvement projects (I-1).

1.3 Participate in environmental outreach efforts to engage the public and build support for environmental initiatives (I-1).

1.4 Operate and maintain a multi-modal mobility system (see Chapter II, I 3.1-3.8).

1.5 Continue to implement the land use and multidisciplinary policies integrated throughout the General Plan as identified in **Table 14**.

1.6 Meet state requirements for the City’s share of greenhouse gas emissions (I-1; Chapter I – Community Development, I-8 and I-11; Chapter II – Air Quality, I-1 to I-10).

1.7 Align City and regional plans to the extent possible to help achieve reductions in greenhouse gas emissions (see Chapter I, I-11).

Objective *It shall be the objective of the City of Westlake Village to:*

2 Consider climate change impacts as a part of emergency response and preparedness plans

Policies *It shall be the policy of the City of Westlake Village to:*

2.1 Collaborate and coordinate with neighboring jurisdictions to maintain and regularly update the Multi-Jurisdiction Hazard Mitigation Plan as an integrated component of the General Plan, to continue to protect the community as local conditions change, and to maintain eligibility for grant funding (I-2 and I-4).

2.2 Ensure continued coordination with neighboring jurisdictions, county, state, and federal agencies on resource management, emergency management, and risk reduction planning and activities (I-2 and I-4).

2.3 Promote a culture of preparedness for City staff, businesses and residents that empowers them to increase their resilience to hazard related events and a changing climate (I-1 and I-5).

Objective *It shall be the objective of the City of Westlake Village to:*

3 Include measures to increase resiliency to climate change impacts as a part of land use and infrastructure planning activities.

Policies *It shall be the policy of the City of Westlake Village to:*

3.1 Incorporate best available data and understanding about the impacts of a changing climate into decision making (I-2 and I-4).

3.2 Build partnerships with public, private and nonprofit sectors to provide services to residents as needed, such as the provision of cooling centers and the fostering of community connections (I-1 and I-5).

3.3 Locate, when feasible, essential public facilities outside of at-risk areas, or identify construction methods or other methods to minimize damage if these facilities are located in at-risk areas (I-2, I-3 and I-6).

- 3.4 Continue to implement the land use planning and infrastructure policies identified in **Table 14** (I-2, I-3 and I-6).
- 3.5 Reduce the impacts of extreme heat on people and the electric grid through measures (I-1 and I-5) such as:
- Public and private partnerships to increase urban tree planting (SB 379).

Implementation Programs

- I-1 Continue to implement “Green City” environmental programs addressing solar systems, composting, water conservation, water quality, and additional City programs.
- I-2 Integrate the results and applicable adaptive policies of the County of Los Angeles Climate Vulnerability Assessment into other City planning and emergency preparedness documents where appropriate, as new information becomes available. Documents to review for periodic updates include the: Emergency Response Plan, Multi-Jurisdiction Hazard Mitigation Plan, Zoning Ordinance, and other applicable codes.
- I-3 Address climate resiliency through the planning and development process.
- I-4 Monitor, evaluate, and adjust plans and implementation strategies as needed as conditions change over time.
- I-5 If eligible, pursue grant and funding opportunities to provide financial assistance or reduced cost for energy retrofits or installation of other adaptation measures to help protect low-income, senior citizens, and other residents against extreme heat events.
- I-6 Where feasible, encourage the use of existing natural features and ecosystem processes, or the restoration of, when considering adaptation projects, hazard management, and climate resiliency.

E. NOISE

1. NOISE SOURCES

The sources of noise can be interior or exterior, and mobile or stationary. Interior noises are generally stationary and include all of those devices and machines in the home, office and factory that can create sounds loud enough to damage hearing, interfere with communication, or disturb sleep. Exterior noise can be mobile or stationary and is generated by motorized vehicles, construction work, industrial operations, human activities (shouting, playing radio too loudly) and other miscellaneous generators such as emergency vehicles, air conditioning units, and trash collection vehicles and containers. The primary concern of this section, however, is exterior noise that can be regulated through local government controls. Noise generated by vehicular traffic is the most significant noise source within the City and, therefore, is the emphasis of this section.

Vehicular traffic noise is generally attributed to buses, trucks, and construction equipment transport. However, as a group, these types of vehicles normally comprise only a small percentage of the total daily traffic flow. Because their noise is within the range generated by normal auto and truck traffic, it is generally assumed to be contained within the overall mix of cars and truck noise.

The three principal components of automobile and truck noise are the engine, exhaust, and tires. Fans operating as part of the cooling system are a major contribution to engine noise, hot gases escaping out of the tail pipe create exhaust noise, and the escape of air between tire treads and the road surface is the source of tire noise. Four major factors contribute to the noise level of vehicles: speed, acceleration, road grade, and road surface. Generally, vehicular noise levels increase directly with increases in those factors.

2. NOISE MEASUREMENT

Common noises experienced on a daily basis may range from a whisper to a passing locomotive train. The range of sound energy represented by these two events is so large that it cannot be represented mathematically without using numbers in the millions and billions. To avoid this inconvenience, sound levels have been compressed in a standard logarithmic scale called the decibel (dB) scale. The reference level for the scale, 0 dB, is not the absence of sound, but the weakest sound a person with very good hearing can detect in a quiet place. The most important feature of the decibel scale is its logarithmic

nature. An increase from 0 to 10 dB represents a tenfold increase in sound energy, but an increase to 20 dB represents a hundredfold increase, while an increase to 30 represents a thousandfold increase over 0 dB.

Another important characteristic of the decibel scale is that sound levels are not directly combined when added. For example, if one truck emits 65 dB while idling, parking another truck producing 65 dB next to it does not generate a total noise level of 130 dB. Rather, the total noise level would be 68 dB. The result is based on the logarithmic nature of the decibel scale. This is an important concept to remember when considering an area exposed to more than one source of noise.

The average range of sounds that humans are commonly exposed to generally falls between 30 and 100 dB (see **Table 15** for examples and human responses). However, not all sound waves affect us equally. The human ear is more sensitive to high-pitch sounds, such as a whistle, than it is to low-pitch sounds, such as a drumbeat. To account for this effect in noise measurements, it is necessary to use an electronic filter in sound level meters that acts as the equivalent of the human ear in filtering out some of the higher and lower frequencies of sound. This filter is called the A-scale weighting network, and is abbreviated by the A in the notation dB(A).

Table 15. Sound Levels and Human Response

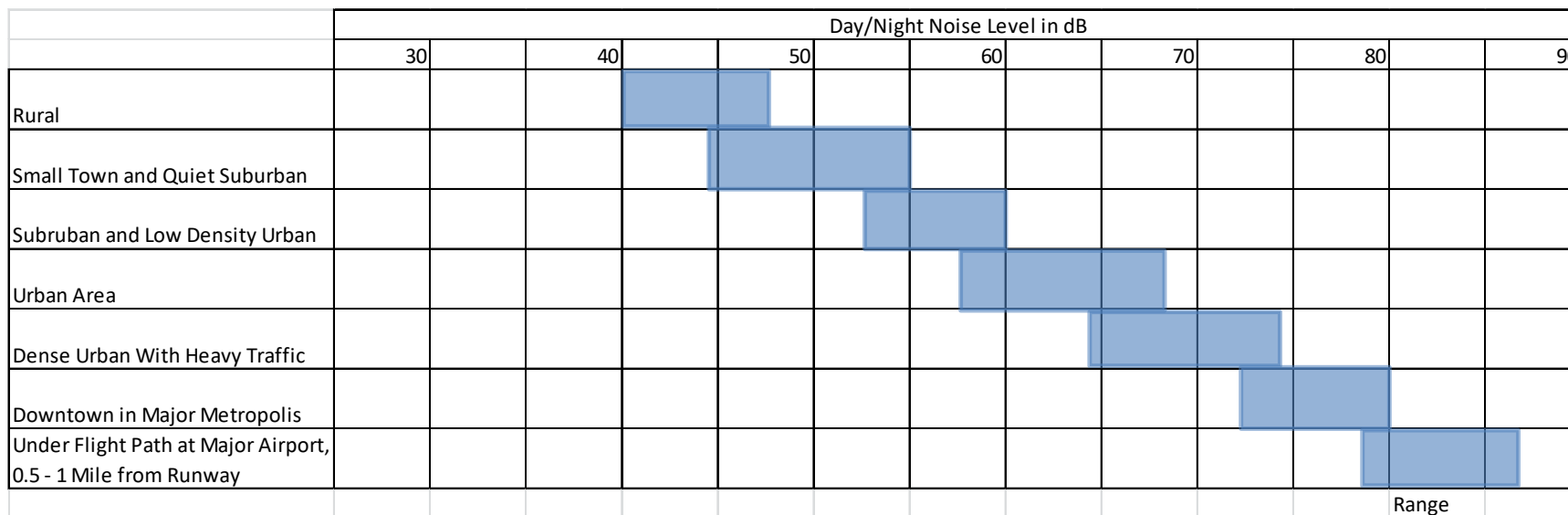
Sound Level dB(A)	Example	Human Response	Relative Loudness (approx.)
0		Threshold of hearing	1
10		Just audible	2
20	Broadcasting Studio		4
30	Whisper	Very Quiet	8
40	Library	Quiet	16
50	Light auto traffic at 100'		32
60	Conversation		64
70	Freeway traffic at 50'	Telephone use difficult	128
80	Alarm clock	Annoying	256
90	Heavy truck	Very annoying; hearing damage after 8 hours	512
100	Jet flyover at 1000'		1,024
110			2,048
120	Jet takeoff at 200'	Initial discomfort; maximum vocal effort	4,096
130			8,192
140		Initial pain threshold	16,384
150	Carrier deck jet operation		32,768

A-scale decibel measurements can be taken at any time in the community to record the sound levels of various noise sources. However, to develop an indicator of varying sound levels occurring over the 24-hour day, it is necessary to average the sound occurring at each moment throughout the day. The day-night noise level, or Ldn, is the result of this procedure, and gives a general, single-number index of noise exposure over an average 24-hour day. In computing the Ldn levels, it is also necessary to apply a weighting to noise that occurs at night to account for the greater sensitivity that people have to such noise. This system of calculating noise exposure has been recommended as the uniformly accepted index by the Environmental Protection Agency (EPA). Typical Ldn noise level ranges are indicated in **Figure 30**.

Quantitative estimates of noise exposure in the City are provided in tabular form and through contour maps. The noise contours are lines connecting points of equal sound intensity. Analysis of attenuation and reverberation due to small sideline features, such as buildings, is beyond the scope of this analysis, and would not be appropriate to noise evaluation at a city-wide level for general planning purposes. It should be remembered that the noise contours are general indicators of noise exposure and not precise levels. It should also be noted that the noise contours only represent noise generated by vehicular traffic. These contours do not account for interior noise or outdoor noise generated by construction work, individual persons, miscellaneous noises such as air conditioning units, or other stationary sources.

The preparation of a noise contour map (**Figure 32**) involves a certain amount of estimating and smoothing. For example, the contour lines at intersections of roads were rounded away from the intersections, indicating an increase in noise levels. Intersections are generally noisier than line sources because traffic volumes increase there. Additionally, many vehicles (e.g., trucks) create more noise under stop-and-go conditions than at steady speeds. The rounding of the contour lines represents this condition, but is not an exact estimate of the magnitude. Precise estimates should be made through site analysis.

Figure 30. Typical Land Use Noise Ranges



3. LAND USE COMPATIBILITY

The Office of Noise Control (California Department of Health Services) has established guidelines identifying community noise levels that are deemed to be generally acceptable. **Figure 31** depicts noise exposure levels that are considered compatible with various types of land uses. Where a land use is denoted as “normally acceptable” for the given Ldn noise environment, the highest noise level in that range should be considered the maximum desirable for conventional construction that does not incorporate any special acoustic treatment. The acceptability of noise environments classified as “conditionally acceptable” or “normally unacceptable” will depend on the anticipated amount of time that will normally be spent outside the structure and the acoustic treatment to be incorporated in the structure's design (see Section 5, Noise Control Measures, for description of specific noise attenuation measures).

With regard to residential uses, the recommended outdoor noise limits of 60 dB and 65 dB for single-family and multi-family residences, respectively, would permit achievement of the 45 dB interior noise level recommended by federal and state standards. This level would result from the noise reduction associated with typical residential construction, which ranges from 12 to 18 dB (with windows partially open).

4. EXISTING NOISE CONDITIONS

Existing noise levels within the City are shown on **Table 16** and graphically depicted by **Figure 32**. As previously mentioned, noise levels in the City of Westlake Village are primarily influenced by vehicular traffic along the major roadways traversing the City. The most prominent noise source is the Ventura Freeway (U.S. Highway 101), an eight-lane roadway that bisects the City in an east-west direction. The freeway currently carries an average daily traffic flow of 175,000 vehicles, an estimated 4.2% of which are trucks (Caltrans, 2015).

Figure 31. Land Use Compatibility with Noise





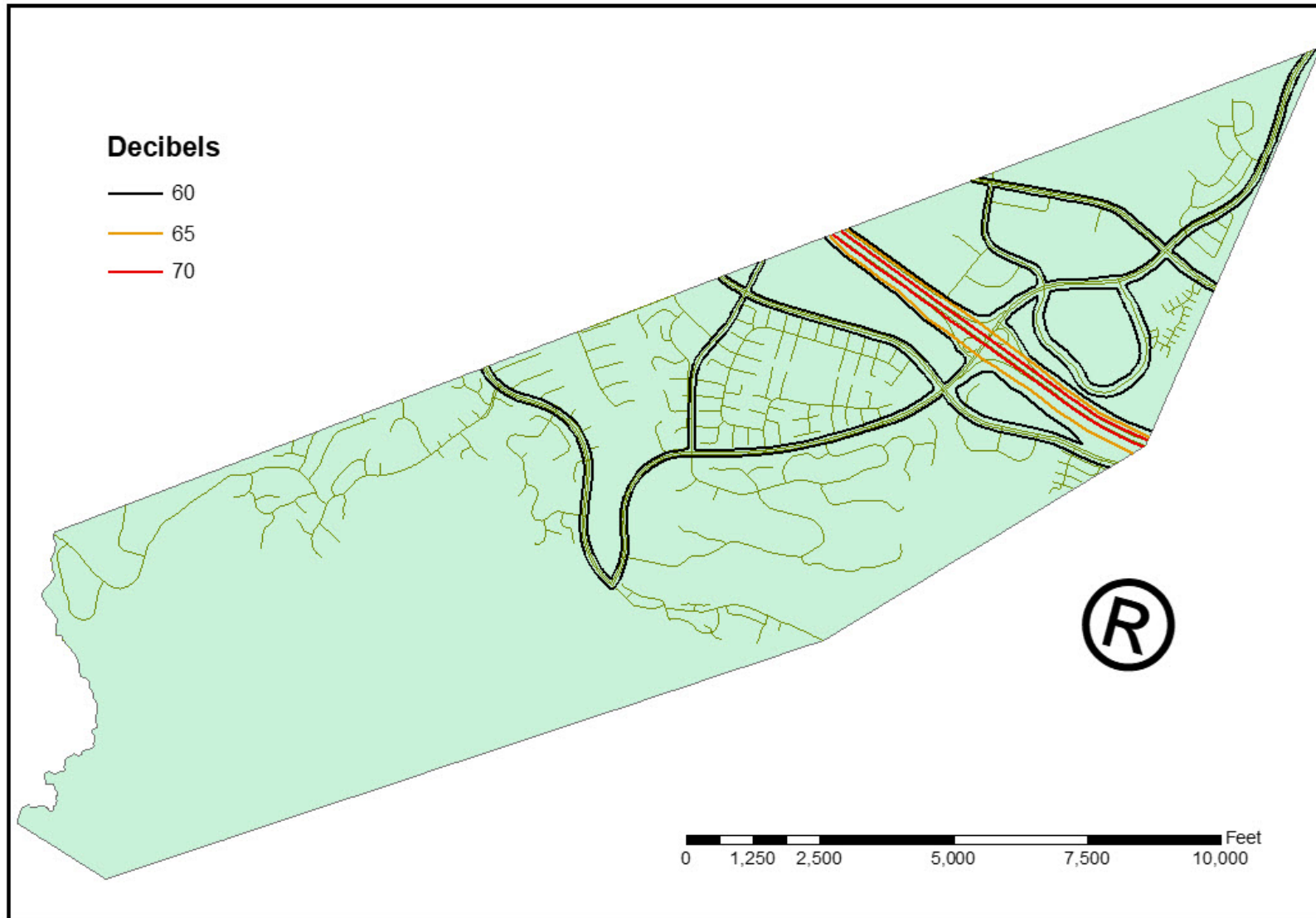
Land Use Category	Community Noise Exposure in Decibels						
	50	55	60	65	70	75	80
Residential - Low Density, Single Family, Duplex, Mobile Homes	Green	Yellow	Yellow	Yellow	Orange	Red	Red
Residential - Multi-family	Green	Green	Yellow	Yellow	Orange	Red	Red
Transient Lodging - Motels, Hotels	Green	Green	Yellow	Yellow	Orange	Orange	Red
Schools, Libraries, Churches, Hospitals, Nursing Homes	Green	Green	Yellow	Yellow	Orange	Orange	Red
Auditoriums, Concert Halls, Amphitheaters	Yellow	Yellow	Yellow	Yellow	Red	Red	Red
Sports Arena, Outdoor Spectator Sports	Yellow	Yellow	Yellow	Yellow	Yellow	Red	Red
Playgrounds, Neighborhood Parks	Green	Green	Green	Green	Orange	Orange	Red
Golf Courses, Riding Stables, Water Recreation, Cemeteries	Green	Green	Green	Green	Orange	Orange	Red
Office Buildings, Business Commercial, and Professional	Green	Green	Green	Yellow	Yellow	Orange	Orange
Industrial, Manufacturing, Utilities, Agriculture	Green	Green	Green	Green	Yellow	Yellow	Orange
 Normally Acceptable	 Normally Unacceptable						
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.	New Construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.						
 Conditionally Acceptable	 Clearly Unacceptable						
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.	New construction or development should generally not be undertaken.						

Table 16. Distances from Major Traffic Corridors to Existing Noise Level Contours

Location	Average Daily Traffic	Average Distance in Feet to Existing Noise Contour		
		60 dB(A)	65 dB(A)	70 dB(A)
U.S. 101 (Ventura Freeway)	175,000	510	330	200
Thousand Oaks Boulevard				
West of Lindero Canyon Road	14,800	158	50	
East of Lindero Canyon Road	16,500	158	50	
Via Colinas				
West of Via Rocas	7,500	158	50	
East of Via Rocas	13,200	158	50	
Lindero Canyon Road				
North of Hedgewall Drive	23,100	158	50	
Hedgewall Drive to Thousand Oaks Blvd.	23,800	158	50	
Thousand Oaks Blvd. to Via Colinas	32,500	158	50	
Via Colinas to 101 Freeway	47,200	158	50	
101 Freeway to Lakeview Canyon Road	11,300	158	50	
Lakeview Canyon Road to Triunfo Canyon Road	7,800	158	50	
Agoura Road				
West of Lindero Canyon Road	13,400	158	50	
East of Lindero Canyon Road	10,100	158	50	
Lakeview Canyon Road				
Agoura Road to Watergate Road	6,200	158	50	
Watergate Road to Lindero Canyon Road	4,100	86	47	
Triunfo Canyon Road				
West of Saddle Mountain Drive	5,800	158	50	
East of Saddle Mountain Drive	6,500	83	44	
Russell Ranch Road				
Northerly portion	1,800	158	50	
Southerly portion	4,100	158	50	

Figure 32. Existing Noise Contours



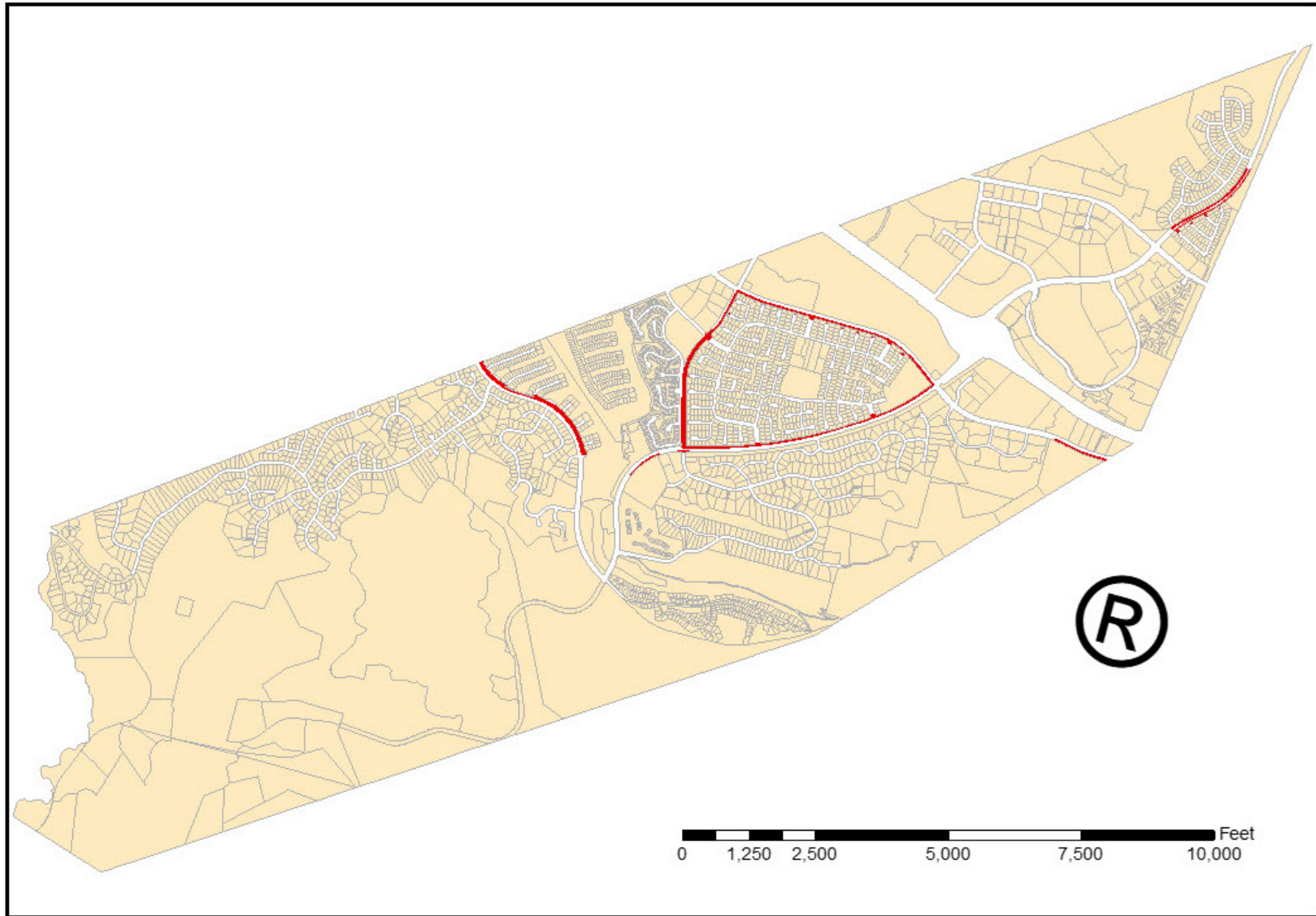
Based on a noise prediction model created by the Federal Highway Transportation Administration, existing (2015) traffic volumes along the Ventura Freeway corridor generate noise levels of approximately 75 dB(A) Ldn at 50 feet from the roadside, exclusive of topographical and/or structural noise attenuation. Given an uninterrupted line of sight and a noise reduction of 3.0 dB(A) per doubling of distance (characteristic of “line source” noise attenuation), the 60 and 65 dB(A) Ldn noise level contours would extend approximately 510 and 330 feet from the edge of the freeway, respectively. Actual distances to these contours along the freeway corridor vary depending upon roadside development and elevation.

Existing development along the Ventura Freeway corridor of the City include noise-tolerant industrial/commercial uses northwest and southeast of the Ventura Freeway/Lindero Canyon Road interchange, and the Westlake Golf Course located southwest of the Ventura Freeway/Lindero Canyon Road interchange. **Figure 31** indicates that the existing 60-75 dB(A) noise level range at the golf course is normally acceptable for this type of land use.

Secondary noise corridors include Lindero Canyon Road, Agoura Road and, to a lesser degree, Triunfo Canyon Road, Lakeview Canyon Road, Thousand Oaks Boulevard, and Russell Ranch Road. Residential uses located along Lindero Canyon Road, Agoura Road, Triunfo Canyon Road and Lakeview Canyon Road are exposed to noise levels exceeding 60.0 dB(A) Ldn, the normally acceptable level (**Figure 33**). However, the majority of these properties are provided with noise attenuation barriers (e.g., walls) that effectively lower first-floor noise levels below 60.0 dB(A) Ldn.

The only areas within the City that currently experience exterior noise levels exceeding 60.0 dB(A) Ldn are second stories of residential units within 50 feet of Lindero Canyon Road, Agoura Road, Triunfo Canyon, and Lakeview Canyon Road, and residential structures on the eastern end of Agoura Road (Colony Townhomes) that are within 50 feet of the roadway and are not provided with noise attenuation barriers.

Figure 33. Potential Noise Impact Areas



5. NOISE CONTROL MEASURES

Noise can be controlled at its source, along its transmission path, at the receiver, or through a combination of these measures. Federal and State regulations provide for certain controls on noise sources, such as motor vehicles. The City has adopted additional provisions that restrict the generation of noise within the community. **Table 17** indicates some of the existing City limitations on noise produced by equipment operation, human activities, construction, loading operations, and refuse collection. The City's Planning Department has primary responsibility for the enforcement of these regulations.

a. Site Design

The most common methods of shielding the interior of a building from exterior noise sources are to orient structures away from the noise and to set buildings back from the noise source as far as possible. A long building or a row of buildings along a traffic corridor may be used to provide some reduction of noise to the side of the building away from the noise source and to areas beyond that row. A site's natural topography can also be exploited by placing buildings in low noise pockets, if they exist.

Limitations of project noise sources may include restrictions on activities permitted, equipment operation, and operating hours. The review of project designs can allow for the control of noise along its transmission path and at the receiver. Several methods of noise reduction in these areas are briefly discussed below.

b. Building Construction

The impacts of exterior noise levels on indoor living and working areas are reduced by normal building materials and construction techniques, even if the building has open windows. The actual amount of reduction depends on building construction features such as orientation, wall area, window area, open window area, and interior acoustic absorption. Approximate noise reduction values provided by a few typical building construction types are shown in **Table 18**.

Table 17. Existing City Noise Controls on Noise Sources

Exterior Noise - Operation of any source of sound prohibited which causes following exterior noise levels to be exceeded on any other property is prohibited:

Land Use of Receptor Property	Time Interval	Exterior Noise Level
Designated noise-sensitive area	Anytime	45 dB(A)
Residential	10:00 p.m. to 7:00 a.m.	45 dB(A)
	7:00 a.m. to 10:00 p.m.	50 dB(A)
Commercial	10:00 p.m. to 7:00 a.m.	55 dB(A)
	7:00 a.m. to 10:00 p.m.	60 dB(A)
Industrial	Anytime	70 dB(A)

Interior Noise for Multi-Family Residential - Operation or creation of any source of sound within a dwelling unit which causes noise level inside a neighboring receiving unit to exceed following limits is prohibited:

Time Interval	Interior Noise Level
10:00 p.m. to 7:00 a.m.	40 dB(A)
7:00 a.m. to 10:00 p.m.	45 dB(A)

Construction Noise - Operation of any tools or equipment used in construction, drilling, repair, alteration or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or anytime on Sundays or holidays is prohibited.

Mobile Equipment - Maximum noise levels for intermittent operation for less than 10 days:

Time Interval	Single-Family Residential	Multi-family Residential	Semi-Residential/Commercial	Commercial
Daily, except Sundays and legal holidays 7:00 a.m. to 7:00 p.m.	75 dB(A)	80 dB(A)	85 dB(A)	85 dB(A)
Daily, 7:00 p.m. to 7:00 a.m., and all day Sunday and legal holidays	60 dB(A)	64 dB(A)	70 dB(A)	85 dB(A)

Stationary Equipment - Maximum noise levels for repetitively schedule operation for 10 days or more:

Time Interval	Single-Family Residential	Multi-family Residential	Semi-Residential/Commercial
Daily, except Sundays and legal holidays 7:00 a.m. to 7:00 p.m.	60 dB(A)	65 dB(A)	70 dB(A)
Daily, 7:00 p.m. to 7:00 a.m., and all day Sunday and legal holidays	50 dB(A)	55 dB(A)	60 dB(A)

Loading and Unloading Operations - Loading, unloading, opening, closing or other handling of boxes, crates, containers, building materials, garbage cans or similar objects between 10:00 p.m. and 6:00 a.m. in such a manner as to cause a noise disturbance is prohibited.

Powered Model Vehicles - Operation of powered model vehicles so as to create a noise disturbance across a residential boundary between 8:00 p.m. and 7:00 a.m. is prohibited.

Refuse Collection Vehicles - Collection of refuse with vehicle or operation of compacting mechanism between 10:00 p.m. and 6:00 a.m. in a residential zone or within 500 feet thereof is prohibited.

Residential Air Conditioning or Refrigeration Equipment - Operation of air conditioning or refrigeration equipment in such a manner as to exceed the following sound levels is prohibited:

Measurement Locations	Units Installed Before January 1, 1980	Units Installed on or After January 1, 1980
Any point on neighboring property line, 5 feet above grade level, no closer than 3 feet from any wall.	60 dB(A)	55 dB(A)
Center of neighborhood patio, 5 feet above grade level, no closer than 3 feet from any wall.	55 dB(A)	50 dB(A)
Outside the neighborhood living area window nearest the equipment location, not more than 3 feet from the window opening, but at least 3 feet from any other surface.	55 dB(A)	50 dB(A)

Vehicle or Motorboat Repairs and Testing - Repairing, rebuilding, modifying or testing any motor vehicle, motorcycle or motorboat in such a manner as to cause a noise disturbance across a real property boundary is prohibited.

Vibration - Operation of any device that creates vibration which is above the vibration perception threshold of any individual at or beyond the property boundary of the source if on private property, or at 150 feet (46 meters) from the source if on a public space or public right-of-way is prohibited.

Table 18. Noise Reduction Provided by Building and Window Types.

Building Type	Window Condition	Noise Reduction from Building
All	Open	10 dB(A)*
Light Frame	Ordinary sash – closed	20 dB(A)
Masonry	Single glazed – closed	25 dB(A)
	Double glazed - closed	35 dB(A)

*Approximate noise reduction of exterior wall with various window areas.

% of Exterior Wall Having Open Window	Approximate Noise Reduction
1%	17 dB(A)
2%	14 dB(A)
4%	11 dB(A)
8%	8 dB(A)
16%	5 dB(A)
32%	2 dB(A)
50%	1 dB(A)

Noise-reducing construction techniques include:

- a. Increasing the mass and stiffness of the wall. Doubling the thickness of a partition can result in as much as a 6 dB reduction in sound; the relative stiffness of the wall material can influence its sound attenuation value.
- b. Using cavity partitions in walls. The use of two or more layers separated by an airspace makes a more effective sound insulator than a single wall of equal weight.
- c. Increasing the width of the airspace. Increasing the width of an airspace from 3 to 6 inches can reduce noise levels by 5 dB.
- d. Increasing the spacing between studs. In a single-stud wall, 24-inch stud spacing gives a 2 to 5 dB increase in noise reduction over the common 16-inch spacing.
- e. Adding acoustical blankets. Made from sound-absorbing materials such as mineral or rock wool, fiberglass, hair felt, or wood fibers, acoustical blankets can attenuate noise as much as 10 dB.

Windows are one of the weakest parts of a wall in terms of noise attenuation. The following techniques can be used to reduce noise entering a structure via its windows:

- a. Closing windows. Open windows, even if only slightly open for ventilation, will lower the sound-reducing properties of a building facade to only 10 to 15 dB no matter what kind of window and wall system is used. The greatest amount of sound insulation can be achieved if windows are permanently sealed. Whether or not windows are permanently sealed, however, keeping windows closed necessitates the installation of an air conditioning system, which may also provide some masking of noise.
- b. Reducing window size. The smaller the windows, the greater the transmission loss of the total partition of which the window is a part. However, this technique is not very effective in reducing noise, as reducing the proportion of window to wall size from 50% to 20% only reduces noise by 3 dB.
- c. Increasing glass thickness. Increasing the thickness of glass from 3/16 inch to 1/2 inch provides an additional 10 dB noise reduction.
- d. Using double-glazed windows. The use of paired window panes separated by an airspace or hung in a special frame can provide greater noise attenuation than the use of thicker glass as described above and can cost less. The performance of double-glazed windows can be enhanced through increased airspace width, increased glass thickness, proper use of sealings, slightly dissimilar thickness of the panes and slightly nonparallel panes.

Other noise-reduction measures related to the design of buildings include the limitation of residential structures exposed to noise to one story in height. Coupled with a barrier, the use of one-story structures can result in acceptable noise levels, both exterior and interior, under adverse noise conditions.

c. Barriers

A noise barrier is an obstacle placed between a noise source and a receiver that interrupts the path of the noise. Walls are the most common noise barrier used, although earth berms, hills, cuts, embankments, or other types of natural or constructed solid structure may serve as barriers. A barrier can be expected to reduce noise by 5 to 10 dB(A); the actual amount of attenuation is dependent on whether it intercepts by a substantial amount the “line-of-sight” between the ear level of the observer and the effective source of the noise, and how solid its composition is. To be most effective, a barrier must be long and continuous to prevent sounds from passing around the ends. It must also be solid, with few, if any, holes, cracks or openings.

d. Landscaping

Shrubs and trees have aesthetic and psychological value as visual barriers of such noise sources as traffic corridors, but provide negligible attenuation of sound. Effective belts of trees for useful noise control (approximately 5 dB(A) attenuation) must be 50 feet tall or more and 75 to 100 feet wide in a long, continuous strip, must have dense foliage down to ground level, and must be evergreen so that the protection is effective year-round. This type of stand takes 20 years to grow and is usually extravagant in terms of site space required.

Most of the above strategies deal primarily with reducing future noise problems rather than existing ones. Where a noise problem already exists, one or more of five general solutions are available: (1) the noise can be reduced at the sources, (2) the noise can be checked by a barrier, (3) the source can be removed from people and other receivers, (4) the receiver can be removed from the source, or (5) the time exposure to the noise can be minimized. As is true with most environmental hazards, early efforts to prevent or reduce adverse noise impacts are easier and less expensive than resolving existing problems.

6. GOALS, POLICIES, AND PROGRAMS

The following presents the goals, objectives, and policies for Noise in the City of Westlake Village. At the end of each policy is a listed "I-" and number in parentheses that refers to a corresponding implementation program.

Goal *It shall be the goal of the City of Westlake Village to:*

Protect Westlake Village residents, employees, and visitors from the adverse impacts of excessive noise created by stationary (intrusive) and overall (ambient) noise sources.

Noise Ordinances, Regulations and Guidelines

Objective *It shall be the objective of the City of Westlake Village to:*

- 1 Enforce appropriate local noise ordinances, regulations and guidelines to effectively control overall (ambient) and stationary (intrusive) noise sources.

Policy *It shall be the policy of the City of Westlake Village to:*

- 1.1 Ensure that local noise ordinances, regulations, and guidelines are appropriate for their intended purpose, are consistent with existing technical standards, and are legally adequate and enforceable (I-1).

Noise Monitoring and Information Updating

Objective *It shall be the objective of the City of Westlake Village to:*

- 2 Maintain base line information regarding the overall (ambient) and stationary source (intrusive) related noise environment of the community on an ongoing basis.

Policies *It shall be the policy of the City of Westlake Village to:*

- 2.1 Monitor and update available data regarding the community's existing and projected overall (ambient) and stationary (intrusive) noise levels as necessary (I-1 and I-2).
- 2.2 Employ technological or mechanical advances in overall and stationary source noise impact mitigation, as they are available and where appropriate (I-1).

Overall (Ambient) Noise Impacts

Objective *It shall be the objective of the City of Westlake Village to:*

- 3 Prevent and mitigate the adverse impacts of excessive noise exposure on the residents, employees, and visitors of the community.

Policies *It shall be the policy of the City of Westlake Village to:*

- 3.1 Require noise sensitive land uses (e.g., residents, hospitals, schools) in areas exposed to existing or projected noise levels exceeding an Ldn of 60 dB(A) exterior, to incorporate effective mitigation measures to reduce interior noise to no more than 45 dB(A) (I-2 and I-3).
- 3.2 Implement requirements under Title 24 of the California Building Energy Efficiency Standards to ensure that interior noise levels attributable to exterior sources shall not exceed an Ldn of 45 dB(A) in any habitable room within new hotels, long-term care facilities, apartment houses, and dwellings other than detached single-family units (I-3).
- 3.3 Require adequate sound insulation of single-family homes in areas potentially exposed to overall (ambient) noise levels exceeding an Ldn of 60 dB(A) (I-3).
- 3.4 Prohibit the development of new industrial, commercial, or related land uses or the expansion of existing land uses when it can be demonstrated that such new or expanded land uses would directly and unavoidably cause overall (ambient) noise levels to exceed an Ldn of 65 dB(A) exterior upon areas containing housing, schools, health care facilities, or other “noise sensitive” land uses (I-4).
- 3.5 Require that loading and shipping facilities of commercial and industrial land uses be located and designed in a manner to minimize the potential noise impacts upon adjoining residential areas to the greatest degree practicable (I-5).
- 3.6 Require that all parking areas for commercial and industrial land uses abutting residential areas be buffered and shielded by landscaped walls, fences, or other effective noise barriers (I-5).
- 3.7 Control high-noise generating commercial/industrial equipment and activities to reduce the potentially adverse noise impacts of such equipment upon adjacent residential uses (I-6).
- 3.8 Encourage “noise sensitive” land uses, including school, libraries, health care facilities, and residential uses, to incorporate landscaped fences, walls,

and/or other noise buffers and barriers, where appropriate and feasible to do so (I-5).

- 3.9 Require an acoustical analyses for any new or expanded land use determined by the City of Westlake Village to be a potential major stationary noise source. Recommended mitigation measures shall be implemented and tested, prior to the issuance of a Certificate of Occupancy for said land use (I-7).

Traffic-Related Noise Impacts

Objective It shall be the objective of the City of Westlake Village to:

- 4 Minimize the adverse impacts of traffic-generated noise on residential and other “noise sensitive” uses.

Policies It shall be the policy of the City of Westlake Village to:

- 4.1 Require that all new non-residential development incorporate on-site ingress and egress points designed to divert traffic (and its resultant noise) away from “noise sensitive” land uses to the greatest degree practicable, consistent with applicable safety and planning considerations (I-5).
- 4.2 Discourage the intrusion of commercial and industrial traffic onto local residential streets (I-10).

Implementation Programs

- I-1 The City of Westlake Village shall continue to enforce an appropriate and legally adequate local Noise Ordinance to comply with the State’s noise insulation standards. Said ordinance shall contain policies and regulations addressing both overall (ambient) and stationary source (intrusive) noise impacts.
- I-2 The City of Westlake Village shall record changes that occur in the community’s noise environment by reviewing available technical and acoustical data and studies that have been conducted for proposed projects. The existing local noise map shall be updated as new information about the noise environment changes or becomes available to ensure the highest possible level of accuracy in planning for land use compatibility and the mitigation of noise impacts.
- I-3 Utilize the development and environmental review process to ensure that noise impacts, including street noise and traffic noise impacts, are adequately addressed, sufficiently mitigated and that adverse conditions

will not result (in accordance with the California insulation standards of the State Building Code, and the policies set forth in the Noise Element of the General Plan).

- I-4 A noise impact evaluation will be required for all projects as part of the local planning and environmental review process to determine if unacceptable noise levels will be created or experienced. Should noise abatement be necessary, a required technical report containing a detailed evaluation of existing and/or projected noise impacts and effective mitigation measures shall be submitted.
- I-5 During the local planning, development and environmental review process ensure that development is designed in a fashion which would minimize potential noise impacts throughout the community. This shall include consideration of the following:
- a) Proximity of noise sensitive land uses;
 - b) Ingress and egress points of non-residential uses.
 - c) Adequate mitigation for ambient and intrusive noise impacts.
- I-6 Continue to enforce City Noise Ordinance provisions regulating and limiting high noise-generating equipment, construction activities, and the hours of truck deliveries to commercial or industrial land uses abutting residential areas, to reduce their potential impacts upon local residential land uses.
- I-7 Based on the results of the local Initial Study and Environmental Checklist process completed by the City of Westlake Village Planning Department, all new development provisions to be potential major stationary noise sources, shall be accompanied by a specific acoustical analysis to identify and analyze potential noise impacts and effective mitigation measures.
- I-8 Ensure through development review that commercial and industrial street patterns are designed not to impact adjacent residential or noise sensitive uses.