

9

SAFETY & NOISE

Ensuring the safety of community members, through protection from hazards, is an essential service of public agencies and a critical priority for maintaining community health. The purpose of the Safety and Noise Element is to establish goals and policies to mitigate the potential impacts from natural and human caused safety and noise hazards that pose a threat to public health and safety. Specifically, this element addresses seismic and geologic hazards, flood, fire, hazardous materials, law enforcement, emergency preparedness, and coordinated response measures. In addition, this element evaluates the community noise environment and presents policies and standards to reduce, eliminate, or mitigate objectionable noise sources.

9.1 Seismic and Geologic Hazards

This section addresses regional geologic and seismic conditions and identifies potential seismic hazards including surface rupture from faulting or seismically induced effects such as ground shaking and landslides as they might pertain to public safety in the Planning Area.

GEOLOGY

The topography of the Bay Area consists of north- to northwest-trending mountain ranges and intervening valleys that are characteristic of the Coast Range geomorphic province. The underlying geology is composed primarily of the Franciscan complex rock bounded on the east by the Hayward fault and on the west by the San Andreas fault. The Franciscan rocks are formed by pieces of former oceanic crust that have been accreted to North America by subduction and collision of the North American and Pacific Plates. These rocks are primarily deep marine sandstone and shale. However, chert and limestone are

also found within the assemblage. San Pablo sits on top of this geologic system.

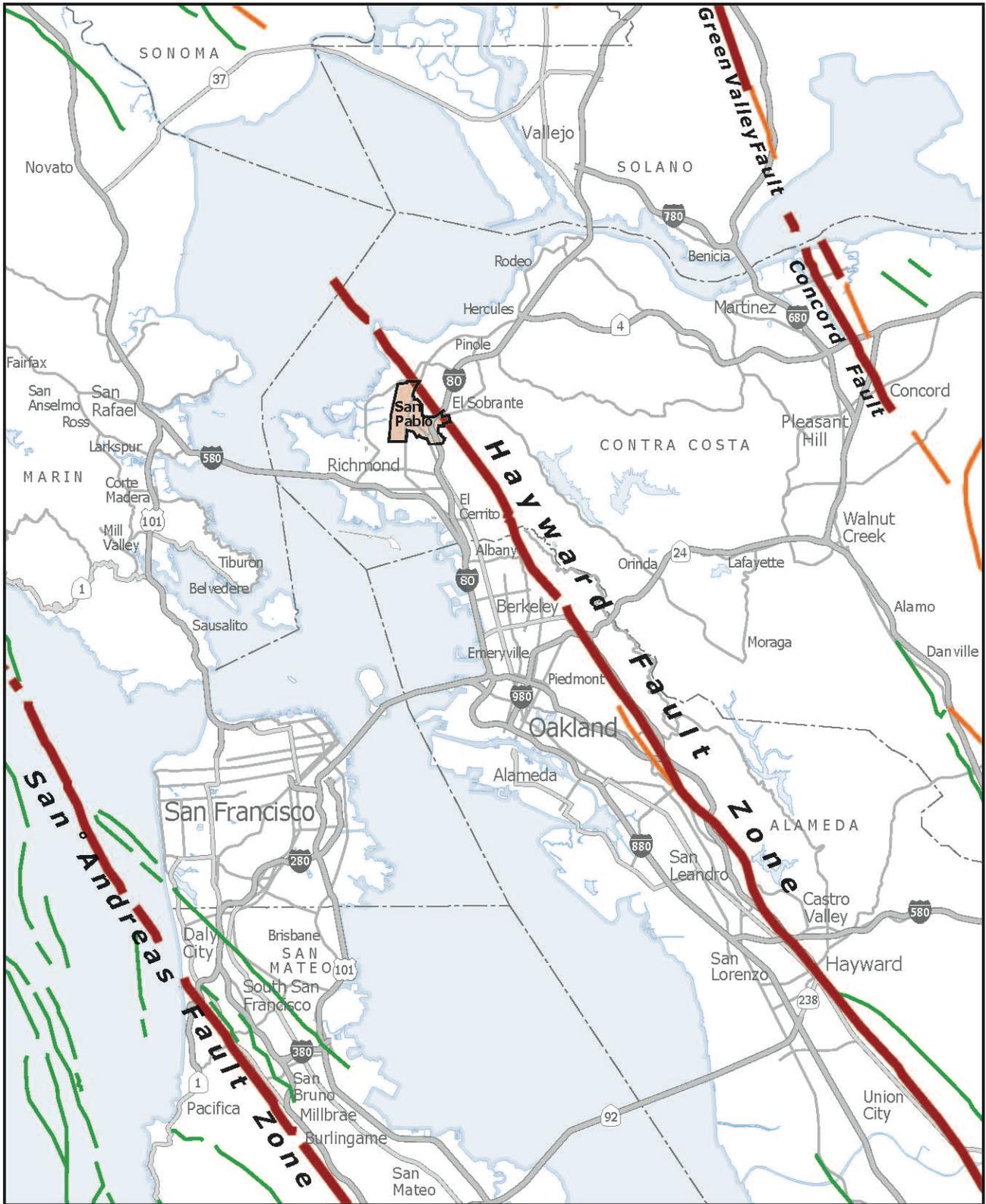
The lowland portion of the city is located on a broad plain and has a typical elevation of about 50 feet. Most of the lowland area is underlain by alluvial soils deposited on bedrock during the Quaternary period (the past one million years). The alluvium material consists of interbedded clay, silt, sand, gravel and coarse debris deposited by streams and weathering of the hills to the east. Local deposits of artificial fill can also be found scattered over the city. These are typically loosely compacted soil and organic materials that were laid over former lowlands and marsh lands over the last two centuries.

The “hillside zone” of the city is comprised of steep to moderate sloping hillside areas in two locations: (1) The eastern and southeastern portions of the city on the northwestern flank of San Pablo Ridge, generally above 100 feet in elevation, and (2) the northern portion of the city, generally above 60 feet in elevation. Most of the bedrock consists of non-marine sedimentary rocks, consisting of weakly consolidated pebble, conglomerate, sandstone, claystone and siltstone. The hills in San Pablo form part of a system of foothills that is ultimately connected to the Diablo Range south of the region.

SEISMICITY

The San Francisco Bay Area is one of the most seismically active regions of the United States. There are approximately 30 known faults in the region that are considered capable of generating earthquakes. The principal faults near San Pablo are the San Andreas Fault and the North Hayward Fault. The San Andreas Fault Zone is the predominant fault system in California and has generated some of the largest and most destructive earthquakes in history. The nearest location of the San Andreas Fault is about 15 miles west of San Pablo. The North Hayward Fault Zone passes directly underneath the eastern portion of the City and is considered a high earthquake hazard as any large movements would cause ground shaking and surface rupture in the area. These faults, as well as other less active faults in the region, are shown in **Figure 9-1**.

The region has historically experienced strong ground shaking from large earthquakes and will continue to do so in the future.



- █ Active Fault with Historic (last 200 years) Displacement
- █ Active Fault with Holocene (last 11,000 years) Displacement
- █ Potentially Active Fault with Quaternary (last 1,600,000 years) Displacement



Figure 9-1
Regional Faults

A large-scale earthquake could have severe consequences for Contra Costa transportation systems, similar to those associated with the 1989 Loma Prieta earthquake which caused the collapse of a nearly 1.5-mile-long two-tiered elevated section of Interstate 880 in Oakland. In addition, permanent ground displacement, liquefaction, land sliding, lurching and other ground movement activities can also occur as a result of an earthquake. According to a report prepared by the Working Group on California Earthquake Probabilities, there is a cumulative probability of 70 percent for a magnitude 6.7 or greater earthquake occurring in the Bay Area by 2030.



Seismic forces can lead to ground raptures and/or subsidence. (Photo by: Tubbi)

FAULT RUPTURE HAZARD ZONES

Earthquakes occur when forces underground cause the faults to rupture and suddenly slip. If the rupture extends to the surface, there is an observable displacement of the earth (surface rupture). Because faults are weaknesses in the rock, they tend to occur again in the same areas. Areas within San Pablo that are most likely to experience fault rupture are incorporated in the Alquist-Priolo Earthquake Zone depicted in **Figure 9-1**. The Alquist-Priolo Earthquake Zone is established by the California Geological Survey under the Alquist-Priolo Special Studies Zone Act of 1972. Developments in San Pablo that fall within this zone are strictly regulated. Developers must conduct special geologic studies before construction permits are issued and disclose surface rupture hazards in real estate transactions. Because of fault rupture hazards, future development potential is limited within this zone.

GROUND SHAKING

Ground movement during an earthquake can vary depending on the overall magnitude, distance to the fault, focus of earthquake energy, and type of geologic material. The composition of underlying soils, even those relatively distant from faults, can intensify ground shaking. The strongest ground shaking anticipated to occur in San Pablo will be triggered by the North Hayward Fault, due to immediate proximity. Damage in areas near the fault and those underlain by estuarine deposits near creeks and the shoreline to the west could be extensive. Earthquakes on other faults will produce lower intensities in the City.

SOIL HAZARDS

Soil properties have a significant bearing on land planning and development. The type of soil will affect liquefaction, shrink swell potential, as well as land sliding. Liquefaction is the rapid transformation of saturated, loose, fine-grained sediment (such as silt and sand) into a fluid state as a result of severe vibratory motion. Most of the lowland areas of San Pablo are mapped by the California Division of Mines and Geology as potentially having liquefaction hazards.

The term “shrink swell” refers to the property of many clays to swell when wetted and shrink when dried. Soils with high shrink swell potential make them poor candidates for construction of tall buildings or basements.

Landslides generally occur in areas of unstable soil conditions. In San Pablo, this hazard is primarily located near the upland areas, along the creeks, and in the Bayview neighborhood near Hilltop.. Sloping areas with greater than 30-degree gradient on both sides of San Pablo Dam Road east of I-80 are especially prone to landsliding. The area north of Hillcrest Road is another example of a landslide active area. For safety reasons, the City has designated all active landslide areas as open space in the General Plan Land Use Diagram and restricts development in those areas.

GUIDING POLICIES

SN-G-1 Minimize risks of property damage and personal injury posed by geologic and seismic hazards.

IMPLEMENTING POLICIES

SN-I-1 Amend the Zoning Ordinance to include provisions for a geologic hazard abatement district for hillside areas at risk of landslides in San Pablo.

The Geologic Hazard Abatement District is a potentially useful tool to effectively abate a landslide hazard that crosses property boundaries. It is a mechanism that responds to the physical realities of landslides and allows property owners to cooperate in solving a common problem. It removes much of the stigma of legal liabilities among adjacent landowners and allows them to cooperate rather than litigate. It also provides for a cost-effective solution, requiring only one geotechnical engineering firm and one plan to solve the problems of several landowners.

SN-I-2 Pursuant to the requirements of the Alquist-Priolo Earthquake Fault Zone Act, continue to review individual projects to prohibit the development of critical or habitable structures within the Fault Zone.

SN-I-3 Continue to maintain and enforce appropriate standards in the Building Code to ensure new developments are designed to meet current safety standards associated with seismic activity.

- SN-I-4 Continue to identify and catalogue structures that may be subject to serious structural damage in the event of a major earthquake and provide information to property owners on ways to pay for rehabilitation of existing buildings, including available State and other financing resources.
- SN-I-5 Support efforts by State and regional agencies to promote public awareness of potential geologic and seismic hazards.
- SN-I-6 Require erosion prevention of hillside areas by re-vegetation or other acceptable methods.

9.2 Flood Hazards

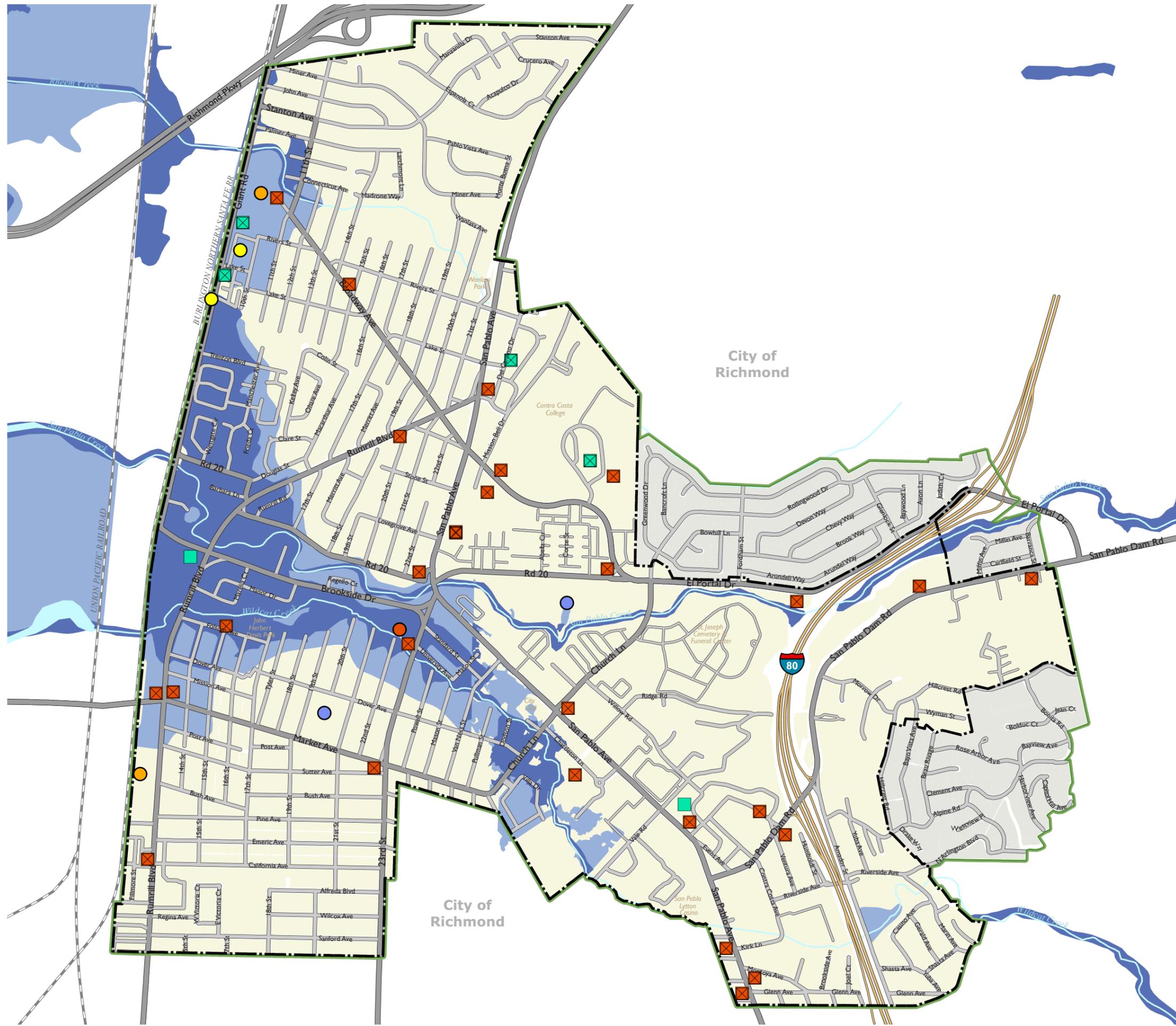
FLOOD ZONES



Severe rainfall has caused parts of San Pablo to experience flash floods in the past, including University Avenue next to Wildcat Creek.

Flood-prone areas in San Pablo are generally located in topographically low areas and in areas close to creeks. Flood zone mapping done by the Federal Emergency Management Authority (FEMA) indicates that the area is most prone to flooding where San Pablo and Wildcat Creeks leave the city boundary on the west, as shown on **Figure 9-2**. In addition, there are flooding areas associated with Rheem Creek on the west side of the city. According to FEMA maps, a total of 180 acres of the total Planning Area is located within the 100-year flood hazard zone, meaning it is subject to a 1% annual chance of flood. Approximately 125 acres of the Planning Area lie within the 500-year flood zone, which describes lands subject to the 0.2% annual chance of flood event as shown in **Table 9.2-1**.

Figure 9-2: Hazardous Materials and Flood Hazard Areas



State Water Resources Control Board (SWRCB)

Cleanup Sites

- LUST Cleanup Site
- Cleanup Program Site
- Closed Sites (Case Closed)

Department of Toxic Substances Control (DTSC)

EnviroStor Status (March 2023)

- Active
- Certified O&M - Land Use Restrictions
- Refer to Another Agency
- No Further Action

FEMA Flood Hazard Zones

- 100 year flood zone
- 500 year flood zone

- City Limits
- Sphere of Influence
- Major Highway
- Major Roads
- Railroads



SOURCE: FEMA, 2020; Geotracker, State Water Resources Control Board, 2021; Envirostor, Department of Toxic Substances Control, 2023; City of San Pablo, 2021; Contra Costa County GIS, 2021; Dyett & Bhatia, 2021

Table 9.2-1 Existing Flood Plains

<i>Type</i>	<i>Total Acres</i>
100-Year Zone Zone	180
500-year Flood Zone	125

Source: Federal Emergency Management Agency, 2023; Dyett & Bhatia, 2024.

Causes of Flooding

Over the years continuous rains have saturated the watersheds in San Pablo and causes major flood events that inundates the western and central parts of the city. The City engaged a water hydraulics consultant to determine the causes of flooding for each flooded area. The resulting report found that while undersized creek channels was one of the reasons that caused flood waters to overflow the banks of the creeks into streets, residences and commercial areas, that was by no means the only reason of flooding. Many areas far away from the creeks were also flooded because the inverts of storm drain inlets on streets that drain into the creek were below the high-water surface elevation in the creek. When the creeks were at or above their high-water mark, not only were these pipes unable to convey any more water into the creeks, they channeled creek water back into areas that were far away from creek banks. Many areas, such as the area bounded by Folsom Avenue, Manor Drive, and Rumrill Boulevard, flooded in this way.

The City also engaged a consultant in 2018 to map the City's storm drain system to understand its connectivity, to support hydrologic and hydraulic modelling, and to analyze the existing system. The storm drain network and modelling outputs were also used to provide information necessary to comply with provision C.10 Trash Load Reduction of the Water Board's Monitoring and Reporting Plan (MRP) by delineating catchment areas within the City. Furthermore, using the modelling results helps identify capital improvement projects with a focus on Rumrill Boulevard.

Undersized box culverts along creeks also contribute to flooding problems and recommend their replacement or enlargement. Many culverts (Rumrill Boulevard, 23rd Street, and Church Lane) are unable to transmit flow volumes because they are designed at an angle to flow direction or inadequately sized.

The City Public Works Division has been working with the Contra Costa Flood Control District and other interested parties to address deficiencies and improve flow volume. Constructed in 2021, Wildcat Creek Restoration and Greenway Trail Project is an example of recent projects. The project widened the creek bank

on the eastern side between Vale Road and Church Lane. Past projects include: a Creek Embankment Stabilization project on San Pablo Creek at Road 20 and 17th Street, a widening of the Wildcat Creek channel at 23rd Street, and a reconfiguration of the Wildcat Creek channel at Rumrill Boulevard.

DAM INUNDATION

San Pablo Creek is a year-round watercourse and is regulated in its upper stream by two dams: Briones Dam and Reservoir, and San Pablo Dam and Reservoir. According to a Flood Study conducted by ABAG in 2007, 1,383 acres of land in the City of San Pablo are subject to flooding should both dams experience a catastrophic failure. The scenario may be triggered by a rupture of the Hayward fault, which lies partially under the city. If a magnitude 7.5 earthquake occurred on this fault, the study predicts that the San Pablo Dam would slump and decrease in height, allowing water to flow over the top, resulting in flooding downstream. If such a disaster occurs, 51 miles of roadway and almost all schools and government buildings in the city will be inundated.⁴⁸ Policies and programs in this element seek to reduce the possibility of this occurrence and mitigate its impact.

The State of California Division of Safety of Dams (DSOD) oversees flood and earthquake safety for the East Bay dams. As part of its emergency preparedness efforts, the East Bay Municipal Utility District (EBMUD) prepares inundation maps as guidance to emergency management and public agencies. Inundation maps show the flooding that could result from a hypothetical failure of a dam or a critical appurtenant structure. The District's dams are considered safe, and failure of a dam is a highly unlikely event. Between February 2020 and May 2021, EBMUD updated and received State Department of Water Resources (DWR), Division of Safety of Dams (DSOD) approval for flood inundation maps for its DSOD-regulated dams. EBMUD has a comprehensive Dam Safety Program. The District proactively inspects upgrades and improves its dams and water supply structures as needed and in consultation with the regulatory agencies. Engineers monitor dams using instruments, monthly visual inspections and periodic dam safety reviews to prevent loss of life, personal injury and property damage from the failure of dams. The safety of each dam is reevaluated with advances in geotechnical, structural and earthquake engineering and also if there is evidence of seepage or ongoing

⁴⁸ EBMUD Annual Report 2008 and EBMUD Summit Reservoir Replacement Project reports.

ground movement. Most of these dams are under the jurisdiction of the State Department of Water Resources (DWR), Division of Safety of Dams (DSOD).

Like San Pablo Dam, Briones Dam also poses a flood risk to the Planning Area. However, the risk from this dam is comparatively less significant due to its greater distance from the city. Additionally, Briones Dam is a newer dam (constructed in 1964) compared to the San Pablo Dam (constructed in 1920), and its flood waters are expected to drain southward of its location as well as into San Pablo Dam in the case of dam failure.

MITIGATION OF FLOOD HAZARDS

The extent of damage from flooding can be mitigated in a number of ways, among them, the identification and avoidance of flood prone areas, planning emergency response, and implementation of long-term flood control projects.

Flood Damage Prevention Ordinance

The City adopted a Flood Damage Prevention Ordinance in 1987 in compliance with requirements of the National Flood Insurance Program (NFIP) and FEMA for development in flood-plain areas. This Ordinance was amended in 2023 to reflect recent changes in FEMA's model ordinance. The stated purpose of the Ordinance is to promote public health, safety, and general welfare, and to minimize and to minimize public and private losses due to flood conditions in specific areas.

The Municipal Code establishes controls on development in flood hazard areas, such as creek setback requirements and minimum floor elevations above the base flood elevation. The intent of the regulations is to avoid exposing new development to flood hazards and reduce the need for future flood control protective work. The Code is amended as needed to maintain compliance with state and federal regulations.

Floodplain Management and the Local Hazards Mitigation Plan

The City's Building Services Division is responsible for providing floodplain management for the Planning Area. Its responsibilities include ensuring compliance with the NFIP and maintenance and enforcement of the Flood Damage Prevention Ordinance. The City's Public Works Division is responsible for planning and construction of flood control projects. Additionally, the department helps prepare and carry out policies in the Contra Costa County Multi-Jurisdictional Local Hazards Mitigation Plan

(LHMP), which provides additional planning and direction for flood hazards in the city. The LHMP focuses on the assessment of identified risks and implementation of loss reduction measures to ensure critical City services and facilities survive a disaster. An update to the Contra Costa County LHMP is underway in 2023 for adoption in 2024.

Storm Drainage Management

The Public Works Department performs cleaning and maintenance activities on creeks, drainage channels, pipes and catch basins in City easements and rights-of-way in accordance with an established schedule and other standard operating procedures. The City encourages homeowners along the creeks to help keep them clear of obstructions and to purchase flood insurance as a precaution. By way of City ordinance, it is illegal to dump trash, leaves, landscape debris, paint, grease, or any other material into any portion of the City's drainage system, and it is illegal to construct structures in the creek channels.

Emergency Flood Response

The first goal of the City's emergency response to flood events is to prevent the loss of life. The protection of physical property is secondary to this goal. Whenever a flood event is expected to occur, City officials typically have only hours to formulate a response, not days or weeks. As a result, the City's emergency response to flood emergencies includes a two-prong approach: 1) Monitor flood levels to determine the severity of the situation, and 2) Work with emergency services and dispatch emergency crews to problem areas if evacuation is required. This is a multistage process involving various City departments and agencies whose responsibilities and procedures are described in greater detail in the City's Emergency Operations Manual. Following the issuance of an order or warning to evacuate, evacuation routes and shelter sites are determined based on field observations and conditions of the flood event.

If a series of storms are forecast ahead of time by the National Weather Service or other agencies, sandbags are provided free of charge to San Pablo residents at the City Corporation yard located at 16th and Folsom Streets.

Wildcat Creek Watershed Restoration Action Plan

The Wildcat Creek Watershed Restoration Action Plan (WRAP) was adopted by the City in August 2010 as a guide to the planning and implementation of projects to reduce flood risk, enhance

riparian habitat and develop recreational resources for the community.

The WRAP recommends the following strategies and actions:

1. Replacement of structures that constitute constrictions in the creek cross-section with structures that allow more water to pass through. For example, the culvert under Rumrill Boulevard could be replaced with a larger culvert better aligned with the creek or with a bridge structure to span the creek.
2. Construct floodwalls to contain flows in tight areas and where feasible acquire properties where flood flows can spread out over a larger area.
3. Make upgrades to the existing stormwater system, such as increased pipe sizes, and implement measures to reduce stormwater runoff.
4. Remove barriers to fish passage; for example, by “daylighting” the creek through Davis Park.
5. Connect gaps in the Wildcat Creek Trail.

City staff will continue to incorporate the recommended strategies and actions into its Capital Improvement Programming and will seek funding for these projects.

GUIDING POLICIES

SN-G-2 Minimize the risks to property, life, and the environment due to flooding hazards.

IMPLEMENTING POLICIES

SN-I-7 Continue to minimize the risk of flooding to development through the development review process. Require new development within a floodplain to comply with the City’s Floodplain Management and Flood Damage Prevention Ordinance and to submit hydrologic studies, identify site development and construction methods, and implement appropriate mitigation measures to minimize surface water run-off.

Developers will be required to provide an assessment of a project's potential impact on the local storm drainage system as part of the development review process. If development is found to have a negative impact on storm drainage, mitigation measures, such as the creation of permanent or temporary detention or retention basins, provision of additional landscaped areas and green roofs, installation of pump stations, and the use of permeable paving in driveways, walkways and parking areas, may be required.

SN-I-8 Regularly review the Land Use Element to identify whether any additional areas subject to flooding have been defined in updated floodplain maps prepared by the Federal Emergency Management Agency or the State Department of Water Resources and adopt amendments to the General Plan or the Zoning Ordinance, as warranted.

SN-I-9 Continue to participate in the National Flood Insurance Program and ensure that local regulations are in full compliance with federal standards.

SN-I-10 Periodically review National Flood Insurance Program maps to ensure that the City's zoning and building regulations reduce potential risks from flooding pursuant to the National Flood Insurance Program of 1968.

SN-I-11 Inform households and businesses located in flood-prone areas about opportunities to purchase flood insurance.

The City will regularly remind residents of the value of flood insurance for vulnerable properties through newsletters and other educational materials. Purchase of flood insurance is required for buildings in Special Flood Hazard Areas defined by the Flood Insurance Rate Map when a federally regulated lender holds the mortgage on the building.

SN-I-12 Site new essential public facilities outside of the 100-year flood plains, including hospital and healthcare facilities, emergency shelters, police and fire stations, and emergency communications facilities to minimize exposure to 100-year floods.

- SN-I-13 Cooperate with the County Flood Control District, California Department of Transportation, and the Army Corps of Engineers to mitigate potential flooding risks, including flood control projects on Wildcat and San Pablo creeks and the maintenance of drainage facilities and infrastructure.
- Flood control projects will be designed to support the City's efforts to reestablish natural conditions in these creek corridors.*
- SN-I-14 Work with railroad operators to minimize downstream flooding related to limited number of culverts.
- SN-I-15 Enforce local regulations regarding illegal dumping of unwanted materials into local waterways.

Additional policies to control stormwater and reduce urban runoff are in the 'Wastewater and Stormwater' section of the Parks, Schools, Community Facilities and Utilities Element.

9.3 Fire Hazards

Fires may be classified by their point of origin, the most common types being urban fires and wildland fires.

URBAN FIRES

Urban fires are fires that begin in a building in urban centers. They are typically localized but have the potential to spread to an adjoining building. In San Pablo, the risk of urban fires is highest where single-family homes, multifamily residences and business facilities are clustered close together, increasing the possibility of rapid spread to an adjoining building. As the city grows in population and becomes denser, the consequence of urban fires increases proportionately. The risk to life and property can be reduced by adopting fire protection policies, such as increasing fire service personnel and ensuring new buildings are built to include fire resistant features which conform to modern fire and building codes. General Plan policies addressing the threat of urban fires are established in the section on Safety Services and Emergency Response.

WILDLAND FIRES

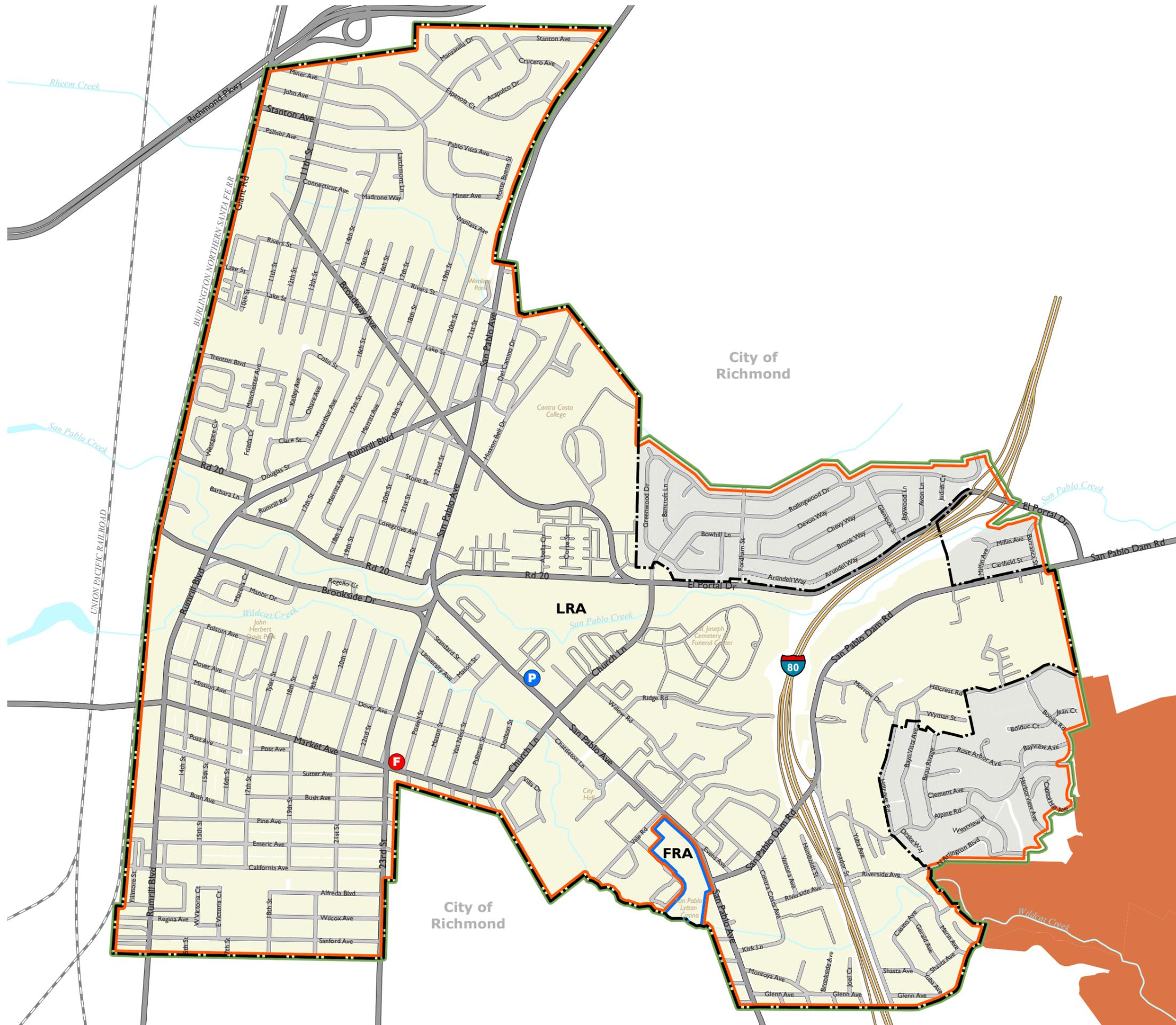
Wildland fires are fires that start in a wooded or undeveloped area. Their potential for damage is dependent on the extent and type of vegetation, known as surface fuels, as well as weather and wind conditions. Urbanized areas are typically less at risk of wildfires than rural areas, although areas of wildland-urban interface where human development transitions to undeveloped wildland are at greater risk of catastrophic wildfire.

As shown in **Figure 9-3**, based on data from the California Department of Forestry and Fire Protection (CAL FIRE), the southeast portion of the Planning Area is adjacent to a Very High Fire Hazard area. Otherwise, the planning area is considered to have either little or no threat of a wildland fire. In general, residential neighborhoods have minimal surface fuels and therefore have a lower risk of wildland fires. However, the residential area southeast of I-80 adjacent to Wildcat Canyon is identified as a Very High Fire Hazard Zone (VHFHZ) by CAL FIRE and is the most at-risk area for wildland fire in the city. Emergency evacuation from this area is provided via Hillcrest Road, Morrow Drive, Alpine Road, and North Arlington Boulevard, which connect to San Pablo Dam Road, the primary access route for the area.

Wildland fire hazards are best controlled by raising public awareness about fire prevention. In 2006, the Contra Costa County Fire Protection District (Con Fire) adopted new Defensible Space Standards that are designed to help structures survive wildland fire events and also began a public education program aimed at raising awareness about fire hazards. Con Fire works with property owners and provides information about wildfire prevention through its information division and enforces fire standards by notifying property owners of the need to cut vegetation that constitutes a fire hazard.

Firefighting capabilities in San Pablo have been enhanced by the opening of a new Fire Station 70 at 1800 23rd Street.

Figure 9-3: Wildfire Hazards



Responsibility Area

- LRA Local Responsibility Area
- FRA Federal Responsibility Area

Fire Hazard Severity Zone in LRA

- Very High Fire Hazard Zone

- Police Station
- Fire Station

- City Limits
- Sphere of Influence
- Major Highway
- Major Roads
- Railroads



SOURCE: Fire Hazard Severity Zones in LRA, and SRA, CAL FIRE, 2009, Published 2018 (<https://egis.fire.ca.gov/FHSZ/>); City of San Pablo, 2021; Contra Costa County GIS, 2021; Dyett & Bhatia, 2021

GUIDING POLICIES

- SN-G-3 *Protect San Pablo residents and businesses from potential fire hazards.*

IMPLEMENTING POLICIES

- SN-I-16 Continue to work with the County Fire Protection District (Con Fire) to make San Pablo more resilient to fire hazards.

The City's Planning Division will work with Con Fire to plan for, maintain, and expand local fire service activities. The City's Building Division will consult with Con Fire on new construction plan checking, building inspections, weed abatement and hazard mitigation activities, and public information resources. The City's Public Works and Planning Division will work with Con Fire to review hydrant locations, landscaping and other fire safety criteria. The City's Police Department will work with Con Fire to distribute fire safety information and coordinate public safety education in schools.

- SN-I-17 Work cooperatively with Con Fire to promote public awareness of fire safety and emergency life support.

The City will work with Con Fire to hold annual Fire Prevention Month activities in the city every October, and to make available preventative fire safety information in City Hall.

- SN-I-18 Review the Con Fire's fire hazard standards and annual report to determine if there should be any modification or additional types of services based on local population needs.

9.4 Hazardous Materials

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency, or if it has characteristics defined as hazardous by such an agency. The California Code of Regulations defines a hazardous material as a substance that, because of physical or chemical properties, quantity, concentration, or other characteristics, may either (1) cause an increase in mortality or an increase in serious, irreversible, or incapacitating, illness or (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of, or otherwise managed. Hazardous materials have been and are commonly used in commercial, agricultural, and industrial applications and, to a limited extent, in residential areas.

Hazardous wastes are defined in the same manner. Hazardous wastes are hazardous materials that no longer have practical use, such as substances that have been discarded, discharged, spilled, contaminated, or are being stored prior to proper disposal. Hazardous materials and hazardous wastes are classified according to four properties: toxic (causes human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), and reactive (causes explosions or generates toxic gases).

HAZARDOUS MATERIALS SITES

Areas where historic or on-going activities have resulted in the known or suspected release of hazardous materials to soil and groundwater or to the air, as identified by the San Francisco Bay Regional Water Quality Control Board and California Department of Toxic Substances (DTSC), are shown in **Figure 9-2**. Sites listed by the RWQCB include those that are from their Leaking Underground Storage Tank (LUST) program and other non-underground tank sites. There is only one active site within San Pablo that is overseen by the DTSC.

In San Pablo, sites with contamination are largely clustered around major roadways where light industrial and commercial uses are located, including Rumrill Boulevard,

San Pablo Avenue, and San Pablo Dam Road. This contamination may be the result of underground storage tank (UST) releases, spills, accidental releases or other activities involving the use of hazardous materials. In general, the areas highlighted are

industrial and manufacturing areas, although some represent gas stations, dry cleaners or other small businesses.

Releases, leaks, or disposal of chemical compounds, such as petroleum hydrocarbons, on or below the ground surface can lead to contamination of underlying soil and groundwater. Depending on the conditions and intensity of the release, groundwater contamination can migrate beyond the property boundary of the original release site. Disturbance of a previously contaminated area through grading or excavation operations could expose the public to health hazards from physical contact with contaminated materials or hazardous vapors. Improper handling or storage of contaminated soil and groundwater can further expose the public to these hazards, or potentially spread contamination through surface water runoff or air-borne dust. In addition, contaminated groundwater can spread down gradient, potentially contaminating subsurface areas of surrounding properties.

REGULATION AND ENFORCEMENT

Various State and federal agencies govern the proper storage, handling, and transport of hazardous materials. Contra Costa Health is the local agency responsible for hazardous materials management. It oversees the cleanup of contaminated sites originating from LUST systems as well as administers the California Accidental Release Prevention Program. The West Contra Costa Integrated Waste Management Authority is the local agency responsible for the safe disposal of household hazardous waste. It operates a permanent household hazardous waste drop-off facility located in Richmond that is available free of charge to any San Pablo resident and operates mobile collection events throughout the year.

GUIDING POLICIES

- SN-G-4 *Reduce the risk to the health of San Pablo residents from exposure to hazardous materials.*
- SN-G-5 *Promote the reduction, recycling, and safe disposal of household and business hazardous wastes through public education and awareness.*

IMPLEMENTING POLICIES

- SN-I-19 Require applicants for development in a potentially contaminated location to perform inspection and cleanup if the site is found to be contaminated with hazardous substances.
- The City will require the project applicant to have the site inspected by a registered Environmental Assessor. Reports detailing the results must be submitted for City review. The level of remediation and cleanup must be in compliance with Federal and State standards.*
- SN-I-20 Continue to support West Contra Costa Integrated Waste Management District's Household Hazardous Waste Drop-off Program, and encourage residents and crime watch organizations to report unlawful dumping of hazardous materials.
- SN-I-21 Ensure that the production, use, storage, disposal, and transport of hazardous materials conform to standards specified in the County's Hazardous Materials Area Plan.
- SN-I-22 Coordinate with Contra Costa Health, Health Services, the Contra Costa County Fire Protection District, and other appropriate regulatory agencies in hazardous material emergency response and the review of all proposals that use hazardous materials, or those properties that may have toxic contamination, such as petroleum hydrocarbons, CAM 17, metals, asbestos, and lead.

9.5 Safety Services and Emergency Response

Police services within the Planning Area are provided by the City of San Pablo Police Department and fire protection and life safety services are provided by the Contra Costa County Fire Protection District (Con Fire). The locations of both City Police and County Fire stations are illustrated in **Figure 9-3**.

POLICE SERVICES

The San Pablo Police Department operates out of a central police facility located at 13880 San Pablo Avenue. In addition, there is a Police Building Annex Building at 13928 San Pablo Avenue and a leased training facility in the College Center shopping area. The Department is a full-service, community-based law enforcement agency with three divisions (Patrol, Investigations, and Support Services) managed by the Chief of Police. The Department has five patrol teams and more than seventy specialized assignments and/or programs.

The current level of service is 1.92 officers to 1,000 residents, which is lower than the national average of 2.5 officers per 1,000 residents.⁴⁹ One of the Department's most pressing needs is space. As of 2023, a new 42,000-square-foot facility is under construction to house the City's police personnel. The facility will also feature a new state-of-the-art training center with an indoor shooting range and a virtual reality training room that will be available to the Police Department and by arrangement to other public safety agencies in the area. To maintain current operations and provide adequate public safety services to the San Pablo community, the Department's facility, equipment and budget would need to grow proportionately with any additional personnel.

The Department does not have a response time mandate, however, according to 2023 records, arrival times in response to dispatched calls for service averaged less than 7 minutes for priority-one calls, 8 minutes for priority-two calls, and 9 minutes for priority-three calls.

⁴⁹ U.S. 2003 Bureau of Justice Law Enforcement and Management Administrative Statistics.



Opened in April 2021, Fire Station 70 provides fire and emergency services from a central location on 23rd Street

FIRE PROTECTION SERVICES

Fire Safety Services in San Pablo are provided by the Contra Costa County Fire Protection District (Con Fire). Con Fire operates one fire station (Station #70) within the Planning Area located at 1800 23rd Street. (see **Figure 9-3**).

The San Pablo Fire Station is actively staffed 24 hours a day, seven days a week, with two engine companies. Fire dispatch is handled through the Contra Costa County Regional Communications Center. Con Fire provides fire-fighting services, lift and elevator rescue services, and medical response. Additionally, Con Fire enforces fire-safety regulations by notifying property owners to cut vegetation that constitutes a fire hazard.

Con Fire establishes no staffing or service ratios for the San Pablo Fire Station, but in general, it aims to provide one fire station for each 26,000 residents. Currently, Con Fire has an Insurance Service Office (ISO) rating of 3, on a scale of 1 to 10 with 1 being the highest. District policy establishes a six-minute response goal from dispatch to arrival for fire service in the region.

Con Fire has a mutual aid agreement with the Richmond Fire Department to ensure quick and adequate response to any fire emergency. Richmond stations are located just half a mile away from San Pablo's Planning Area boundary.

Additional policies addressing wildland fires are in the Fire Hazards section.

EMERGENCY PLANNING

The California Emergency Services Act requires cities to prepare and maintain an Emergency Plan for natural, humanmade, or war-caused emergencies that result in conditions of disaster or in extreme peril to life. The San Pablo Emergency Operations Manual was adopted in 1999 and updated in 2020. Further revisions are anticipated for final approval in July 2024. The Manual outlines the City's response to different types of disaster situations including seismic hazards, extreme weather conditions, and flooding. It establishes the chain of command, operational areas and responsibilities for different City departments as well as individuals and defines the City's response in four response and recovery phases: increased readiness, initial response operations, extended response operations, and recovery operations. The Manual is meant to work in conjunction with other disaster mitigation plans of the region, such as the Association of Bay Area

Governments (ABAG) Local Hazard Mitigation Plan (see below) and the State Emergency Plan.

EVACUATION ROUTES & POTENTIAL SHELTER SITES

The City has identified several evacuation routes through San Pablo to be used in case of catastrophic emergencies. The names of the streets are known to emergency services but not publicly identified. The location, extent and the severity of a disaster will determine which routes and which direction people must take in order to escape or avoid the afflicted areas. Additionally, possible emergency shelter sites have been identified internally. The City does not publish these sites in advance of an emergency for fear of having people congregate at a site that would not be opened or placing them in harm's way. The type and severity of the emergency will determine which site will be opened.

In the event of a natural or human-made disaster, the City will coordinate with the Red Cross, Salvation Army, and State and federal agencies to provide emergency relief and disaster recovery.

LOCAL HAZARD MITIGATION PLANNING

The purpose of a Local Hazard Mitigation Plan is to reduce or eliminate long term risk to human life and property resulting from hazards, by identifying risks before they occur and putting together resources, information, and strategies for emergency response. In San Pablo, hazard mitigation planning is carried out collectively at the County level owing to the proximity of different cities and their joint exposure to earthquakes and other regional hazards. Contra Costa County is the lead agency on the Local Hazard Mitigation Plan for the County and its participating jurisdictions.

As a participant in the multi-jurisdictional planning process, City staff helped in the development and review of the comprehensive list of mitigation strategies in the plan. The plan includes a San Pablo annex which lists information most relevant to San Pablo in the areas of health, infrastructure, housing, government, environment, and land use. The plan was adopted in 2018 and is undergoing an update for adoption in 2024.



The City's Emergency Operations Manual establishes procedures in case of emergencies.

GUIDING POLICIES

- SN-G-6 *Provide a comprehensive, “urban” service approach for police services, composed of public education, outreach, and partnerships with the public.*
- SN-G-7 *Foster an efficient and coordinated response to emergencies and natural disasters.*
- SN-G-8 *Proactively advocate public safety services which respond to the emergency and rescue needs of San Pablo residents and employees.*

IMPLEMENTING POLICIES

Safety Services

- SN-I-23 *Continue to assess the staffing, training, facility, and equipment needs of the Police Department periodically to ensure they meet current and future community needs.*
- The City will ensure the staffing ratios and response times meet national standards, and hire additional police officers, support training programs, and retrofit police-related facilities and purchase*

equipment, as needed. The construction of the Police Headquarters and Regional Training Facility to be completed in 2024 will help to fulfill long-term facility goals for the Department.

SN-I-24 Require adequate access for emergency vehicles in all new developments, including adequate widths, turning radii, hard standing areas, and vertical clearance.

SN-I-25 Explore the feasibility of developing a small police station annex at Rumrill Boulevard and Market Avenue.

SN-I-26 Complete program expansions of new police and fire facilities,. Specifically, the City will pursue the following:

- Develop a joint police and fire Emergency Operations Center (EOC) that will serve as the base of operations for the City and centralize communications and direction in the event of an emergency as a West County Regional EOC.

An EOC is a place where city staff can come together during an emergency to coordinate response and recovery actions and resources. These centers may alternatively be called command centers, situation rooms, war rooms, crisis management centers, or other similar terms. Regardless of the term, this is where the coordination of information and resources takes place. The EOC is not an incident command post; rather, it is the operations center where coordination and management decisions are facilitated. An EOC may serve a number of uses including operations, training, meetings and other uses. The new Police Headquarters and Training Facility includes space for a West County Regional EOC.

SN-I-27 Continue to share information and develop joint law enforcement efforts with adjacent jurisdictions and other public safety agencies.

The Police Department will continue to participate in regional cooperative efforts such as the West Contra Costa County (WCCC) Chiefs Committee, WCCC Narcotics, and WCCC Gang Intervention meetings.

SN-I-28 Continue to partner with schools and youth organizations in San Pablo to conduct law enforcement outreach and conflict resolution programs.

The Police Department will continue its Juvenile Education & Welfare Liaison (JEWL) Program, Gang Reduction Education and Training (GREAT), GREAT Summer Program, and other programs; work with schools to develop conflict resolution, peacemaking, and anger management training; and develop anti-crime curriculums.

SN-I-29 Continue to engage the community to formulate crime prevention and public safety strategies through public relations, community forums, and neighborhood based public safety programs.

The City has established community programs such as Neighborhood Watch, Business Watch, and the Community Police Academy that create opportunities for dialogue and perspective sharing to understand community priorities. These programs provide engage youth, ethnic communities, business community, the elderly, and other community members, incorporating community concerns and helping to identify consensus on community safety priorities and program approaches.

Additional policies related to fire protection are in the section 'Fire Hazards'.

Emergency Management

SN-I-30 Adopt and periodically update the City's Emergency Operations Plan.

SN-I-31 In consultation with the Police Department, the County Fire Protection District and other emergency service providers, develop an emergency evacuation map showing potential evacuation routes and maintain a list of emergency shelters to be used in case of catastrophic emergencies.

SN-I-32 Initiate periodic public information programs that explain the City's emergency preparedness programs and encourage each household to be self-sufficient for 72 hours after a human-made or natural disaster.

SN-I-33 Continue to participate in the multi-jurisdictional hazard mitigation planning process and implement policies in the latest multi-jurisdictional Hazard Mitigation Plan.

The federal Disaster Mitigation Act of 2000 requires that cities, counties, and special districts have a Local Hazard Mitigation Plan to be eligible to receive FEMA hazard mitigation funds. The City is part of the Contra Costa County multi-jurisdictional Local Hazard Mitigation Plan. .

SN-I-34 Develop effective mechanisms for a coordinated response to natural and man-made emergencies by:

- Conducting regular emergency planning meetings and disaster preparedness exercises with various City Departments, the Fire District, Police Department, , the Contra Costa Health s, and other emergency service providers and relevant public agencies;
- Holding emergency drills that require all City staff to be adequately trained to handle different kinds of emergency scenarios; and
- Coordinating with the East Bay Regional Communications System Authority (EBRCSA) to d continue to operate the P-25 compliant communications system with coverage in San Pablo.

SN-I-35 The EBRCSA was created as a Joint Powers Authority (JPA) on September 11, 2007, with the goal of developing and operating a state-of-the-art radio communications system that would provide regional interoperability. This system was installed in 2012. Ensure critical use facilities (City Hall, Police Department, Fire Station, public assembly facilities, transportation services) and other structures that are important to protecting health and safety in the community remain operational during an emergency.

9.6 Noise

The purpose of the Noise Element is to identify the noise sources that exist within the City, and to mitigate their potential impacts through both preventative and responsive measures.

NOISE CHARACTERISTICS AND MEASUREMENT

Noise is commonly defined as undesirable or unwanted sound. Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as leaf blowers, to the intermittent disturbances of overhead aircraft, to the fairly constant noise generated by traffic on freeways. Noise is primarily a concern with regard to noise-sensitive uses such as residences, schools, churches, and hospitals.

Noise Measurement

Three aspects of community noise are used in assessing the noise environment:

- *Level* (e.g., magnitude or loudness) of sound. Sound levels are measured and expressed in decibels (dB) with 10 dB roughly equal to the threshold of hearing. **Figure 9-4** shows the decibel levels associated with different common sounds.
- *Frequency* composition or spectrum of the sound. Frequency is a measure of the pressure fluctuations per second, measured in units of hertz (Hz). The characterization of sound level magnitude with respect to frequency is the sound spectrum, often described in octave bands, which divide the audible human frequency range (e.g., from 20 to 20,000 Hz) into ten segments.
- *Variation* in sound level with time, measured as noise exposure. Most community noise is produced by

many noise sources that change gradually throughout the day and produce a relatively steady background noise having no identifiable source. Identifiable events of brief duration, such as aircraft flyovers, cause the community noise level to vary from instant to instant. A single number called the equivalent sound level or L_{eq} describes the average noise exposure level over a period of time.

Transient noise events may be described by their maximum A-weighted noise level (dBA) Hourly $-L_{eq}$ values are called Hourly Noise Levels.

Reporting Noise Levels

Measuring and reporting noise levels involves accounting for variations in sensitivity to noise during the daytime versus nighttime hours. Noise descriptors used for analysis factor in human sensitivity to nighttime noise when background noise levels are generally lower than in the daytime and outside noise intrusions are more noticeable. Common descriptors include the Community Noise Equivalent Level (CNEL) and the Day-Night Average Level (DNL, symbol (L_{dn})). Both reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the evening and night. The CNEL descriptor is used in relation to major continuous noise sources, such as aircraft or traffic, and is the reference level for the Noise Element.

Knowledge of the following relationships is helpful in understanding how changes in noise and noise exposure are perceived:

- Except under special conditions, a change in sound level of 1 dB cannot be perceived;
- A 3 dB change is considered a just noticeable difference;
- A 5 dB change is required before any noticeable change in community response would be expected. A 5 dB increase is often considered a significant impact: and
- A 10 dB increase is subjectively heard : approximate doubling in loudness and almost always causes an adverse community response.

NOISE SOURCES IN SAN PABLO

The major sources of noise in San Pablo are related to vehicular traffic, including automobile and truck traffic on arterial roads and Interstate 80, and rail operations along Giant Road. Schools, industrial areas and construction sites may also generate noise during the day. Existing noise contours are shown in **Figure 9-5**.

Traffic Noise

Traffic noise depends primarily on the speed of traffic and the percentage of truck traffic. The primary source of noise from automobiles is high frequency tire noise, which increases with speed. In addition, trucks and older automobiles produce engine and exhaust noise, and trucks also generate wind noise. While tire noise from cars is located at ground level, truck noise sources can be as high as ten to fifteen feet above the roadbed due to tall exhaust stacks and higher engines. Sound walls are not effective for mitigating such noise unless they are very tall.

Maximum noise levels of DNL 60 dB are considered “normally acceptable” for unshielded residential development. Noise levels from DNL 60 dB to 70 dB fall within the “conditionally unacceptable” range, and those in the DNL 70 to 75 dB range are “normally unacceptable.”

Noise exposure contours for San Pablo were modeled by applying the Federal Highway Administration’s noise modeling procedure. These noise contours are conservative, meaning that the contours are modeled with no noise attenuation from natural barriers and buildings. Automobile traffic on Interstate 80 creates the highest amount of noise with noise levels exceeding 80 dB during peak hours at 100 feet from the highway. San Pablo Avenue, Rumrill Boulevard, and 23rd Street also produce a high amount of traffic noise, especially near intersections.

Noise from Trains along the BNSF Railroad

Rail operations contribute to the noise environment in San Pablo. The BNSF railroad corridor (formerly Burlington Northern Santa Fe) along Giant Road at the western edge of the Planning Area primarily carries freight trains. These trains generally travel at speeds of about 30 miles per hour and generate high noise levels when crossing roadways at-grade. Noise levels typically range from DNL 60 to 70 dB at 100 feet from the railroad tracks. Because train noise only lasts a few minutes every time and occurs only a few times a day, they are not considered as severe as noise from a construction site or Interstate 80.

Noise from Industrial Zones

Two industrial clusters in San Pablo have the potential to cause noise impacts. The first is located south of Brookside Drive along the west side of Rumrill Boulevard, and the second at Giant Trade Center along Giant Road. The tenants in both of these areas consist primarily of salvage yards, warehouses, car repair shops and wholesalers. At full buildout of the General Plan, newer and cleaner industries are expected to be located in both areas, which would reduce noise impacts.

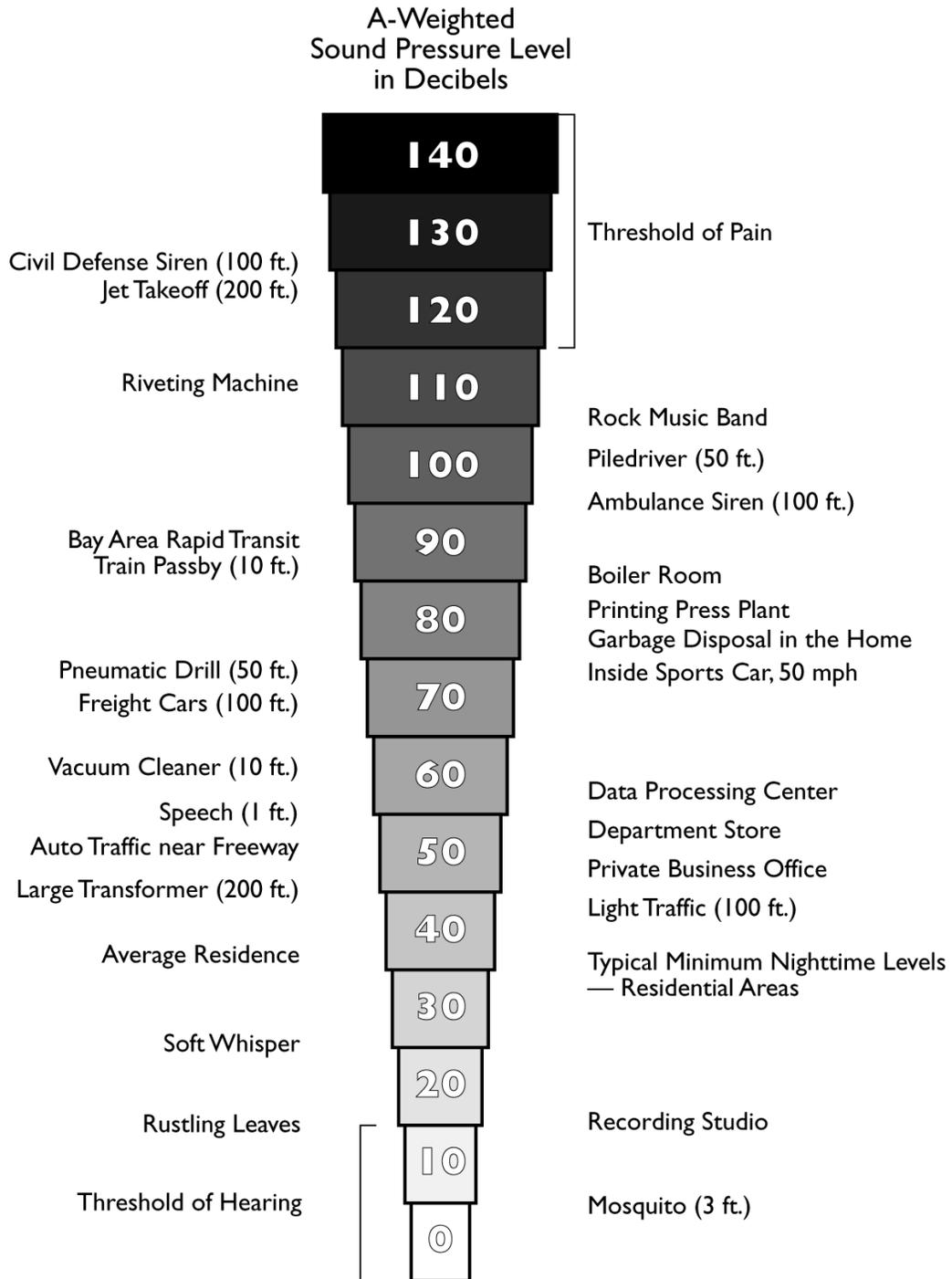
Noise from Construction Activity

Noise from construction activity is created by the operation of heavy equipment used in grading and earth moving, including diesel engine machines, as well as activities such as piling, demolition, hammering, drilling, and other construction work. Construction noise is regulated in the City's Municipal Code, which limits noise from construction operations between 8 p.m. and 7 a.m. in residential areas on weekdays and Saturdays and between 10 pm and 6 am in commercial areas on all days, unless there is an emergency. No noise-generating construction is allowed in residential areas on Sundays. General Plan policies also require contractors to use best available control technology (such as noise attenuation fences, mufflers and engine shrouds) to reduce the amount of noise generated.

PROJECTED NOISE CONDITIONS

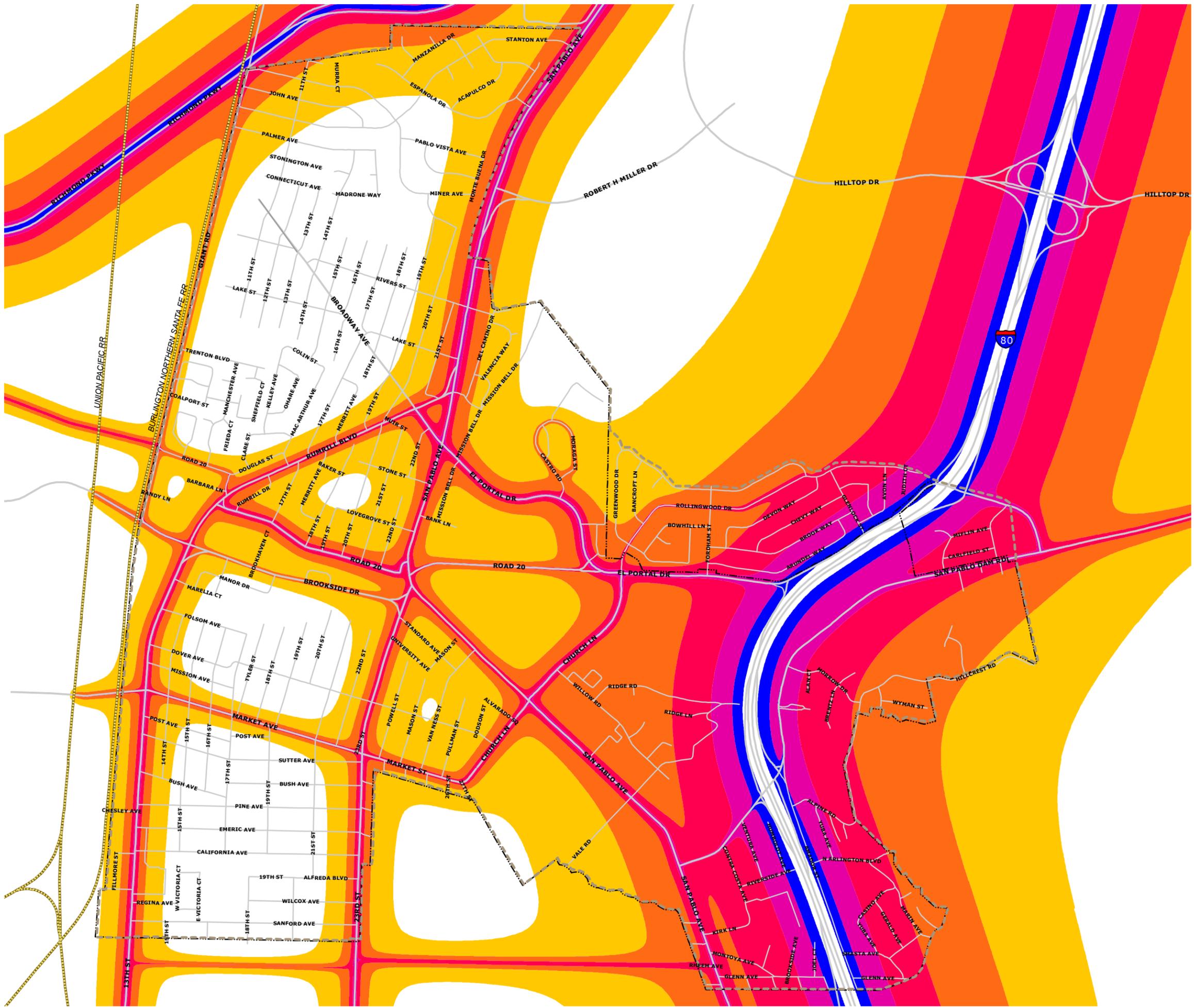
Higher traffic volumes, more commercial noise sources, and a larger population will all contribute to the noise environment in San Pablo in 2040 and beyond. Future noise contours are provided in **Figure 9-6**. Increases in traffic levels can be counteracted by the implementation of alternative forms of transportation and land use design that factor in noise concerns. Locating noise-sensitive uses away from high noise areas (e.g. San Pablo Avenue) and buffering noise levels through design and landscape features will help minimize future noise-related land use conflicts.

Figure 9-4: Typical Sound Levels



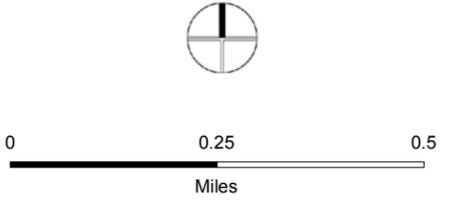
(n ft.) = Distance in feet between source and listener

Figure 9-5
Existing Noise Contours



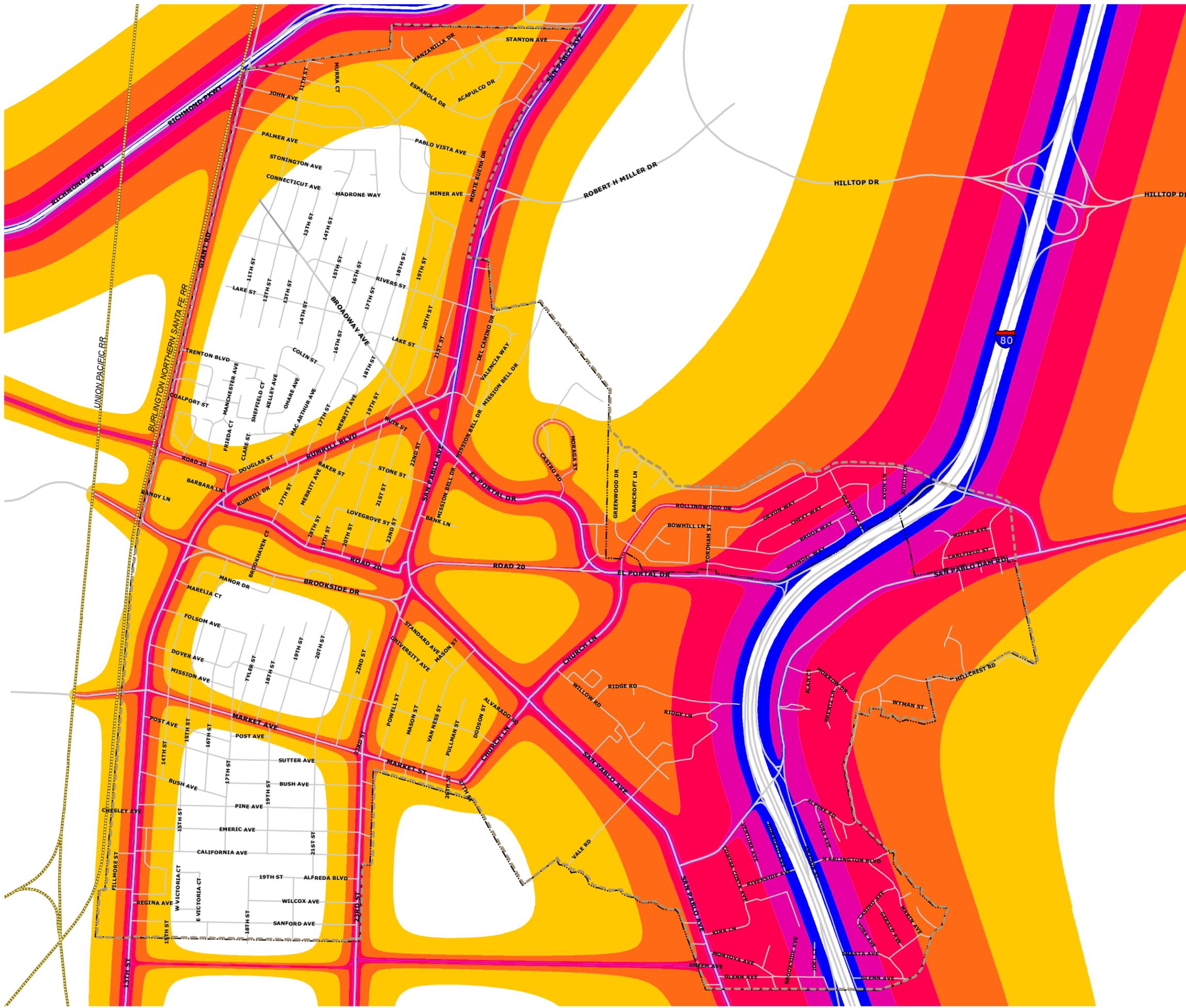
- > 55 dB
- > 60 dB
- > 65 dB
- > 70 dB
- > 75 dB

- Planning Area
- City Limits
- Major Roads
- Minor Roads
- Railroads



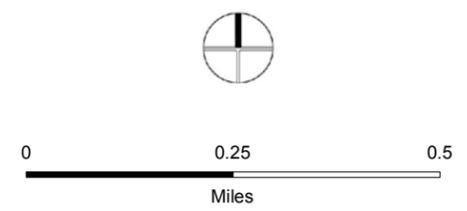
SOURCE: Charles Salter Associates, 2009;
 Contra Costa County, 2010; City of San Pablo, 2010;
 Dyett & Bhatia, 2010.

Figure 9-6
Future Noise Contours



- > 55 dB
- > 60 dB
- > 65 dB
- > 70 dB
- > 75 dB

- Planning Area
- City Limits
- Major Roads
- Minor Roads
- Railroads



SOURCE: Charles Salter Associates, 2009;
 Contra Costa County, 2010; City of San Pablo, 2010;
 Dyett & Bhatia, 2010.

Policies in this chapter establish review criteria for certain land uses to ensure that future noise levels will not exceed acceptable levels near noise-sensitive land uses.

Guiding Policies

SN-G-9 Protect public health and welfare by eliminating noise problems and maintaining an acceptable indoor and outdoor acoustic environment.

IMPLEMENTING POLICIES

General Noise Policies

SN-I-36 Use the Community Noise Level Exposure Standards, shown in **Table 9.6-1**, as review criteria for new land uses. Require all new development that would be exposed to noise greater than the “normally acceptable” noise level range to reduce interior noise through design, sound insulation, or other measures.

SN-I-37 Require proposed industrial, commercial, and other uses with potential noise and vibration-producing activities to submit a noise study report identifying noise and vibration mitigation measures that would reduce the adjacent noise level to acceptable ranges based on the Community Noise Environment Standards.

SN-I-38 Require new, fixed noise sources (e.g. mechanical equipment) to use best available control technology to minimize noise and vibration.

Noise from mechanical equipment can often be reduced by applying soundproofing materials, mufflers, or other controls provided by the manufacturer.

SN-I-39 Establish standards for noise reduction for new housing exposed to DNL noise levels above 65 dB, including but not limited to, the following:

- All facades must be constructed with substantial weight and insulation;
- Sound-rated windows with enhanced noise reduction for habitable rooms;

- Sound-rated doors with enhanced noise reduction for all exterior entries at habitable rooms;
- Minimum setbacks and exterior barriers;
- Acoustic baffling of vents is required for chimneys, attic and gable ends; and
- Installation of a mechanical ventilation system affording comfort and fresh air under closed window conditions is required.

Alternative acoustical designs that achieve the prescribed noise level reduction may be approved, provided a certified Acoustical Engineer submits information demonstrating that the required reductions can be achieved and maintained.

SN-I-40 Work with Caltrans, AC transit and railroad operators to mitigate transportation-related noise impacts on residential areas and sensitive uses. Additionally, continue to limit hours for construction and demolition work to reduce construction-related noises.

SN-I-41 Explore the feasibility of establishing a Railroad Quiet Zone in San Pablo by working with the State Public Utilities Commission Rail Crossings Engineering Section, the City of Richmond, and regional freight train operators.

A quiet zone is a railroad grade crossing at which trains are prohibited from sounding their horns in order to decrease the noise level for nearby residential communities. The train horns can be silenced only when other safety measures compensate for the absence of the horns. The Federal Railroad Administration website provides guidance to cities wishing to create railroad quiet zones. Additionally, the City of Richmond has established six quiet zones and may be able to share their experience with the City of San Pablo.

SN-I-42 Require that all new residential building designs for sites where the DNL will exceed 65dBA achieve noise level reductions through acoustical design and construction of the building elements:

- Residential building designs must be based upon a minimum interior design noise level reduction of 35dB in all habitable areas (i.e., garages, storage areas, etc. are excepted). The 35dB criteria must provide a minimum constructed noise level reduction of 30dB; and
- Residential building designs must also be based upon a minimum design noise level reduction of 40dB in all bedrooms. The 40dB criteria must provide a minimum constructed noise level reduction of 35dB.

SN-I-43

Require that all residential building designs for sites where the DNL will exceed 65dBA include supporting information for City review and approval demonstrating that an acoustical design providing the necessary noise level reduction has been prepared by a Board-Certified Acoustical Engineer for each dwelling unit prior to construction. Elements of this acoustical review process shall include:

- A letter by a Board-Certified Engineer approving the acoustical design of each dwelling unit (or group of units, if identical), submitted to the City with building permit applications. This letter must be received and approved prior to the issuance of a building permit;
- Following construction, a letter by the Board-Certified Engineer showing noise level reduction test results for a minimum of two habitable areas within each dwelling unit (or group of units, if identical), submitted to the City for review and approval prior to the issuance of an occupancy permit.

Acoustical analysis pursuant to General Plan noise standards should be the financial responsibility of the project applicant. All acoustical engineering and measurement should be conducted under the direction of an Acoustical Engineer who is currently Board Certified by the Institute of Noise Control Engineering, USA. General review and approval of groups of buildings or prototype designs may be sufficient to meet these requirements.

SN-I-44

Construction contractors shall implement the following measures for construction activities conducted within the City. Construction plans submitted to the City shall include construction noise analysis and identify these measures on demolition, grading, and construction plans submitted to the City. The City of San Pablo Building Department shall verify that grading, demolition, and/or construction plans submitted to the City include these notations prior to issuance of demolition, grading and/or building permits.

- Mufflers. During excavation and grading construction phases, all construction equipment, fixed or mobile, shall be operated with closed engine doors and shall be equipped with properly operating and maintained mufflers consistent with manufacturers' standards.
- Stationary Equipment. All stationary construction equipment shall be placed so that emitted noise is directed away from the nearest sensitive receivers.
- Equipment Staging Areas. Equipment staging shall be located in areas that will create the greatest distance feasible between construction-related noise sources and noise-sensitive receivers.
- Smart Back-up Alarms. Mobile construction equipment shall have smart back-up alarms that automatically adjust the sound level of the alarm in response to ambient noise levels. Alternatively, back-up alarms shall be disabled and replaced with human spotters to ensure safety when mobile construction equipment is moving in the reverse direction in compliance with applicable safety laws and regulations.
- Electrically-Powered Tools and Facilities. Electrical power shall be used to run air compressors and similar power tools and to power any temporary structures, such as construction trailers or caretaker facilities, where feasible.
- Noise Disturbance Coordinator. The project applicant shall designate a "noise disturbance

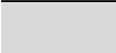
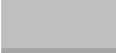
coordinator” responsible for responding to any local complaints about construction noise. The disturbance coordinator shall determine the cause of any noise complaint and shall require that reasonable measures be implemented to correct the problem. A telephone number for the disturbance coordinator and the City shall be posted at the construction site.

- Temporary Noise Barriers. Erect temporary noise barriers, where feasible, when construction noise is predicted to exceed the acceptable standards (e.g., 65 dBA at residences, schools, churches or other sensitive receptors and 70 dBA at commercial and industrial uses) and when the anticipated construction duration is greater than is typical (e.g., two years or greater). Temporary noise barriers shall be constructed with solid materials (e.g., wood) with a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the barrier. If a sound blanket is used, barriers shall be constructed with solid material with a density of at least one pound per square foot with no gaps from the ground to the top of the barrier and be lined on the construction side with acoustical blanket, curtain or equivalent absorptive material rated sound transmission class (STC) 32 or higher.

SN-I-45 Prior to issuance of a building permit for a project requiring pile driving during construction within 135 feet of fragile structures such as historical resources, 100 feet of non-engineered timber and masonry buildings (e.g., most residential buildings), or within 75 feet of engineered concrete and masonry (no plaster); a vibratory roller within 40 feet of fragile historical resources or 25 feet of any other structure; or a dozer or other large earthmoving equipment within 20 feet for a fragile historical structure or 15 feet of any other structure, the project applicant shall prepare a vibration analysis to assess and mitigate potential vibration impacts related to these construction activities. This vibration analysis shall be conducted by a qualified and experienced acoustical consultant or engineer. The vibration levels shall not exceed FTA

architectural damage thresholds (e.g., 0.12 in/sec Peak Particle Velocity (PPV) for fragile or historical resources, 0.2 in/sec PPV for non-engineered timber and masonry buildings, and 0.3 in/sec PPV for engineered concrete and masonry). If vibration levels would exceed this threshold, alternative uses such as drilling piles as opposed to pile driving, static rollers as opposed to vibratory rollers, and lower horsepower earthmoving equipment shall be used. If necessary, construction vibration monitoring shall be conducted to ensure Federal Transit Administration (FTA) vibration thresholds are not exceeded.

Table 9.6-1: Land Use Compatibility For Community Noise Environments

Land Use Category	Community Noise Exposure (Ldn or CNEL, dB)					
	55	60	65	70	75	80
Residential – Low Density Single Family, Duplex, Mobile Homes	Light Gray	Light Gray	Medium Gray	Medium Gray	Dark Gray	Very Dark Gray
Residential – Multi Family	Light Gray	Light Gray	Light Gray	Medium Gray	Dark Gray	Very Dark Gray
Mixed-Use & High Density Residential	Light Gray	Light Gray	Light Gray	Medium Gray	Dark Gray	Very Dark Gray
Transient Lodging – Motels, Hotels	Light Gray	Light Gray	Medium Gray	Medium Gray	Dark Gray	Very Dark Gray
Schools, Libraries, Churches, Hospitals, Nursing Homes	Light Gray	Light Gray	Medium Gray	Medium Gray	Dark Gray	Very Dark Gray
Auditoriums, Concerts, Halls, Amphitheaters	Light Gray	Light Gray	Medium Gray	Dark Gray	Very Dark Gray	Very Dark Gray
Sports Area, Outdoor Spectator Sports	Light Gray	Light Gray	Medium Gray	Dark Gray	Very Dark Gray	Very Dark Gray
Playgrounds, Neighborhood Parks	Light Gray	Light Gray	Light Gray	Medium Gray	Dark Gray	Very Dark Gray
Office Buildings, Businesses Commercial and Professional	Light Gray	Light Gray	Light Gray	Medium Gray	Dark Gray	Very Dark Gray
Industrial, Manufacturing Utilities, Agriculture	Light Gray	Light Gray	Light Gray	Light Gray	Medium Gray	Dark Gray
 Normally Acceptable	Specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.					
 Conditionally Acceptable	New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.					
 Normally Unacceptable	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and any necessary noise insulation features included in the design.					
 Clearly Unacceptable	New construction or development should not be undertaken.					

Source: Adapted from Governor's Office and Planning and Research, General Plan Guidelines, 2003.