6 Environmental Hazards

The Environmental Hazards Element incorporates two of the mandatory elements of the General Plan—Safety and Noise. The primary goal of this element is to minimize future loss of life, injury, and property damage resulting from natural hazards. A secondary goal is to reduce exposure to hazardous materials, noise, vibration, and other dangers or nuisances associated with the built environment.

Emergency preparedness is an important part of hazard mitigation. However, the City has independent plans and programs for emergency response that are outside the scope of the General Plan. The focus in this chapter is on prevention and mitigation. By integrating hazards into land use decisions, Piedmont can reduce the risk of catastrophic damage when disaster strikes. Accordingly, this element includes policies to limit development on unstable slopes, seismically retrofit schools and older structures, maintain "defensible" space around homes on fire-prone hillsides, provide roads that are adequate for emergency vehicles, and ensure that the city's water supply is adequate for fire-fighting.

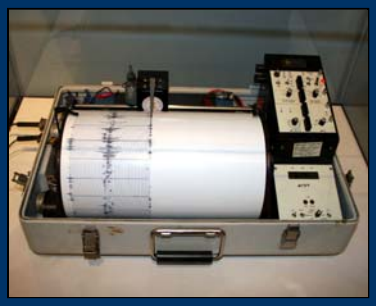
The State Government Code (Section 65302(g)) identifies the specific hazards that must be addressed by the general plan. These include seismically-induced surface rupture, ground failure, tsunamis and seiches, dam failure, slope instability, subsidence, and liquefaction. The Government Code also requires general plans to address evacuation routes, peakload water supply requirements, minimum road widths, and clearances around structures. All of these topics are covered in this chapter.

The Environmental Hazards Element also includes a proactive set of policies to address noise issues in Piedmont. Piedmont residents value their peace and quiet, and enjoy a relatively calm environment considering the city's location in the center of a major metropolitan area. Policies in this chapter strive to maintain that environment and mitigate activities and land uses that generate noise.

Goals, policies, and actions in this element address the following major topics:

- Geologic hazards
- Wildfire and flooding hazards
- Hazardous materials management
- Emergency preparedness
- Noise control

Measuring Earthquakes



Earthquakes are measured in terms of their magnitude and intensity.

Magnitude refers to the duration of the shaking and the size of the area affected. It is typically measured with the *Richter Scale*, a logarithmic scale which indicates the amount of energy released by the earth's movement.

Intensity refers to the degree of ground shaking. While each earthquake has only one magnitude, intensity varies with location. Intensity on any given site depends on many factors, including the site's distance from the fault, the fault's orientation to the site, and local soil and groundwater conditions.

GEOLOGIC HAZARDS

Piedmont's Geology

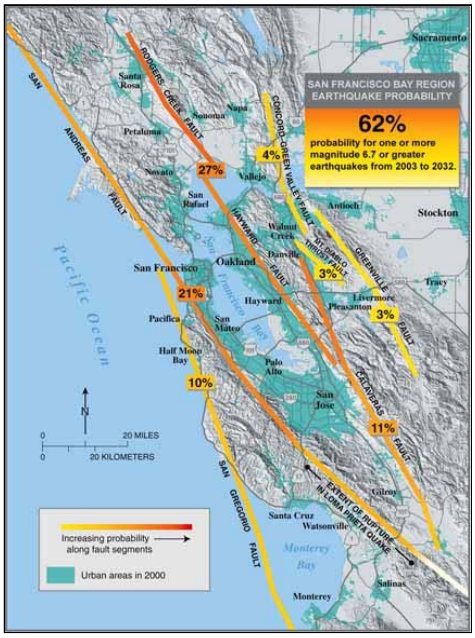
Piedmont is located in a geologically active part of the world. The region's geology is dominated by the intersection of the Pacific and North American tectonic plates, two components of the earth's crust that are moving in opposite directions. Large earthquake faults have developed in response to the stress between the plates. When enough strain builds up along a fault line, the plates slip and an earthquake occurs.

In the Central Bay Area, most earthquakes are associated with the San Andreas, Calaveras, and Hayward Faults. The San Andreas Fault traverses San Mateo County, about 15 miles west of Piedmont. The Calaveras Fault lies on the edge of the Diablo Range, about 15 miles to the east. The main trace of the Hayward Fault runs about 0.25 miles east of Piedmont, along an alignment that roughly parallels State Highway 13. The Fault extends from Point Pinole more than 40 miles south to Milpitas.

The Hayward Fault presents the greatest threat to Piedmont, although a large earthquake on any of the region's faults could cause significant damage. The last catastrophic earthquake on the Hayward Fault occurred in 1868 and was estimated to be magnitude 7.0. Piedmont was rural at the time, but there was extensive damage in Berkeley, Oakland, San Leandro, and Hayward. The San Andreas Fault produced the devastating 1906 San Francisco earthquake (magnitude 8.0) and was associated with the 1989 Loma Prieta earthquake (magnitude 6.9-7.1). Earthquakes of Magnitude 5.0 or greater have occurred on the Calaveras Fault in 1984 (Morgan Hill) and 2007 (North San Jose).

Table 6.1 indicates the region's major faults and the earthquake probabilities for these faults. Overall, there is a 62 percent chance that the Bay Area will experience an earthquake of magnitude 6.7 or greater between 2003 and 2032. The probability for the Hayward Fault alone is 27 percent—the single highest risk among Bay Area faults.

Since 1972, the State of California has required that earthquake fault zones with a high potential for surface rupture be officially designated on USGS maps. These areas are known as "Special Study Zones" and are subject to geotechnical study requirements and development restrictions. The Special Studies Zone associated with the Hayward Fault extends about 300-400 feet on either side of the fault trace, which places its western boundary just east of the Piedmont city limits. There are no Special Study Zones within Piedmont.



The map above indicates the location of the Bay Area's major faults, as well as the probability of a major quake between 2003 and 2032.

Table 6.1: Magnitude 6.7 Earthquake Probabilities for the San Francisco Bay Area, 2003-2032

Source Fault	Probability of a 6.7 or Greater Quake	Maximum Credible Earthquake
San Francisco Bay Region	62%	--
San Andreas	21%	8.0
Hayward/ Rogers Creek	27%	7.5
Calaveras	11%	7.5
Concord/Green Valley	4%	6.75
San Gregorio	10%	7.5
Greenville	3%	7.25
Mount Diablo Thrust	3%	--
Background	14%	--

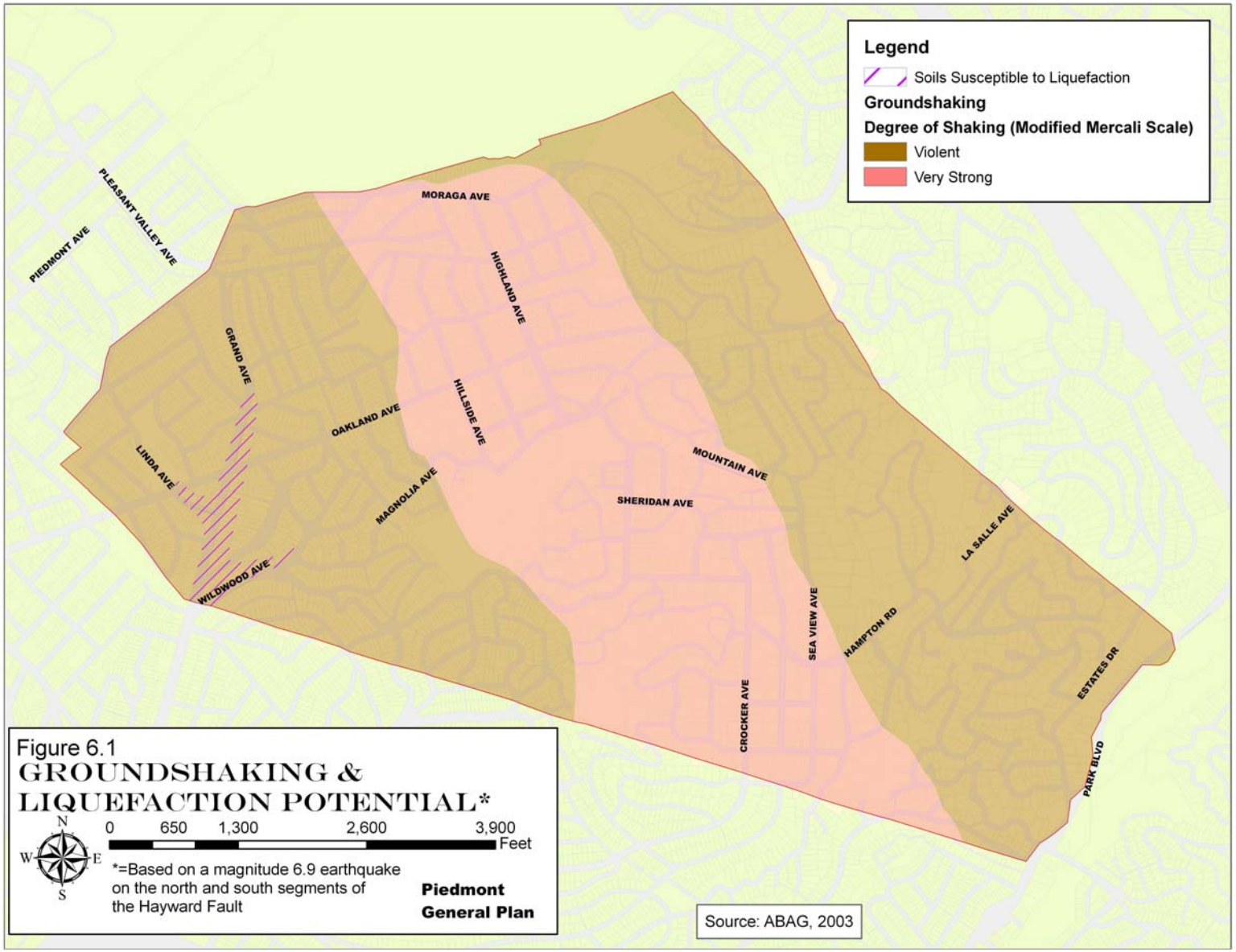
Source: 2002 Working Group on California Earthquake Probabilities

Earthquake Hazards in Piedmont

Earthquakes pose a substantial danger to property and human safety. Ground shaking is typically the greatest hazard and major cause of damage. The transmission of earthquake waves can cause buildings to collapse, streets to crack, and utility lines to rupture. Strong ground shaking can also cause damage due to falling objects such as bookcases or water heaters, chemical spills, and secondary effects such as fire or explosion.

On any given site, the degree of shaking tends depends on the magnitude of the earthquake, distance to the fault, property of the underlying soils, building design and construction, and building materials. Shaking tends to be strongest on filled soils and in areas where soil depth and moisture content are high.

Figure 6.1 shows projected ground shaking intensity in Piedmont in the event of a magnitude 6.9 earthquake on the Hayward Fault. Such a scenario would produce very strong to violent shaking in most of the city. Significant structural damage could occur, including failure of stucco and masonry walls, collapse of chimneys and tanks, unbolted houses moving off of their foundations, and cracks in wet ground and on steep slopes.


Legend
Soils Susceptible to Liquefaction
Groundshaking
Degree of Shaking (Modified Mercali Scale)
Violent
Very Strong
MORAGA AVE
PLEASANT VALLEY AVE
PIEDMONT AVE
HIGHLAND AVE
GRAND AVE
HILLSIDE AVE
OAKLAND AVE
LINDA AVE
MAGNOLIA AVE
MOUNTAIN AVE
SHERIDAN AVE
LA SALLE AVE
WILDWOOD AVE
SEA VIEW AVE
HAMPTON RD
ESTATES DR
CROCKER AVE
PARK BLVD
Figure 6.1
GROUNDSHAKING & LIQUEFACTION POTENTIAL*
N
W
E
S
0 650 1,300 2,600 3,900
Feet
*=Based on a magnitude 6.9 earthquake on the north and south segments of the Hayward Fault
Piedmont General Plan
Source: ABAG, 2003

A magnitude 6.9 earthquake on the Hayward Fault would produce very strong to violent shaking in most of the city. Significant structural damage could occur, including failure of stucco and masonry walls, collapse of chimneys and tanks, unbolted houses moving off of their foundations, and cracks in wet ground and on steep slopes.

ABAG has modeled the ground shaking impacts of earthquakes along other Bay Area faults, including the San Andreas and Calaveras. A 7.2 earthquake on the San Andreas Fault would produce moderate to strong ground shaking in Piedmont, and a 6.2 quake on the Calaveras Fault would produce light to moderate shaking. Both scenarios create a high probability for structural damage in the city.

Another earthquake related hazard is liquefaction. This is the conversion of water-saturated soils, especially landfill, from a solid state to a liquid state. Structures on liquefaction-prone soils can rotate and slowly sink during a major quake. Liquefaction hazard maps prepared by ABAG indicate only one high-risk area in Piedmont, located along an old streambed that runs beneath Grand Avenue.

A number of other earthquake hazards are present in the East Bay, although not in Piedmont itself. For example, surface rupture is a serious hazard in the Montclair District of Oakland, since it is bisected by the Hayward Fault. Differential settlement and lateral spreading are hazards along the Bay shoreline and in large areas of Oakland, Alameda, Berkeley, and Emeryville where tidal flats have been filled to accommodate development. Piedmont is also not vulnerable to tsunamis, as the city is located two miles from the shoreline at an elevation of over 25 feet.

Additional earthquake-related hazards, including landslides and dam failure, are addressed below and later in this chapter.

Landslide Hazards in Piedmont

Landslides are the rapid movement of soil, rock, or mud down a slope. They may be triggered by natural causes such as earthquakes and heavy rain, or man-made causes such as broken water mains, improperly constructed roads, and slopes that are undercut or overloaded during construction.

Landslides are relatively common in the East Bay Hills, especially during high-intensity, long duration winter rains. They generally occur along the sides of ravines where surface water and groundwater are concentrated, or on deep-seated bedrock and steep slopes with weak or shallow soils. When such soil becomes saturated with water, its weight increases and resistant forces are reduced. The risk of landslides increases where certain conditions are present, such as hillsides that have been denuded by fire.

There is no way to eliminate geologic hazards completely. However, the potential for damage can be substantially reduced through construction methods and materials.

The risk of landslides generally corresponds to slope, with the highest hazards in Moraga Canyon, along Indian Gulch, in Piedmont Park, in the Wildwood Gardens area, along Park Boulevard, and in the Somerset Road area along the Oakland border. Maps from the US Geological Survey illustrate the potential for mudslides (debris flows) in the city. The areas of greatest hazard are steep hillsides above the city's creeks.

Landslide hazards in the rest of the city are generally low. However, there is still the potential for slope instability resulting from improper construction and poor drainage. These hazards are somewhat greater in the eastern part of the city due to the steeper slopes and expansive clay soils.

Mitigating Geologic Hazards

There is no way to eliminate geologic hazards completely. However, the potential for damage can be substantially reduced through construction methods and materials. A majority of buildings in Piedmont are one- and two-story early to mid-20th century wood-frame houses. While such structures generally perform well in an earthquake, they pre-date the current seismic requirements of the Uniform Building Code. Certain types of construction, such as homes that are not bolted to their foundations or homes with living areas over crawl spaces without substantial lateral strength, are more vulnerable than others. Tall brick chimneys and unrestrained water heaters are also a source of potential damage.

Over the last 50 years, many Piedmont residences have been retrofitted with shear walls, cross-bracing, and foundation reinforcements. Structural hazards in the city are also somewhat reduced due to the stability of the soil, the absence of large multi-family buildings, the relatively small number of commercial buildings, and the limited number of structures where large numbers of people congregate. Piedmont does not have "tilt-up" structures, soft-story buildings (apartments with tuck-under parking), mid-rise or high-rise buildings, elevated tanks, or unreinforced masonry buildings.

All construction and rehabilitation projects in Piedmont must conform to building codes which take seismic forces into account. The Building Code assigns a seismic design category (SDC) to each type of structure based on its occupancy, soil profile, acceleration parameters, and other factors. The SDC affects the type of structure that may be developed on a given site, as well its design, height, and detail requirements.

Measure E

In March 2006, Piedmont voters approved a bond measure which authorized the Piedmont Unified School District to sell up to $56 million in general obligation bonds to seismically retrofit buildings on its five campuses.

The funds are being used to modernize and strengthen those pre-1990 school structures that have not yet been brought up to current standards. Although these structures met the seismic standards in place at the time of their construction, a geotechnical evaluation determined they could pose a threat to life and property in the event of a major quake on the Hayward Fault. One of the first major projects is the reconstruction of Havens Elementary School. Students are attending classes in temporary portables while the new school is constructed.

Piedmont also requires a soils report for development on sites with slopes exceeding 20 percent, and on any site—regardless of slope—for a new residence. The Municipal Code also includes subdivision regulations that require soil and geologic reports with any application for a tentative subdivision map. The Code includes requirements for grading, drainage, and erosion control to reduce the risk of landslides and slope failure.

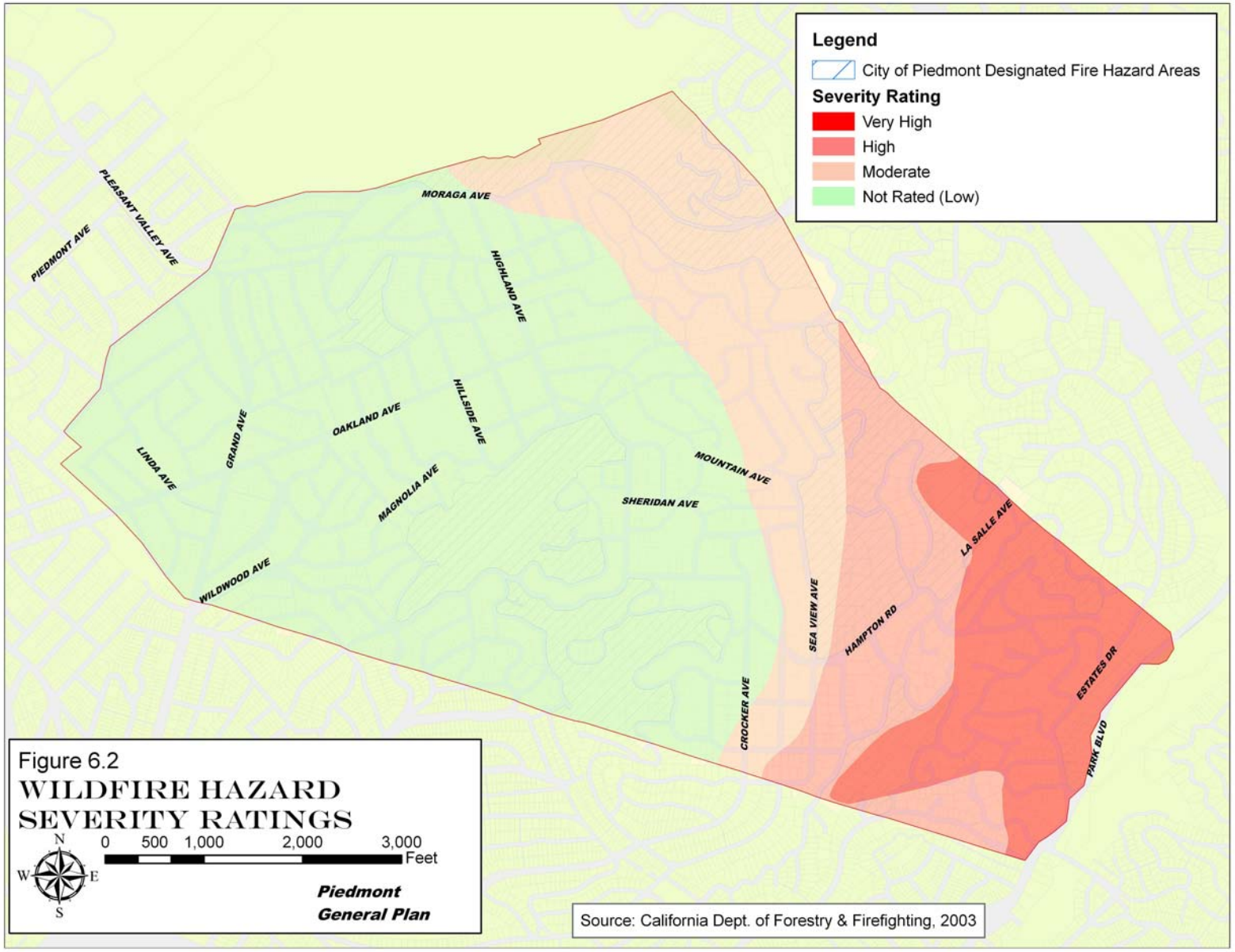
Piedmont is also working proactively to reduce seismic hazards in public assembly places, especially schools (see text box at left). The City is also coordinating with EBMUD and PG&E to retrofit water, sewer, and gas lines to minimize the service disruption that could occur after an earthquake. EBMUD is upgrading its entire East Bay water storage and conveyance system, improving post-earthquake fire fighting capacity, and ensuring the reliability of the drinking water supply. For its part, the City of Piedmont is exploring undergrounding of electric lines, in part to reduce hazards and outages from falling utility lines and power poles. The City's sewer replacement program also will help reduce the risk of failure during a major earthquake.

WILDFIRE

Wildfire is part of California's natural ecology. However, its danger and cost have increased as fire-prone areas across the state have been developed. Homes have been built on steep scrub-covered hillsides throughout the East Bay hills, creating an interface between urban uses and open space that has increased the risk of fire. Over the years, fire suppression and invasive plants have contributed to fuel build-up and increased the risk of more catastrophic fire events.

Parts of Piedmont have the same landscape character as the area burned in the devastating 1991 Oakland Hills Fire. The 1991 Fire destroyed more than 3,000 homes in Oakland and Berkeley, caused 23 deaths, burned 2,000 acres, and resulted in $3 billion in property damage. Although there were no casualties or damage in Piedmont, the fire stopped at the city limits.

Figure 6-2 illustrates wildfire severity in Piedmont based on data provided by the California Department of Forestry and Fire Prevention. The highest hazards are in the eastern half of the city, generally corresponding to the areas of hilliest terrain, densest vegetation, and lowest density.


Legend
City of Piedmont Designated Fire Hazard Areas
Severity Rating
Very High
High
Moderate
Not Rated (Low)
MORAGA AVE
PIEDMONT AVE
PLEASANT VALLEY AVE
HIGHLAND AVE
HILLSIDE AVE
OAKLAND AVE
GRAND AVE
LINDA AVE
MAGNOLIA AVE
WILDWOOD AVE
SHERIDAN AVE
MOUNTAIN AVE
CROCKER AVE
SEA VIEW AVE
HAMPTON RD
LA SALLE AVE
ESTATES DR
PARK BLVD
Figure 6.2
WILDFIRE HAZARD SEVERITY RATINGS
N
W
E
S
0 500 1,000 2,000 3,000
Feet
Piedmont General Plan
Source: California Dept. of Forestry & Firefighting, 2003

Defensible Space

In the aftermath of the 1991 Oakland Hills Fire, Piedmont and surrounding communities have taken important steps to control the hazardous conditions that contribute to wildfire risk. Probably the most critical step is to maintain "defensible space" around each residence to reduce the risk of structure loss.

Piedmont property owners are required to keep weeds and grass to within two inches of the ground, keep vacant lots cleared of debris, remove dead branches from trees and shrubs, remove piles of trimmings and trash, and keep roofs free of fallen branches. Homeowners on steep hillside lots must maintain a 100-foot buffer around any structure free of dry grass, brush and dead leaves. The requirement is 30 feet in non-hillside settings.

Other measures to reduce hazards include requirements for noncombustible roofing, fire breaks, one-hour rated exterior walls, spark arresters on chimneys, sufficient clearance between structures, and firebreaks. Piedmont also requires fire sprinklers in new residential construction.

Vegetation Management

Fuel reduction and vegetation management are high priorities in Piedmont. The Piedmont Fire Department enforces weed abatement regulations as outlined in City Ordinance #505, Chapter 6.1. These regulations aim to reduce the loss of life and property by controlling fuels that could cause or support wildfire (see text box).

Piedmont also participates in the Alameda County Operational Area Emergency Management Organization, part of the standard emergency management system established after the Oakland Hills Fire. Its agreement with the organization ensures mutual aid assistance during emergencies, cooperative training and exercise, and sharing of resources. The city has Mutual Response Area (MRA) agreements with Oakland during the fire season. Piedmont also serves on an Operational Area Council that reviews and approves countywide disaster preparedness policies and programs.

Peakload Water Supply Requirements

Peakload water supply requirements refer to the water supply and pressure that would be needed to fight a major wildfire in the city. These requirements are met in almost all of Piedmont. The Requa Place / Wildwood Gardens area has been identified as having less than optimal water volume, and could be targeted for future improvements.

Minimum Road Widths

Roads must be sufficiently wide for emergency vehicles to reach the site of a fire or other emergency. Engineering standards in most California cities generally require at least 10-12 feet of lane width and two lanes in each direction on all streets (20-24 feet curb to curb). As noted in the Transportation Element, some of the city's roads do not meet these standards. Because widening such roads is not feasible in most instances, the City implements parking restrictions and other requirements to keep such roads passable. Piedmont also maintains overhead clearances to keep local streets free of low hanging branches and other obstructions.

Fire safety considerations have influenced the placement of fire hydrants, the prioritization of capital improvements, and the approval process for new homes. Applications for new homes are typically reviewed by the Piedmont Fire Department to ensure adequate access and water supply.

Flooding could potentially result from the failure of Tyson Lake dam or the collapse of East Bay Municipal Utility District reservoir tanks in the hills above Piedmont. The probability of dam or tank failure is extremely low. Nonetheless, a worst case scenario Hayward Fault earthquake could produce this scenario.

FLOODING

Stream Overflow and Storm-Related Flooding

Maps published by the Federal Emergency Management Agency (FEMA) indicate the extent of flooding in the event of a 100-year storm (e.g., the "100-year flood plain"). Such a storm is defined as having a one percent chance of occurring in any given year. The extent of flooding is determined based on engineering and hydrologic studies that consider the capacity of streams, the extent of paved surfaces within watersheds, constraints to water movement (such as narrow culverts), and other factors.

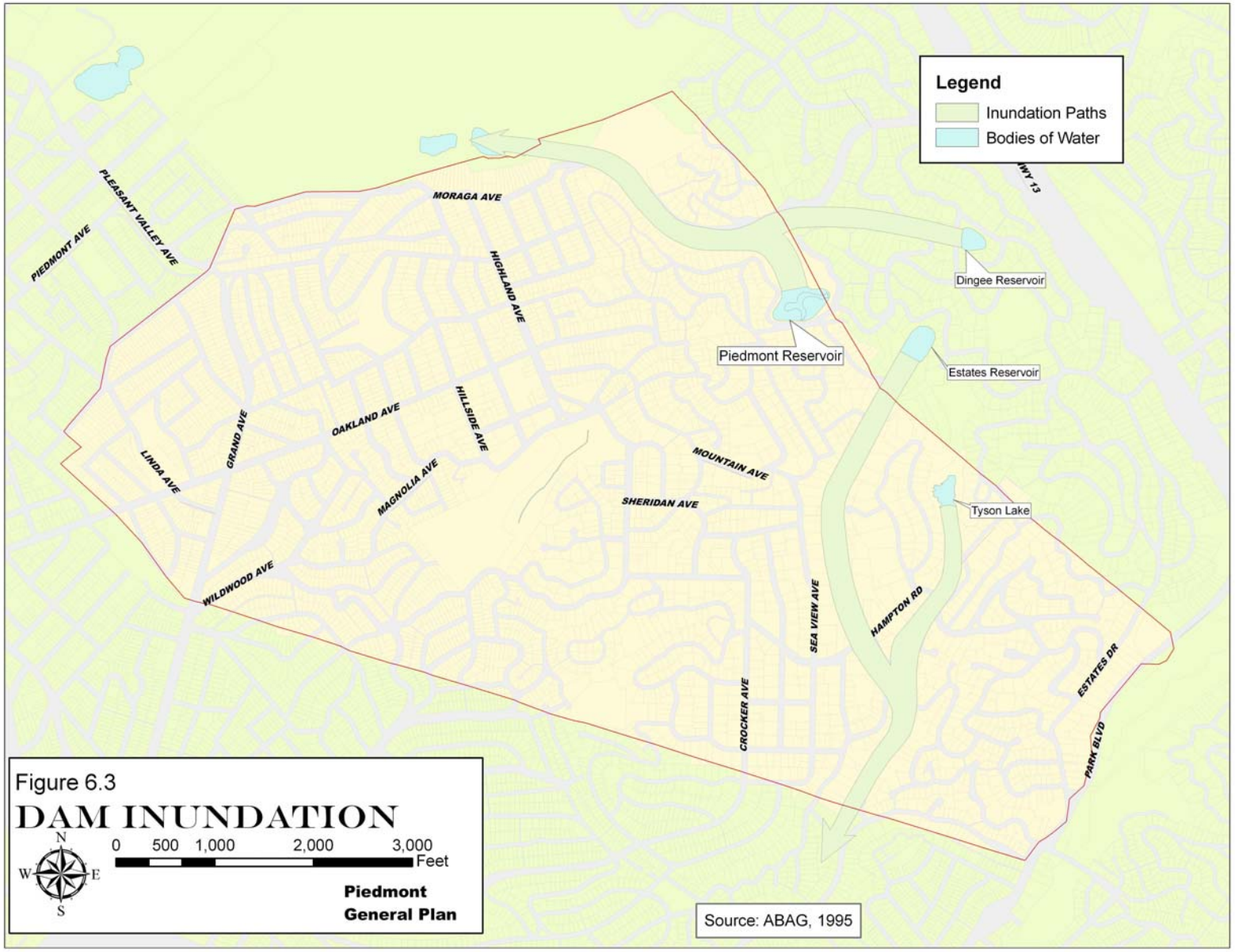
There are no FEMA-designated flood plains in Piedmont. The city's creeks carry relatively small volumes of runoff. Heavy rains may produce ponding around storm drains but these events are short in duration and do not typically cause property damage. The City adopted a flood plain ordinance in 2006, but its intent was to ensure continued eligibility for federal disaster relief funds rather than to address imminent flood hazards.

Dam Failure

Flooding could potentially result from the failure of Tyson Lake dam or the collapse of East Bay Municipal Utility District reservoir tanks in the hills above Piedmont. The probability of dam or tank failure is extremely low. Nonetheless, a worst case scenario Hayward Fault earthquake could produce this scenario. Dam inundation areas are shown in Figure 6-3.

Tyson Lake and its associated dam are below the size threshold requiring monitoring by the State Department of Water Resources Division of Dam Safety. The dam is periodically inspected on behalf of the Tyson Lake Homeowners Association. In the event of dam failure, water would cross Hampton Field Park and then follow LaSalle to Indian Gulch, potentially damaging homes in its path.

The probability of flooding from EBMUD tanks is greatly diminished by the fact that the Piedmont Reservoir (on Blair Avenue) is empty and the Dingee Reservoir is being decommissioned. Moreover, EBMUD Reservoir #1 on Estates Drive is planned for replacement with two reinforced concrete water tanks. In the event the Estates Reservoir (or the replacement tanks) collapsed, water would follow the streambed between Glen Alpine and Sea View, cross Hampton Road, and follow St. James to Indian Gulch. In the event the future Piedmont Reservoir tank collapsed, water would flow into Moraga Canyon.


Legend
Inundation Paths
Bodies of Water
MORAGA AVE
PIEDMONT AVE
PLEASANT VALLEY AVE
HIGHLAND AVE
HILLSIDE AVE
OAKLAND AVE
GRAND AVE
LINDA AVE
MAGNOLIA AVE
WILDWOOD AVE
MOUNTAIN AVE
SHERIDAN AVE
SEA VIEW AVE
HAMPTON RD
CROCKER AVE
ESTATES DR
PARK BLVD
HWY 13
Dingee Reservoir
Piedmont Reservoir
Estates Reservoir
Tyson Lake
Figure 6.3
DAM INUNDATION
N
W
E
S
0 500 1,000 2,000 3,000
Feet
Piedmont
General Plan
Source: ABAG, 1995

HAZARDOUS MATERIALS

Hazardous materials include substances that are flammable, corrosive, explosive, radioactive, infectious, thermally unstable, and poisonous. Although such substances are typically associated with industrial land uses, they may also be found at gas stations, dry cleaners, medical offices, public buildings, and many retail and office uses. Hazardous materials are also used in most households, and include cleaning solvents, paint, motor oil, pesticides, plastics, and common household chemicals. Common building materials and appliances may also contain substances such as asbestos, lead, and mercury. Naturally occurring hazards such as mold also may be an issue in some structures.

The storage, handling, transport, and disposal of hazardous materials can create health and safety issues. All Piedmont firefighters receive “first responder” training to respond to spills and accidents. The Fire Department also implements state and federal programs aimed at reducing exposure to hazardous materials.

More recently, the disposal of electronic waste such as computers, televisions, and fluorescent lamps has become a concern. The City of Piedmont implements programs to reduce these hazards, including e-waste collection, battery recycling, and stormwater controls. Household hazardous waste disposal centers have been established in Oakland and Hayward. Information on the location and hours of operation of these centers has been provided to each Piedmont household.

The State Department of Toxic Substances Control (DTSC) maintains data bases indicating permitted hazardous material sites in California, as well as clean-up sites and other sites where corrective actions have occurred. No clean-up sites have been identified in Piedmont. DTSC also maintains inventories of leaking underground fuel tanks. Two sites are noted in Piedmont, both associated with gas stations. Groundwater quality at these sites is monitored on an ongoing basis.

The City maintains five large emergency supply containers, sells 32-gallon household disaster kits with essential supplies, and operates a Community Emergency Response Training (CERT) program to help residents plan for disasters and disaster recovery.

EMERGENCY PREPAREDNESS

Piedmont's emergency preparedness program is coordinated through the Police, Fire, and Public Works Departments, in conjunction with the City Clerk and City Administrator. Chapter 5 of the Municipal Code establishes provisions for disasters and emergencies, including the creation of a Disaster Council comprised of the Mayor, Vice-Mayor, City Administrator, emergency service providers, and other individuals who may be appointed by the Council. The Mayor is designated as the Director of Emergency Services. The Disaster Council is responsible for developing the city's emergency operations plan (see text box, facing page).

The City maintains five large emergency supply containers, sells 32-gallon household disaster kits with essential supplies, and operates a Community Emergency Response Training (CERT) program to help residents plan for disasters and disaster recovery. Piedmont has prepared an emergency preparedness video in cooperation with KCOM, mailed emergency preparedness brochures to Piedmont residents, and trained Fire Department personnel to provide CERT training for residents. The City also conducts periodic drills and training exercises, holds annual "disaster days," and participates in multi-jurisdictional and multi-agency exercises. The training covers not only earthquake and fire response, but also acts of terrorism and other types of disasters.

Piedmont residents may also participate in emergency preparedness sponsored by the City of Oakland, including CORE (Citizens of Oakland Respond to Emergencies) training programs. CORE includes training in disaster response, light rescue, shelter management, first aid, neighborhood organization, communication, and personal readiness.

Evacuation Routes

There are no formally designated evacuation routes in Piedmont. In the event of an emergency, the evacuation routes are designated by the Police Chief and the Public Works Director based on the nature of the emergency and the direction or movement of the threat. Evacuation would generally use arterial streets such as Grand Avenue, Moraga Avenue, Oakland Avenue, and Park Boulevard.

Piedmont's Emergency Preparedness Plan

Piedmont firefighters respond to a hazmat spill

Piedmont's emergency plan is formally known as the Multi-hazard Functional Plan (MHFP). It deals with both wartime emergencies and peacetime emergencies, such as earthquakes, fires, floods, dam failure, major accidents, hazardous material spills, storms, epidemics, critical pollution, and civil disturbances.

The purpose of the Plan is to:

- Provide a basis for the conduct and coordination of operations and the management of critical resources during emergencies;
- Make widely known the authority, responsibilities, functions, and operations of civil government during emergencies;
- Provide a means of incorporating into the City's emergency organization any non-governmental agencies and organizations having the resources necessary to meet unforeseen needs; and
- Establish emergency disaster containers with medical supplies, shelter, water, food, rescue, and communications equipment.

The MHFP becomes operative if there is a state of war, a proclamation of a state of emergency by the Governor, or an order of the Mayor, Council, or City Administrator.

One of the objectives of the MHFP is to maintain a system of emergency supply containers. These are located at Beach, Wildwood, and Havens schools, at Hampton Field, and at the Corporation Yard. The city undertakes preventative container maintenance and periodic replacement of contents to ensure that supplies are kept in functional condition. A back-up amateur radio system has been placed in the container at Havens School and an organization of amateur radio enthusiasts has been formed to operate the system in the event of an emergency.

NOISE

Noise is an environmental hazard with the potential to substantially impact human health and well-being. It can interfere with sleep, disrupt communication and relaxation, and even have harmful physical effects such as hearing loss. In a relatively quiet residential city like Piedmont, even small increases in noise may be perceptible. It is therefore important to maintain standards which retain the city's peaceful environment and mitigate potential noise sources.

Noise Sources

The primary source of noise in Piedmont is vehicular traffic. The noise level at any given location depends on a number of factors, including topography and proximity to major arterial or collector streets. Ambient noise in the western half of the city tends to be higher than the eastern half, given the greater density, proximity to the I-580 freeway, presence of schools and other non-residential uses, and less extensive tree cover.

Given the quiet character of the city, domestic noise sources are a greater concern in Piedmont than they are might be in other cities. Noise from sporting events at local parks and school playgrounds, leaf blowers and gardening equipment, private parties, and construction is a concern in some neighborhoods. Noise from air conditioning units, pool and spa filter systems, exhaust systems, air compressors, wireless equipment cabinets, pumps, and other mechanical equipment also may be an issue. Such noise sources are regulated by the Piedmont Municipal Code and the Building Code. Acoustical studies may be required when new sources of noise are introduced.

Section 12.8 of the City Code declares that loud, unnecessary, and unusual noise is a nuisance and is unlawful. The criteria for determining whether a nuisance exists considers includes the ambient noise level, the sound level of the objectionable noise, the intensity of the noise, whether the noise is continuous or intermittent, the duration and tonal content of the noise, the proximity of the noise to sleeping facilities, the zoning of the area, and the nature of the source. The Code specifically prohibits construction noise between 6:00 PM to 8:00 AM seven days a week, extending an extra hour (to 9:00 AM) on Sunday mornings. In addition, Chapter 5 of the City Code requires machinery that generates perceptible noise to include mitigating equipment which reduces the sound at the edge of the property to no more than 50 decibels.

Measuring Noise



Three factors must be taken into consideration when measuring noise:

(a) the magnitude of the sound
(b) the frequency of the sound
(c) the variation in sound level over time.

Sound is typically measured using decibels (dB). Decibels are measured on a logarithmic scale, which means that each increase of 10 dB is equivalent to a doubling in loudness. The measurements are usually taken on an "A-weighted" scale that filters out very low and very high frequencies.

Noise levels are usually expressed with an indication of the duration of the measurement period. For longer periods, the measurement reflects the average noise level over the period. This accounts for the variations in sound levels that occur during the day. For instance a fire truck with blaring sirens may produce a sustained noise level of 90 dB during the 15 seconds it passes by. The average noise level for an hour at this location would be much lower, since this noise level is not sustained the entire time. A single measure called the equivalent sound level or L_{eq} is used to describe average noise over a specified time period.

Noise measurements also make adjustments to reflect the greater sensitivity of people to night-time noise. The term Community Noise Equivalent Level (CNEL) is used to describe the average noise level during a 24-hour period, with a penalty of 5 dB added to sound levels between 7 and 10 PM, and a penalty of 10 dB added to sound levels between 10 PM and 7 AM. The term Day-Night Average Level (L_{dn}) is similar but only includes the 10 dB penalty for 10 PM – 7 AM noise.

The term "ambient noise" is used to describe the composite noise from all sources near and far—in other words, the characteristic noise environment at a given location. The US Environmental Protection Agency suggests an ambient exterior noise goal of 55 dB L_{dn} in residential areas. The US Department of Housing and Urban Development's minimum exterior standard is 65 dB L_{dn}. Most local governments use 60 dB L_{dn} as the limit for exterior noise exposure in residential areas. This corresponds to the state requirement that all new housing with noise levels exceeding this limit be insulated.

In general, increases in noise of less than 3 dB L_{dn} are not perceptible. A 5 dB increase can trigger a noticeable change is sometimes used as threshold to identify a "significant" noise impact under the California Environmental Quality Act.

How Loud Was That?

Source	Sound in decibels
Civil Defense Siren from 100 feet away	130
Jet takeoff from 200 feet away	120
Jackhammer from 50 feet away	110
Pile driver or Rock concert	100
Ambulance siren from 100 feet away	90
Pneumatic drill at 50 feet away Power mower from 3 feet away Garbage disposal	80
Freeway from 100 feet away	70
Vacuum cleaner from 10 feet away	60
Washing machine Light traffic from 100 feet away	50
Typical living room	40
Quiet bedroom Whisper	30
Recording Studio	20
Threshold of Hearing	10
	0

Source: Illingworth and Rodkin, 2007

Noise Levels in Piedmont

Table 6-2 shows short-term and long-term noise measurements at seven locations in Piedmont in June 2007 (see text box on the previous page for an explanation of how noise is measured). Figure 6-4 indicates noise contours in Piedmont. The contour lines follow the highest volume traffic arteries in narrow bands. Contours in the range of 65 dBA L_{dn} run along Grand, Moraga, and Highland Avenues and along Park Boulevard. Contours in the range of 60 dBA L_{dn} run along Oakland and Linda Avenues. An area with ambient noise levels in the vicinity of 60 dBA L_{dn} exists around the Piedmont Civic Center.

Elsewhere in Piedmont, ambient noise levels are generally below 60 dBA L_{dn} and in most cases below 50 dBA L_{dn}. Noise levels diminish fairly dramatically away from major streets. This is due to both the normal reduction in noise level with distance from the source, and the absorption of noise by homes and trees adjacent to these streets. The hilly terrain and wooded character of the city provide additional noise shielding.

Noise levels vary with time of day, which is to be expected given the influence of traffic and other noise-producing activities. For example, on Moraga Avenue, noise levels are 66 dB L_{eq} during the afternoon rush hour, but drop to 49 dB L_{eq} in the middle of the night. Noise levels are highest on Grand Avenue, running as high as 76 dB L_{eq} during the morning and evening rush hours and dropping to 60 dB L_{eq} at 2 AM. By contrast, the noise monitor placed on Trestle Glen Drive recorded daytime levels of about 55-60 dB L_{eq} and nighttime levels of 40-45 dB L_{eq}.

Table 6-3 compares the noise measurements taken in June 2007 with those taken in June 1994 at the same locations. In general, the 2007 data show less variation than the 1994 data. Noise levels in 2007 were lower at the Oakland Avenue, Highland Avenue, Magnolia Avenue, and Linda Avenue locations, and higher at the Grand Avenue and Trestle Glen locations. The most significant increase was on Grand Avenue, which saw a 6 dBA rise between 1994 and 2007.

Major changes in the noise environment are not anticipated during the timeframe of this General Plan. The contours shown in Figure 6-4 are expected to remain constant and should be representative of noise conditions in the Plan's horizon year of 2025. A very slight increase in noise could occur along Grand Avenue, Moraga Avenue, and Park Boulevard as traffic volumes increase. At the same time, technological changes (such as alternative fuel vehicles and quieter buses) may offset such increases.

Table 6.2: Summary of Short-Term Noise Measurements and Estimated L_{dn}, 2007

Location and Time	Measured Noise Levels, dBA					Primary Noise Source (distance from centerline)
	L_{10}	L_{50}	L_{90}	L_{eq}	L_{dn}	
ST-A: Oakland Ave between Monte Vista and Olive 3:40-3:50 PM	63	58	48	60	**60**	Oakland Avenue (55 feet)
ST-B: Moraga Ave between Ramona and Monticello, 2:40-2:50 PM	69	61	49	65	**66**	Moraga Avenue (50 feet)
ST-C: Highland Ave between Moraga and Park Way, 2:00-2:10 PM	66	59	46	62	**63**	Highland Avenue (23 feet)
ST-D: Magnolia Ave between Bonita and Hillside, 2:20 and 2:30 PM	58	53	49	55	**60**	Magnolia Avenue (26 feet)
ST-E: Grand Ave between Cambridge and Oakland, 3:00-3:10 PM	67	60	51	63	**64**	Grand Avenue (35 feet)
ST-F: Linda Ave between Kingston and Lake, 3:30-3:30 PM	64	53	46	60	**60**	Linda Avenue (23 feet)
ST-G: Trestle Glen between Park Blvd and Cavanaugh, 12:40-12:50 PM	56	43	37	53	**60**	Trestle Glen Road (20 feet)

Source: Illingworth and Rodkin, based on data collected on June 7, 2007

Table 6.3: Comparison of Ldn Levels in 1994 and 2007

Location	L_{dn} (dBA)	
	1994	***2007***
Oakland Avenue near Olive	63	60
Moraga Avenue near Ramona	66	66
Highland Avenue near Moraga	69	65
Magnolia Avenue near Hillside	62	60
Grand Avenue near Oakland	71	77
Linda Avenue near Kingston	65	62
Trestle Glen Road near Park	56	62

Source: Illingworth and Rodkin, 2007; Charles Salter Associates, 1994

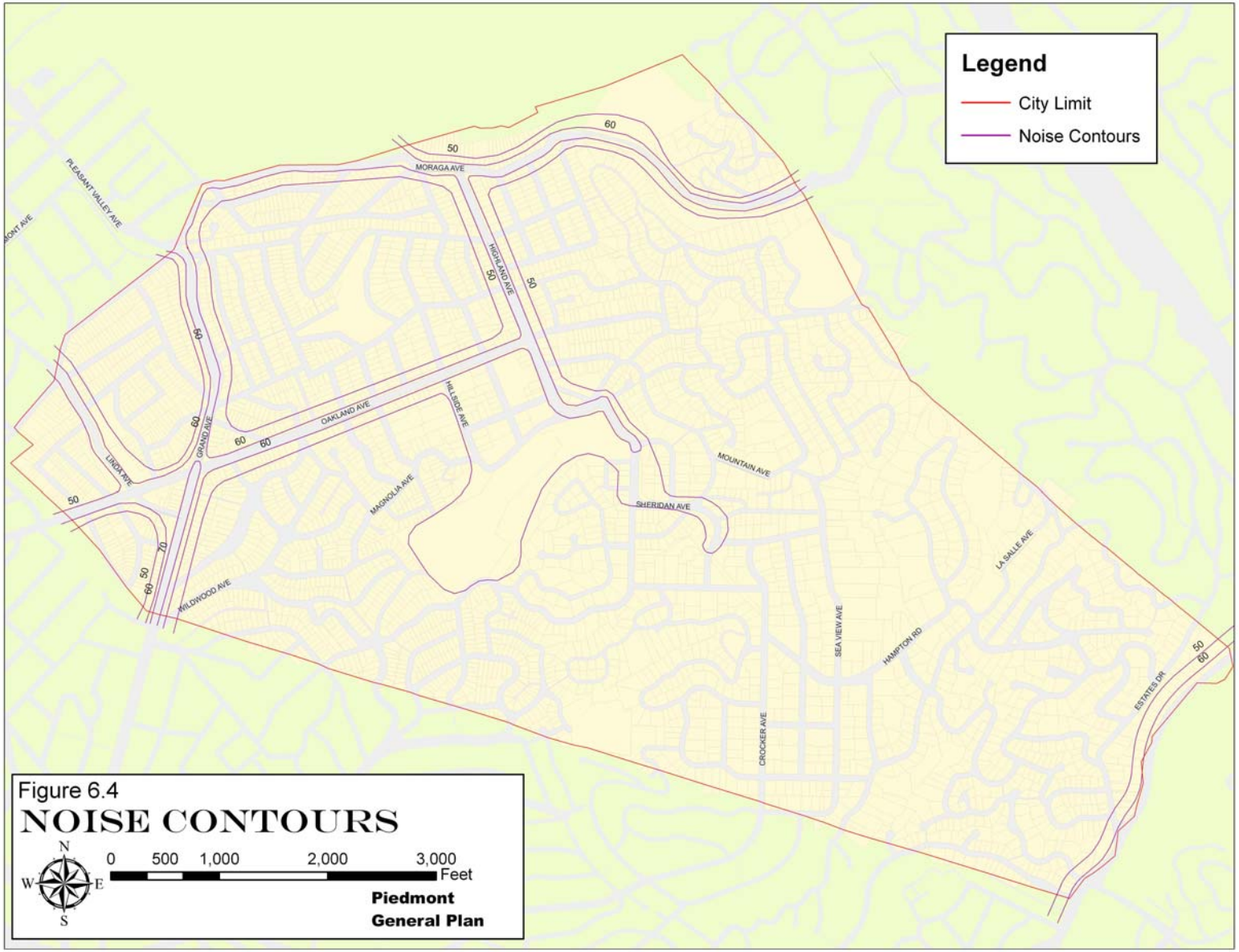


Figure 6.4
NOISE CONTOURS

Evaluating Noise Compatibility

The conventional way to determine noise compatibility is with three standards: *normally acceptable*, *conditionally acceptable*, and *normally unacceptable*. These are shown in Table 6.4 and are described below:

- **Normally acceptable** levels are those which would pose no threat to the specified use. Standard construction would reduce external noise so that the interior noise levels would not disrupt activities.
- **Conditionally acceptable** noise levels are those in which standard building construction would not be adequate to protect the use. Mitigation measures such as noise barriers, site design, or acoustical insulation could be employed to achieve acceptable sound levels.
- **Normally unacceptable** levels are those for which simple mitigation measures are not adequate. The specified land uses would not be appropriate in these areas without major noise attenuation measures.

Noise Compatibility Guidelines

Some land uses are considered to be more sensitive to noise impacts than others. According to the state General Plan Guidelines, these uses include hospitals, convalescent homes, schools, churches, sensitive wildlife habitat, and residential areas. Using this definition, virtually all of Piedmont would be considered "noise sensitive." Based on the city's current and expected future land use mix, particular care should be taken to address potential noise impacts from future commercial or mixed use development, park improvements, and school reconstruction. Additionally, existing high noise volumes along Grand Avenue suggest that special acoustical insulation may be needed for future development along this particular roadway.

Table 6.4 presents noise compatibility standards for different land uses in Piedmont. These standards are adapted from the state General Plan Guidelines. The table indicates the exterior noise levels that should be considered normally acceptable, conditionally acceptable, and normally unacceptable for each of the major land uses found in the city. Where exterior noise levels fall in the "conditionally acceptable" range, noise studies will typically be required before development is approved. Approval may be conditioned on mitigation measures which reduce interior noise to the standards in this table. This could include sound walls, tree planting, and other noise reduction measures on the part of the project sponsor.

Table 6.4: Recommended Maximum Noise Levels, dB (L_{dn})

Land Use	Interior	Exterior		
		Normally Acceptable	Conditionally Acceptable	Normally Unacceptable
Low Density Residential	45	<60	60-70	>70
Medium Density Residential	45	<65	65-70	>70
Office	55	<65	65-75	>75
Retail	60	<65	65-75	>75
Schools/ Churches	45	<60	60-70	>70
Parks and Playgrounds	--	<67	67-75	>75

Source: State of California General Plan Guidelines, 2003. Barry Miller, AICP 2008

One of the most effective ways to reduce noise is to control it at the source. Examples of noise source controls include Piedmont's ban on private gas-powered leaf blowers, its building code standards for outdoor mechanical equipment, and its designation of certain streets as truck routes.

Mitigating Future Noise Impacts

Although Piedmont will remain a quiet community in the future, localized changes in noise levels will occur as homes are remodeled and expanded, new homes are built, and school and park facilities are constructed. Mitigation of noise impacts will sometimes be necessary. This can be accomplished by reducing noise at the source, modifying the path between noise source and noise receiver, and adjusting noise receivers

Noise Source Controls

One of the most effective ways to reduce noise is to control it at the source. Examples of source controls include Piedmont's ban on private gas-powered leaf blowers, its building code standards for outdoor mechanical equipment, and its designation of certain streets as truck routes. Other examples include federal regulations for quieter aircraft and motor vehicle mufflers, and the use of quieter buses by AC Transit. The City will continue to implement noise source controls by regulating hours of play on athletic fields, regulating the hours of construction, and enforcing the Piedmont noise ordinance.

Noise Path Controls

The path that noise travels between its source and receiver provides an opportunity for reduction in volume. Typical noise barriers include sound walls, fences, berms, or dense plantings of shrubs and trees. Because Piedmont does not have freeways or high-volume arterials, sound walls have been unnecessary in the city. Landscaping and fences are used on private properties to absorb noise and provide buffering, effectively reducing sound and providing privacy in many locations.

Noise Receiver Controls

Adjusting the noise receiver is typically done through building design, and construction. Standard construction reduces noise levels from outside to inside by 10 to 20 dB. Additional reduction can be achieved through site planning—for example, by setting a building back from the street, placing mechanical equipment away from sleeping areas, and limiting the use of decks that face onto noisy streets. Noise levels can be substantially reduced by increasing wall mass and thickness, adding acoustical blankets, sealing cracks and edges, increasing glass thickness or using double glazed windows, using solid core doors instead of hollow doors, and through interior finishes such as carpeting, drapes, and acoustical ceiling tiles.

GOALS, POLICIES, AND ACTIONS

Goal 18: Geologic Hazards

Minimize the loss of life, personal injury, and property damage resulting from earthquakes, landslides, unstable soils, and other geologic hazards.

Policies and Actions

Policy 18.1: Restricting Development on Unstable Sites
Permit development only in those areas where potential danger to the health, safety, and welfare of Piedmont residents can be adequately mitigated.

Policy 18.2: Seismic Design Standards
Maintain and enforce seismic design and construction standards which meet or exceed the standards established by the Building Code. Piedmont's Municipal Code should be periodically reviewed, updated, and amended to incorporate the most current knowledge and highest standards of seismic safety.

Policy 18.3: Infrastructure Reliability
Maintain road and infrastructure design standards which address geologic conditions in Piedmont, including the potential for earthquakes and landslides. Infrastructure should be retroffited where necessary to improve reliability during and after an earthquake.

Policy 18.4: Soil and Geologic Reports
Require site-specific soils reports and geologic studies in instances where development may be exposed to substantial geologic or seismic hazards, including ground shaking and landslides. Ensure that any identified hazards are appropriately mitigated.

Policy 18.5: Seismic Upgrades
Encourage the upgrading and reinforcement of homes, businesses, schools, and other public buildings to protect against future damage, injury, and loss of life in the event of a major earthquake. The City will encourage the mitigation of seismic deficiencies through bolting of structures to their foundations, lateral bracing of cripple walls, bracing of water heaters and potential falling objects, and similar measures. Structural hazards in public buildings should be mitigated based on the severity of risk and the type of occupancy.

Policy 18.6: Siting of Critical Facilities
Design and locate new critical facilities, including schools, municipal offices, disaster supply containers, and emergency shelters, in a manner which maximizes their ability to remain functional after a major earthquake.

Policy 18.7: Earthquake Safety Education
Provide earthquake safety information to citizens, property owners, and volunteer groups.

- ***Action 18.A: Soil and Geotechnical Reporting Requirements***
  Require soil and geotechnical reports for any structure constructed on a slope exceeding 20 percent, any application for a tentative subdivision map, and any new residence on any lot, regardless of slope.

- ***Action 18.B: Data Base of Geologic Reports***
  Maintain any soil and geologic reports completed for development applications as public records. Keep records of the location and extent of areas covered by such reports and refer to these records as needed when future applications for development are made.

- ***Action 18.C: Incentives for Seismic Retrofits***
  Consider a variety of incentives that encourage Piedmont residents to retrofit their homes for seismic safety. Incentives might include reduced fees for households seeking permits to replace brick foundations, install shear walls, or perform other seismic upgrades.

- ***Action 18.D: Post-Earthquake Structural Evaluation***
  Continue the program providing for evaluation of structures following a major earthquake, and take appropriate actions in the event a structure is determined to be unsafe.

See also Action 3.A in the Land Use Element regarding the Measure E bond measure to seismically retrofit Piedmont's public schools.

Implement vegetation management programs which reduce the fuel load and potential for wildfire. This should include the removal of invasive fire-prone vegetation and the use of less flammable plants for landscaping, especially on hillside sites. Public education on "defensible space" and good vegetation management practices should be strongly promoted.

Goal 19: Wildfire and Flooding Hazards

Reduce exposure to wildfire, flooding, and other climate-related hazards

Policies and Actions

Policy 19.1: Reducing Fire Hazards
Maintain building and development regulations that minimize the potential for damage, injury, or loss of life due to fire. Where appropriate, this should include the use of fire-resistant building materials, fire sprinklers, non-combustible roofing materials, and other fire suppression and risk-reduction measures.

Policy 19.2: Fuel Management
Implement vegetation management programs which reduce the fuel load and potential for wildfire. This should include the removal of invasive fire-prone vegetation and the use of less flammable plants for landscaping, especially on hillside sites. Public education on "defensible space" and good vegetation management practices should be strongly promoted.

Policy 19.3: Fire-Fighting Water Flow
Ensure that Piedmont's water system remains adequate for fire-fighting purposes. As funding allows, undertake improvements for areas where capacity is determined to be deficient.

Policy 19.4: Fire Department Review of Development Applications
Ensure that the Piedmont Fire Department reviews proposed development applications to verify that response times will be acceptable, emergency access will be adequate, water supply and fire flow will be sufficient, vegetation clearances will be maintained, and appropriate construction materials will be used.

See policies in the Community Services and Facilities Element for additional guidance on Police and Fire Protection.

Policy 19.5: Keeping Flood Hazards Low
Maintain Piedmont's low potential for flooding through storm drain maintenance, preservation of creeks and drainage courses in their natural state, and periodic clearing of debris from storm drains and catchment basins. Ensure that new development does not increase the risk of off-site flooding, either in Piedmont or downstream in Oakland.

Policy 19.6: Managing Runoff
Ensure that runoff from individual properties is directed in a way that does not threaten adjacent properties. Runoff should be directed to places where it can be absorbed into the ground, detained in rain barrels or cisterns, or directed toward storm drains.

See also Policy 16.4 in the Natural Resources Element on the use of permeable pavement and limits on impervious surface coverage. See the Community Services and Facilities Element for additional policies on the storm drainage system.

- ***Action 19.A: Mutual Aid Agreements***
  Maintain mutual aid agreements for wildland fire protection with the City of Oakland and other East Bay jurisdictions.

- ***Action 19.B: Weed and Brush Abatement***
  Implement weed abatement and property inspection programs to identify and mitigate wildfire hazards.

- ***Action 19.C: Fire Sprinkler Requirements***
  Consider a building code amendment that would require installation of sprinklers during major home remodels, for example, when more than 50 percent of a home's interior space is refurbished.

- ***Action 19.D: Tyson Lake Dam Inspections***
  Work with Tyson Lake Homeowners to obtain current information on the condition of the Tyson Lake dam, and receive notification and copies of reports when the dam is inspected.

- ***Action 19.E: EBMUD Reservoir Retrofits***
  Support EBMUD's efforts to seismically retrofit and/ or replace its reservoirs above Piedmont as a way to reduce the threat of flooding in the event of tank collapse. Minimize the visual impact of any replacement tanks constructed on the reservoir site.

- ***Action 19.F: Drainage Improvements***
  Require storm drainage improvements for any development or home improvement which could create or exacerbate the potential for flooding. Development applications should be reviewed by the Public Works Department to ensure that such hazards are identified and mitigated.

Minimize the use of toxic and hazardous materials. As feasible, residents should be encouraged to consider safer alternatives such as pesticide-free landscaping and non-toxic household cleaners and building materials. Information on proper methods of household hazardous waste disposal should be provided to Piedmont residents.

Goal 20: Hazardous Materials

Minimize the potential for exposure to hazardous materials.

Policies and Actions

Policy 20.1: Hazardous Material Handling, Storage, and Disposal
Require that the handling, storage, and disposal of hazardous materials complies with all applicable local, county, state, and federal laws. Where appropriate, clearance from the Piedmont Fire Department should be required before businesses licenses are issued.

Policy 20.2 Transport of Hazardous Material
Coordinate and cooperate with nearby cities, regional organizations, and environmental agencies in efforts to control hazardous materials and regulate the transport of hazardous materials on Piedmont streets.

Policy 20.3 Hazardous Building Materials
Work with property owners to remediate hazardous building materials such as asbestos, mercury, and lead. Ensure that any hazardous building materials removed during home renovations are properly handled and disposed.

Policy 20.4 Hazardous Material Land Uses
Maintain planning and zoning procedures which protect the public from possible exposure to hazardous chemicals. New uses which involve storage or handling of hazardous materials should be discouraged.

Policy 20.5: Household Hazardous Materials
Minimize the use of toxic and hazardous household products. As feasible, residents should be encouraged to consider safer alternatives, such as pesticide-free landscaping and non-toxic household cleaners and building materials. Information on proper methods of household hazardous waste disposal should be provided to Piedmont residents.

Policy 20.6: Underground Tanks
Ensure that any underground storage tanks containing hazardous materials are properly installed, used, removed, and monitored.

- ***Action 20.A: Fire Department First Responder Training***
  Continue to train Piedmont Fire Department personnel in hazardous materials response.

- ***Action 20.B: Groundwater Monitoring***
  Continue efforts to monitor groundwater plumes associated with leaking underground fuel tanks at local gas stations.

- ***Action 20.C: Household Hazardous Waste Disposal Education***
  Continue to educate Piedmont residents on proper disposal of household hazardous wastes, including information on household hazardous waste collection and drop off locations. Develop programs to ensure proper disposal of compact fluorescent light bulbs (CFLs).

- ***Action 20.D: Participation in County HazMat Programs***
  Support and participate in Alameda County's hazardous waste management planning programs. As needed, update local codes regulating the permitted use and storage of hazardous gases, liquids, and solids.

See also the Community Services and Facilities Element for additional policies on fire protection services.

See also the Natural Resources and Sustainability Element for additional policies on surface and ground water quality.

Goal 21: Emergency Preparedness

Ensure that the City, the School District, and Piedmont residents and businesses are prepared for natural and man-made disasters.

Policies and Actions

Policy 21.1: Preparedness and the Community
Recognize the importance of communication and full community engagement to the success of all emergency preparedness strategies.

Policy 21.2: Emergency Preparedness Plan
Use the Standardized Emergency Management System as the basis for emergency planning. The City will maintain an emergency preparedness plan that identifies a chain of command and outlines the actions to be taken in the event of a disaster.

Policy 21.3: Preparedness Education and Citizen Training
Promote and coordinate public education on earthquake hazards and emergency preparedness. The City will continue to implement programs that advise the public of preparedness and post-disaster recovery measures, and will encourage volunteer citizen participation in disaster response.

Continue to implement emergency preparedness and training programs for residents and neighborhood groups through the Piedmont Fire Department. Public awareness of these programs should be increased through email and other media.

Policy 21.4: Intergovernmental Preparedness Planning
Cooperate with other cities, regional organizations, and other public agencies to undertake emergency preparedness planning.

- ***Action 21.A: Police and Fire Emergency Training***
  Take the steps necessary to ensure that Piedmont's Police and Fire Department maintain a high degree of readiness and that their facilities, equipment, and services remain operational after a major disaster.

- ***Action 21.B: Multi-Functional Hazard Plan Updates***
  Periodically update Piedmont's Multi-functional Hazard Plan to respond to changing conditions and resources. The Plan should include provisions to coordinate City Department actions with volunteers.

- ***Action 21.C: Disaster Containers***
  Provide emergency equipment and disaster containers to assist the Police and Fire Departments and citizen volunteers trained to respond to emergencies. These containers should be regularly maintained and replenished.

- ***Action 21.D: Citizen Preparedness Training Programs***
  Continue to implement emergency preparedness and training programs for residents and neighborhood groups through the Piedmont Fire Department. Public awareness of these programs should be increased through email and other media and by linking preparedness to other City initiatives such as crime prevention and environmental sustainability. Encourage residents to participate in similar disaster preparedness programs in the City of Oakland.

- ***Action 21.E: Emergency Preparedness Drills***
  Conduct periodic disaster drills to test the effectiveness of the City's emergency response procedures. Encourage the Piedmont Unified School District to conduct emergency drills, and to participate in City drills.

- ***Action 21.F: Emergency Vehicle Access***
  Maintain on-street parking prohibitions where necessary to ensure adequate access to all properties by emergency vehicles.

See the Community Services and Facilities Element for additional policies on Police and Fire Protection.

"The quiet neighborhoods are a blessing."

- General Plan Survey Response

Goal 22: Noise

Maintain the peace and quiet of Piedmont neighborhoods.

Policies and Actions

Policy 22.1: Noise Insulation for New Development
Design new development, including residential additions and remodels, in a way that reduces the potential for residents to be exposed to high levels of noise. Development along busy streets such as Grand Avenue and Oakland Avenue should include effective noise insulation measures for interior spaces.

Policy 22.2: Noise Reduction Measures
Require new development with the potential to create long-term increases in noise volumes to mitigate potential impacts. Noise reduction techniques, such as sound muffling devices, building orientation, buffers, landscaping, and acoustical barriers, should be used as appropriate.

Policy 22.3: Transportation Noise
Support efforts to mitigate the sources of transportation noise in the city, especially AC Transit buses and other motor vehicles.

Policy 22.4: Domestic Noise Controls
Maintain and enforce ordinances to reduce sources of domestic noise in the city, including residential construction and gasoline-powered yard equipment.

Policy 22.5: Outdoor Activity Noise
Maintain limits on the hours and extent of scheduled events at parks and athletic fields to maintain a peaceful environment in the residential areas around these facilities.

Policy 22.6: Non-Piedmont Noise Sources
Seek to reduce noise emanating from outside the city limits when it detrimentally affects Piedmont residents. This policy applies to such sources as the Oakland Rose Garden, Interstate 580, and Oakland and San Francisco International Airports.

- ***Action 22.A: Noise Compatibility Guidelines***
  Follow the noise compatibility guidelines in Table 6.4 for future development. The table specifies the maximum noise levels that are normally acceptable, conditionally acceptable, and normally unacceptable for new development. If a project is in a "normally acceptable" noise contour, an increase in noise up to the maximum should not necessarily be allowed. The impact of a proposed project on existing land uses should be evaluated in terms of the potential for adverse community impacts, regardless. The noise compatibility guidelines are intended to apply to post-construction conditions and exclude construction-related noise.

- ***Action 22.B: Acoustical Study Requirements***
  On an ongoing basis, require acoustical studies for projects which could potentially elevate noise levels above the "normally acceptable" limits specified in Table 6.4, or introduce noise-sensitive uses in areas where the existing noise levels presently exceed the normally acceptable levels described in Table 6.4. Such analyses should be prepared by a qualified acoustical consultant and should include sufficient sampling data to adequately describe existing and future conditions.

- ***Action 22.C: Playfield Hours of Operation***
  Define and enforce hours of operation for Piedmont Sports Field, Coaches Playfield, Linda Playfield, Dracena Park, and any other athletic fields that may be developed during future years. Noise levels at city parks should be periodically monitored to ensure that limits on hours of operation are sufficient to maintain neighborhood peace and quiet.

- ***Action 22.D: Enforcement of Noise Regulations***
  Enforce rules and regulations pertaining to noise, including the California Motor Vehicle Code and Chapter 12 of the Piedmont Municipal Code. Continue to implement the Title 24 noise standard of 45 dBA L_{dn} in all habitable rooms.