

8 Safety and Noise

The purpose of the Safety and Noise Element is to identify the natural and man-made public and safety hazards that exist within the city, and to establish policies and programs to mitigate their potential impacts through both preventative and responsive measures. This Element addresses seismic hazards, wildfire hazards, drainage and flood control, hazardous materials, health and safety services, and the community noise environment.

8.1 SEISMIC AND GEOLOGIC HAZARDS

GEOLOGY

The Lemoore Planning Area lies just east of the trough of California's Central Valley. The Central Valley stretches 500 miles in a northwest to southeast direction and averages about 40 miles in width between the Coast Ranges in the west and the Sierra Nevada in the east. The whole region is characterized by flat-lying sedimentary rocks overlain by alluvial soils up to 200 feet deep near the Sacramento River.

EROSION

Soil erosion is a process whereby soil materials are worn away and transported to another area, either by wind or water. Rates of erosion can vary depending on the soil material and structure, placement, and human activity. Soil containing high amounts of silt can be easily eroded, while sandy soils are less susceptible. Excessive soil erosion can eventually damage building foundations and roadways. Erosion is most likely to occur on sloped areas with exposed soil, especially where unnatural slopes are created by cut-and-fill activities. Soil erosion rates can be higher during the construction phase. Typically, the soil erosion potential is reduced once the soil is graded and covered with concrete, structures, or asphalt.

SUBSIDENCE

Subsidence is the gradual settling or sinking of the earth's surface with little or no horizontal motion. Subsidence typically occurs in areas that overlie an aquifer where the groundwater level is gradually and consistently decreasing. Additionally, subsidence may also occur in the presence of oil or natural gas extraction. Areas of substantial subsidence occur on the west side of the Kings River, outside the Planning Area, and predominately relate to groundwater withdrawal.

EXPANSIVE SOILS

Expansive soils possess a "shrink-swell" characteristic. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in fine-grained clay sediments from the process of wetting and drying. Structural damage may occur over a long period of time, usually the result of inadequate soil and foundation engineering, or the placement of structures directly on expansive soils. Several portions of the Planning Area have soil with high to moderate shrink-swell potential.

These soils suitability issues are described in more detail in Chapter 7 and the accompanying **Figure 7-2**.

FAULT ZONES AND GROUND SHAKING

There are no known active seismic faults in Kings County or its immediate vicinity. Beyond surface rupture along the fault zone, potential hazards related to major earthquakes include ground shaking and related secondary ground failures. The principle earthquake hazard affecting the area is ground shaking as opposed to surface rupture or ground failure. According to a 1974 5-County Seismic Study, Kings County is in an area where amplification of shaking that would affect low- to medium-rise structures is relatively high. The vast majority of deaths during earthquakes are the result of structural failure mainly due to ground shaking. Most such deaths are preventable with existing knowledge of design and construction methods.

Ground shaking intensities are measured using the modified Mercalli Intensity Scale (see box). Earthquakes of M5.0 or greater have occurred on fault systems in the region, including the San Andreas Fault. The closest active fault is the Nunez fault located in western Fresno

Modified Mercalli Intensity Scale

The modified Mercalli Intensity Scale is a 12-point scale of earthquake intensity based on local effects experienced by people, structures, and earth materials. Effects range from those that are detectable only by seismicity recording instruments M1 (I) to total destruction M12 (XII). Most people will feel Intensity M4 (IV) ground motion indoors and Intensity M5 (V) outside. Intensity M6 (VI) ground shaking will cause some heavy furniture to move, plaster to fall, and minor chimney damage. Intensity M7 (VII) will cause considerable damage in poorly designed or constructed buildings (including some broken chimneys), slight to moderate damage in well-built ordinary structures, and negligible damage in buildings of good design and construction. Intensity M8 (VIII) will cause great damage in poorly designed or constructed buildings (including fall of chimneys, factory stacks, columns, walls, etc.), considerable damage in ordinarily substantial structures (including some partial collapse), but slight damage in specially designed structures.

Source: Bolt, 1988; California Geological Survey, 2003.

County. The Nunez fault is a 4.2-km-long, north-south-trending, right-reverse, oblique-slip fault situated about 8 miles northwest of Coalinga. Surface rupture occurred along this fault in the 1983 Coalinga earthquakes, which had a magnitude of 6.7. This was followed by another earthquake with magnitude of 6.0 in 1985. The location of this fault however, is far away from Lemoore and aftershocks during both earthquakes did not cause any damage.

Secondary natural hazards associated with earthquakes result from the interaction of ground shaking with existing ground instabilities, and include liquefaction, settlement or subsidence, landslides and seiches. While some of these secondary hazards are a concern to other parts of Kings County and the 5-County Seismic Study region, none are considered of particular concern to the Lemoore Planning Area because of its distance from the major regional fault (San Andreas Fault), the lack of steep slopes, and the clay composition of area soils.

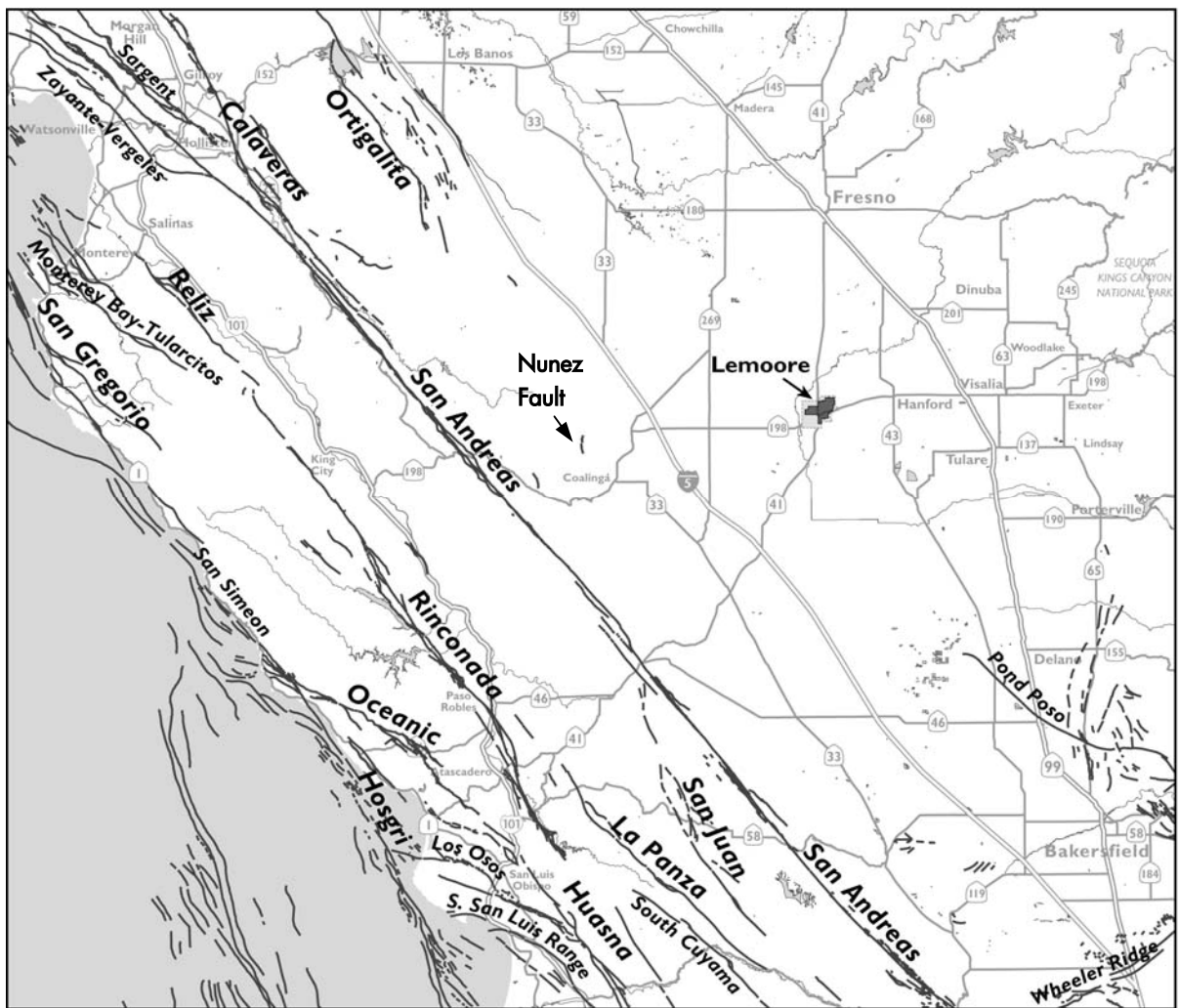


Figure 8-1
Regional Faults

RESPONSE OF STRUCTURES TO EARTHQUAKES

Existing structures in the Planning Area could be affected by the earthquake-induced ground shaking described above, but to varying degrees based on length, intensity, and distance of the earthquake from a given building. New structures are required to adhere to current California Uniform Building Code (CUBC) standards, providing adequate design, construction and maintenance of structures to prevent exposure of people and structures to major geologic hazards. In particular, any critical facilities such as hospitals, fire and police stations, and emergency communications and operations centers must be adequately designed, constructed and maintained with the goal of remaining functional after a large seismic event. The use of flexible utility connections, building anchors, and adequately reinforced concrete can reduce the loss of life and damage to buildings for human occupancy. The requirements of Zone II of the Uniform Building Code are considered adequate for normal facilities in the Lemoore Planning Area.

GUIDING POLICIES

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



Seismic forces can lead to ground subsidence such as that pictured above.

IMPLEMENTING POLICIES

SN-I-1 Review proposed development sites at the earliest stage of the planning process to locate any potential geologic or seismic hazard.

Following receipt of a development proposal, engineering staff will review the plans to determine whether a geotechnical review is required. If the review is required, then the applicant will be referred to geotechnical experts for further examination.

SN-I-2 Maintain and enforce appropriate building standards and codes to avoid or reduce risks associated with geologic constraints and to ensure that all new construction is designed to meet current safety regulations.

SN-I-3 Facilitate stricter safety provisions for important or critical-use structures (such as hospitals, schools, fire, police, and public assembly facilities; substations and utilities) through input during site selection and a comprehensive geotechnical investigation.

SN-I-4 Require mitigation for structural alterations on load-bearing and un-reinforced masonry buildings to ensure structural safety.

Measures include requiring a professional structural engineer to verify the structural integrity of the building and potential impacts to surrounding buildings

through the submission of an Engineering Analysis Report (EAR), requiring shoring, bracing, anchoring, foundation support, or construction of a metal perimeter safety fence on site, and/or other measures deemed necessary by the structural engineer.

- SN-I-5 Require utilities be designed to withstand probable seismic forces to be encountered in Lemoore.

This policy applies to underground utilities, overhead utilities including utility poles and utility equipment at sub-stations.

- SN-I-6 Control erosion of graded areas with vegetation or other acceptable methods.

Plant materials should not be limited to hydro seeding and mulching with annual grasses. Trees add structure to the soil and take up moisture while adding color and diversity.

- SN-I-7 Establish location standards and inspection requirements for above-ground storage tanks to minimize potential risks to life and property.

Above ground storage tanks (AST) include storage of water, agriculture products, petroleum, or other materials. These tanks must be located at an appropriate distance from residential areas, and inspected annually, to ensure compliance with appropriate State and federal codes.

8.2 FLOOD CONTROL

FLOOD ZONES

The 100-year and 500-year floodplains for the Lemoore Planning Area are delineated by the Federal Emergency Management Agency's Flood Insurance Rate Maps. A total of 14 percent of the Planning Area (1,710 acres) is located within the 100-year flood plain and 6 percent is located in the 500-year flood plain (764 acres). Within the Urban Growth Boundary, 6 percent (448 acres) is located within the 100-year flood plain. These floodplains are largely located in the western portion of the Planning Area near the wetlands and the westside industrial park. The majority of the Planning Area (80 percent) is located outside of these two floodplains. (The City has applied for an amendment to the current FEMA floodplain maps. The City will amend the General Plan maps after approval is received.)

The Kings River, which is the primary source of irrigation water for the Planning Area, is regulated by the Pine Flat Dam, located east of Fresno. A Flood Inundation Analysis performed for Pine Flat Dam by the U.S. Army Corps of Engineers indicates the potential effects of dam failure on the downstream floodplain covers the entire Planning Area. The extremely low probability of the occurrence of dam failure, large volume of flood water available for dilution of potential pollutants, and the relatively long warning period to ready the dairy sites for flooding indicate that inundation related to dam failure would not be a significant impact on growth and development in and around Lemoore.

Table 8.1 Floodplains in Lemoore Planning Area

<i>Type</i>	<i>Acreage</i>	<i>Percent of Planning Area</i>	<i>Acreage in Urban Growth Boundary</i>	<i>Percent of Urban Growth Boundary</i>
100 Year Floodplain	1,710	14	448	6
500 Year Floodplain	764	6	0	0
Area Outside Floodplains	9753	80	7,230	94
Total	12,227	100	7,680	100

Note: The City has submitted an application to FEMA for a change in the 100-year floodplain boundary to reflect City improvements. This proposed change has not been incorporated into FEMA-provided maps and is not included in the acreage calculation. When GIS digital files are available, the flood hazard maps will be updated.

Source: Federal Emergency Management Agency, 2006.

GUIDING POLICIES

SN-G-2 *Protect the community from risks to lives and property posed by flooding and stormwater runoff.*

IMPLEMENTING POLICIES

SN-I-8 Require all new development within a flood zone to comply with the City’s Flood Damage Prevention Ordinance.

SN-I-9 Identify and remedy deficiencies in the existing storm drainage infrastructure in partnership with regional and federal agencies.

Minor flooding currently occurs on Cedar Lane east of 19th Avenue, East D Street east of Lemoore Avenue, and areas north of Hanford Armona Road. The City will continually plan for and upgrade storm drainage facilities to meet future drainage needs in cooperation with the Lemoore Canal and Irrigation Company, California Department of Transportation, and other regional and federal agencies.

SN-I-10 Require new development to prepare hydrologic studies and implement appropriate mitigation measures to minimize surface water run-off and reduce the risk of flooding.

Developers will be required to provide an assessment of a project’s potential impacts 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, installation of pump stations, and the use of permeable paving in driveways and parking areas, may be required.

SN-I-11 Require developers to provide for the ongoing maintenance of detention basins.

Maintenance may be by the City under contract or by a private entity. If wetlands are affected, maintenance of detention basins will include mitigation monitoring in compliance with regulatory requirements.

SN-I-12 Ensure City staff and its Emergency Response Services receive early warning of a catastrophic failure of Pine Flat Dam, and are trained to respond to this emergency and receive formal training in an Emergency Operation Center.

The early warning and training system will include coordination and communication with the U.S. Army Corps of Engineers.

8.3 WILDLAND FIRE HAZARDS

Fire hazard potential is largely dependent on the extent and type of vegetation, known as surface fuels, that exists within a region. Fire hazards are typically highest in heavily wooded, undeveloped areas as trees are a greater source of fuel than low-lying brush or grassland. Suburban, urban areas or rocky barren areas have minimal surface fuels and therefore typically have the lowest fire hazard. Wildfire hazard data for the Lemoore Planning Area is provided by the California Department of Forestry and Fire Protection, as illustrated in **Figure 8-2** and summarized in **Table 8.1**. The majority of the Planning Area is considered to have either little or no threat or a moderate threat of wildfire. Only one percent of the Planning Area currently has a high threat of wildfire. Wildfire hazard present in the Planning Area should decrease as vacant parcels become developed. Although not identified on the map, the City does experience frequent fire problems along the railroad, as they tend to not take proper care of their weed abatement.

Table 8.2 Existing Wildfire Hazards

<i>Fire Hazards</i>	<i>Acreage</i>	<i>Percent of Planning Area</i>
Little or No Threat		46
Moderate	6,494	53
High	85	1
Very High	-	0
TOTAL	12,227	100

Note: Level of fire hazard severity based on surface fuels analysis, California Department of Forestry and Fire Protection.

Source: California Department of Forestry and Fire Protection, Dyett & Bhatia, 2004

GUIDING POLICIES

SN-G-3 *Protect Lemoore’s residents and businesses from potential wildfire hazards.*

IMPLEMENTING POLICIES

SN-I-13 Ensure Fire Department personnel are trained in wildfire prevention, response and evacuation procedures.

SN-I-14 Continue the City’s Weed Abatement Program administered by the Volunteer Fire Department to reduce fire hazards before the fire season.

- SN-I-15 Enforce the Uniform Fire Code through the approval of construction plans and final occupancy permits.
- SN-I-16 Utilize existing or new public awareness programs through the Volunteer Fire Department to highlight the dangers of open burning and how home owners can protect their properties from wildfires.
- SN-I-17 Update news media and City residents on current wildfire threat levels during drought periods.

8.4 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 Regulation (CCR) 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 (CCR, Title 22, Division 4.5, Chapter 10, Article 2, Section 66260.10). 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) (CCR, Title 22, Chapter 11, Article 3).

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 Central Valley Regional Water Quality Control Board and U.S. Environmental Protection Agency (U.S. EPA), are shown in **Figure 8-2**. These sites are designated as either, Leaking Underground Fuel Tanks (LUFT) sites, SLIC (Spills, Leaks, Investigations, and Cleanups) sites, which are non-fuel contamination sites, Toxic Release sites, and Air Emissions. Most of the contaminated sites within the Planning Area are largely associated with leaking underground storage tanks and are predominately clustered around the City's railroad tracks, between 19th Avenue and Lemoore Avenue. LUFT sites are predominately associated with retail and commercial uses (e.g., gas stations, convenience stores, car washes, etc.) while additional sites are associated with local industrial and agricultural uses. In 2007, there are 13 LUFT sites, one SLIC site, and two Toxic Release sites within the Planning Area. A complete list of hazardous materials sites and handlers is included in Appendix B.

All hazards figure

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Although not included on the map or as a listed hazardous site, hazardous materials have potential to exist at the old jet bowl, located north of Iona and east of the golf course parking lot, as well at the fueling distribution site, located off Lemoore south of the railroad tracks and wrecking yards located on 19 ½ Avenue and Iona Avenue. The potential also exists for agricultural chemical residues to be present in shallow soils within the Planning Area. In addition, the San Joaquin Valley Railroad line extends through the central portion of the Planning Area. Railroad rights-of-way typically have surface contamination due to the lubricating oil used on the wheels and the use of herbicides to help minimize weeds within these areas.

Currently, there are no hazardous wastes landfill sites within Lemoore. The Kings Waste & Recycling Authority maintains a permanent Household Hazardous Waste facility in the City of Hanford. Lemoore residents can make use of this facility through free household hazardous waste disposal services available at collection sites in the City. The City collects e-waste, battery, and used oil for disposal.

GUIDING POLICIES

SN-G-4 Protect Lemoore's ecology and residents from harm resulting from the improper production, use, storage, disposal, or transportation of hazardous materials.

IMPLEMENTING POLICIES

SN-I-18 Prohibit locating of businesses or expansion of businesses meeting federal Emergency Planning and Community Right-to-Know Act (EPCRA) reporting requirements within a quarter mile of schools, hospitals, and residential neighborhoods.

This policy applies to all facilities that qualify for hazardous chemical storage reporting requirements under EPCRA Sections 311 and 312. Where the location or expansion of such facilities within a quarter mile of these uses cannot be feasibly avoided, effective planning, notification, and mitigation measures will be implemented.

SN-I-19 Require remediation and cleanup of sites contaminated with hazardous substances.

The level of remediation and cleanup will be determined by the City based on the intended use and health risk to the public. At the minimum, remediation will be in compliance with federal and State standards. Clean-up shall be required in conjunction with new development, reconstruction, property transfer of ownership, and/or continued operation after the discovery of contamination.

SN-I-20 Coordinate enforcement of the Hazardous Material Disclosure Program with the Kings County Health Department to identify facilities producing, utilizing, or storing hazardous wastes.

State and Federal legislation requires every business that handles hazardous materials report their inventories to the local fire department. The program's primary

function is to identify, monitor, and assist businesses using or storing hazardous materials and allow the City to handle emergency incidents more effectively. The City will maintain and share this information with police, fire, and emergency services.

SN-I-21 Promote the reduction, recycling and safe disposal of household and business hazardous wastes through public education and awareness.

The City will: 1) Educate the public on the types of household and business hazardous wastes and their proper disposal methods, 2) Provide information on the Kings Waste and Recycling Authority collection programs, including drop-off points and collection dates, and 3) Encourage citizen reporting of unlawful dumping activity. The City currently handles e-waste and battery and oil recycling.

8.5 SAFETY SERVICES

POLICE SERVICES

Housed at 657 Fox Street on the northwest corner of Fox Street and Cinnamon Drive, the Lemoore Police Department provides police services for the City. The Police Department has a staff of 31 sworn peace officers and 7 civilian staff members. There are 30 vehicles assigned to the Department. The location of the police station is illustrated in **Figure 8-2**.



Lemoore Police Officers patrolling on bicycles.

The Police Department currently operates at a ratio of 1.33 officers per thousand residents, which is lower than the western U.S. average of 1.5 officers per thousand residents reported by the Federal Bureau of Investigation. Average response times in 2006 averaged between 2.1 to 6.1 minutes depending on the priority type. Response times and the ability of the Police Department to provide acceptable levels of service are contingent on increasing staffing levels, sworn and civilian,

consistent with resident population increase and the population of visitors, merchants, schools, and shoppers with the Department’s service area. The current Police Department facility is nearing capacity. Facility and manpower resources will continue to be stretched as demand for services increase in the future. The number of officers required at buildout to maintain the existing service ratio is depicted in **Table 8.3**.

Table 8.3 Police Service Existing and Future Demand

	<i>Existing Conditions (2006)</i>	<i>Demand at Buildout (2030)</i>
Sworn Officers	31	64
Population	23,390	48,250

Source: City of Lemoore, 2006; Dyett & Bhatia, 2007.

As the City grows, the Police Department faces the dual challenges of maintaining smooth traffic flow and ensuring the safety of Lemoore citizens. It will be important for the City of Lemoore to consider projected growth and geographic distribution of population as presented in the General Plan when allocating resources to the Police Department and negotiating locations for new facilities.

Police Programs

The Lemoore Citizens' Police Academy started in March 1997 gives members of the community a better understanding of the criminal justice system. The Citizens' Academy has been tailored to the philosophy of community policing embraced by members of the Lemoore Police Department. The Department's goal is to provide 2 sessions of the Citizen's Police Academies a year.

In October 1997, the Department started the Volunteers in Policing Program, where graduates of the Citizens' Academy volunteer hours to make patrol checks, handle clerical work, work radar, finger print and other miscellaneous tasks as required. The Volunteers in Policing donated 5,092 hours of volunteer time during 2006 to their community. This brings the total number of hours donated by members of the Volunteers in Policing to 38,349 hours since the start of the program.

FIRE AND LIFE SAFETY SERVICES

The Lemoore Volunteer Fire Department (LVFD) has operated as an all volunteer department since 1921. The LVFD includes one Chief, two Assistant Chiefs, four Crew Captains, seven Engineers, eleven Emergency Medical Technicians, one paid part-time Secretary, and one paid full-time maintenance worker. The department covers an area of approximately nine square miles, with Mutual Aid Agreements with Kings County Fire, Hanford City Fire and the Naval Air Station Lemoore. Other public services provided include fire inspections, tours and demonstrations, permitting of certain hazardous materials, and investigation of hazardous materials incidents. The Fire Department regulates explosive and hazardous materials under the Uniform Fire Code, and permits the handling, storage and use of any explosive or other hazardous material.

Table 8.4 Fire Service Existing and Future Demand

	<i>Existing (2006)</i>	<i>Demand at Buildout (2030)</i>
Staffing	35 volunteers	72 volunteers
Facilities	2	3

Sources: City of Lemoore, 2006; Dyett & Bhatia, 2007.

In 1997 the City earned its Insurance Service Office's (ISO) rating of 3, on a scale of 1 to 10 with 1 being the best rating. The City currently has a ratio of 1.5 firefighters per thousand residents. Future staffing required to maintain current the ratio is depicted in **Table 8.4**. Existing fire response times average between 4 and 6 minutes. The locations of both existing and future City and



8-13 Volunteer firefighters demonstrate techniques to put out a fire, as by-standers watch on.

County fire stations are illustrated in **Figure 8-2**. As the City develops on the westside, the Fire Department estimates that an additional station, equipment, and personnel will need to be added in order to maintain the current ISO rating and response times. If fire response service improvements do not keep pace with growth, response time will increase, fire losses will increase, insurance rates will increase, and citizens' safety will be in jeopardy. It will be important for the City of Lemoore to consider projected growth and geographic distribution of population as presented in the General Plan when allocating resources to the Fire Department and negotiating locations for new facilities, in particular on the west side of the City.

EMERGENCY RESPONSE

The California Emergencies Services Act (State Government Code Section 8550-8668) requires each city to prepare and maintain an Emergency Plan for natural, manmade, or war-caused emergencies that result in conditions of disaster or in extreme peril to life. The City of Lemoore published an Emergency Operations Plan (EOP) in 2005. The City's EOP provides guidance to City staff in the event of extraordinary emergency situation associated with natural disaster and technological incidents. The EOP concentrates on operation concepts and response procedures relative to large-scale disasters. In the event of a county-wide disaster, the City is to assume its role assigned in the Kings County EOP.

GUIDING POLICIES

SN-G-5 Maintain and enhance the City's capacity for law enforcement, fire-fighting and emergency response.

IMPLEMENTING POLICIES

SN-I-22 Assess the manpower, facility, and equipment needs of Police and Fire services at least every three years in order to provide all residents with an optimal level of protection.

To meet existing and future demand, the City will continue to plan for adequate law enforcement and fire-fighting services and ensure their staffing ratios and response time meet national standards. The requirements for additional Police and Fire Stations shall be considered in Capital Improvement Program budgets and development impact fees.

SN-I-23 Support public education programs involving crime prevention, fire protection and safety issues.

Currently, Lemoore's Police Department has a number of outreach and training programs in place. These include the Neighborhood Watch, Are you ok? Explorers, Volunteers in Policing, Secret Witness, D.A.R.E., and Citizens' Academy programs, as well as County-wide Narcotics and Gang task forces. The Volunteer Fire Department also has public education programs. The City will support these and future efforts by these departments involving crime prevention, fire protection and safety issues. Additionally, the City will encourage residents to prepare a 72 hour emergency kit as part of its public education initiative.

Law Enforcement

- SN-I-24 Develop an additional police station with improved access to parts of Lemoore west of SR-41 and parts south of SR-198, when necessary to maintain performance and response standards.
- SN-I-25 Maintain mutual aid agreements with Kings County, Naval Air Station Lemoore, neighboring law enforcement agencies and the California Highway Patrol.
- SN-I-26 Collaborate, and exchange information with other local, state and federal agencies and with utility service providers in activities related to terrorism prevention and response.

Fire-Fighting

- SN-I-27 Maintain Fire Department performance and response standards at Class 3 ISO rating or better, including building and staffing a new fire station in West Lemoore if necessary.
- SN-I-28 Require adequate access for emergency vehicles in all new development, including adequate widths, turning radii, and vertical clearance on new streets.

The street cross-sections in the General Plan are consistent with this policy.

- SN-I-29 Require sprinklers in buildings exceeding 5,000 square feet and all mixed use development to protect residential uses from non-residential uses, which typically pose a higher fire risk.

Appropriate fire protection measures are necessary in mixed use developments, since residential units are typically in close proximity to higher fire load occupancies, such as retail stores, restaurants, etc.

- SN-I-30 Maintain mutual aid agreements with Kings County, California Department of Forestry, Naval Air Station Lemoore, and nearby cities for fire and disaster services.

Additional policies in the Land Use Element will ensure that new development finances additional public safety facilities as necessary to mitigate its own impacts.

8.6 NOISE

The purpose of this section is to identify the noise sources that exist within the City, and to establish policies and programs to mitigate their potential impacts through both preventive and responsive measures. This section has a direct relationship with the land use, circulation, and housing elements. A thorough understanding of the noise characteristics of the

transportation system as well as the noise sensitivity of certain land uses will allow Lemoore citizens and officials to make smart decisions to prevent noise annoyance before it occurs.

NOISE CHARACTERISTICS AND MEASUREMENT

Noises vary widely in their scope, source, and volume, ranging from individual occurrences such as a leaf blower or holiday firecrackers, to regular though intermittent disturbance by aircraft flying overhead, or an infrequent train going through town, to the fairly constant noise generated by traffic on large highways or freeways. Noise is primarily a concern with regard to noise-sensitive land uses such as residences, schools, churches, and hospitals.

Noise Measurement

Noise is commonly defined as any undesirable or unwanted sound. Three aspects of noise are used in assessing the community 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 8-1** 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 divides 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 distant noise sources that change gradually throughout the day and produce a relatively steady background noise with 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

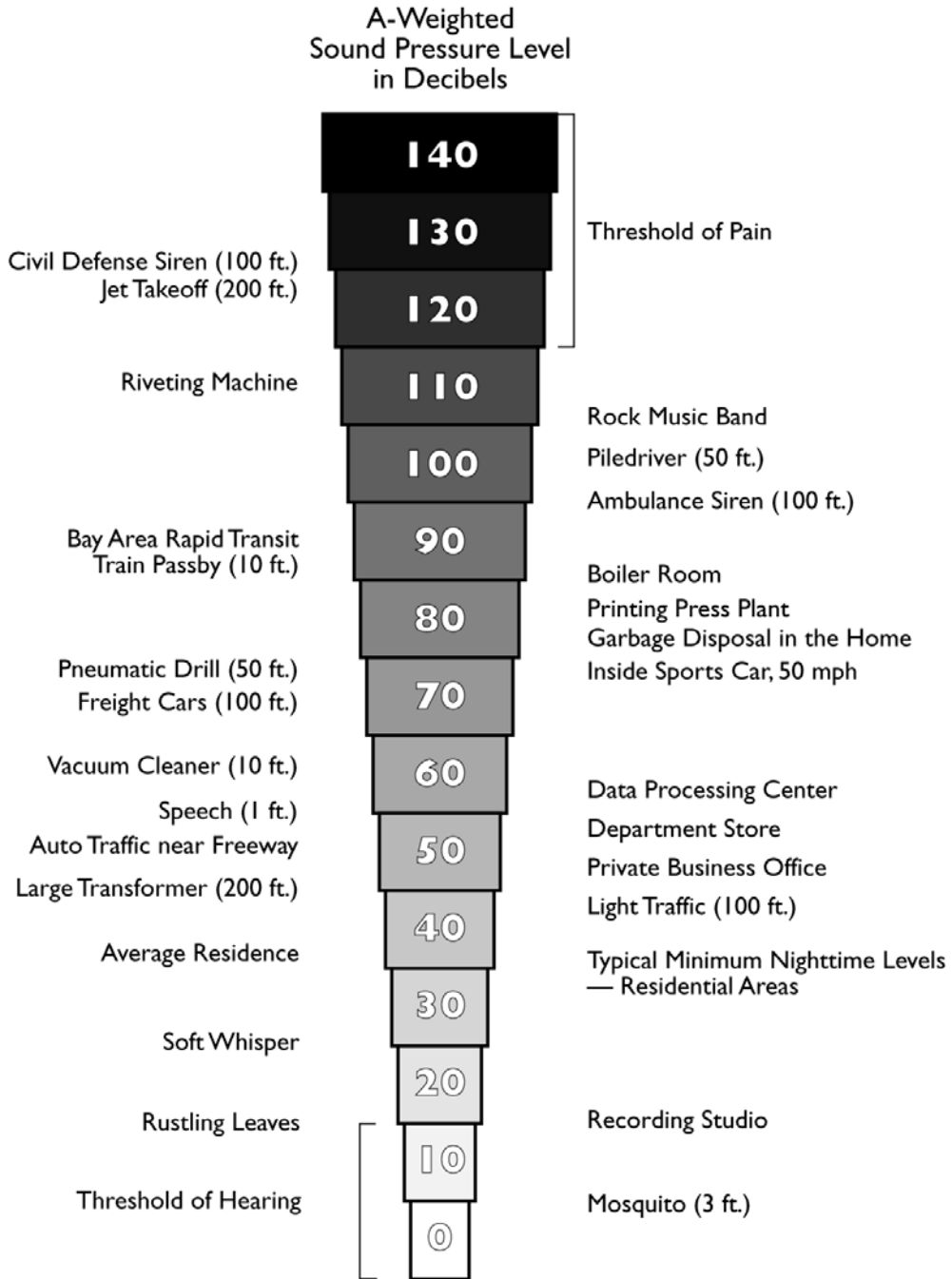
Measuring and reporting noise levels involves accounting for variations in sensitivity to noise during the daytime versus nighttime hours. Noise descriptors used for analysis need to account for human sensitivity to nighttime noise; background noise levels are generally lower than in the daytime and outside noise intrusions are more noticeable. Common descriptors include the Community Noise Equivalent Level (CNEL) and the Day-Night Average Level (DNL). Both reflect noise exposure over an average day with weighting to reflect the increased sensitivity to noise during the evening and night. The two descriptors are roughly equivalent. 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 as an approximate doubling in loudness and almost always causes an adverse community response.

Figure 8-3
Noise Levels of Common Sounds



Criteria for Significance

The following noise exposure criteria will be used to evaluate proposed residential and mixed-use development within the City of Lemoore:

- The California Building Code requires that habitable rooms in multi-family dwellings with an exterior DNL or CNEL noise exposure above 60 dB receive an acoustical analysis to ensure a maximum interior noise level of 45 dB¹;
- State and federal agencies set the 65 db exterior CNEL noise exposure as the maximum normally acceptable level above which residential uses may be incompatible if not acoustically treated²;
- The State Office of Noise Control in coordination with the Governor’s Office of Planning and Research has published guidelines showing residential noise compatibility “Conditionally Acceptable” in areas of DNL or CNEL noise exposure between 55 dB and 70 dB, and “Normally Unacceptable” in areas between 70 dB and 75 dB³; and
- The Navy’s Air Installations Compatible Use Zones (AICUZ) land use compatibility guidelines for aircraft noise zones state that residential uses are not compatible and should be “discouraged in areas of DNL or CNEL noise exposure in DNL 65-69 and strongly discouraged in DNL 70-74”⁴. The Navy’s instructions for AICUZ studies, such as are currently being undertaken by NAS Lemoore, go on to state that:

“The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the residential use would not be met if development were prohibited in these Zones. Where the community determines that these uses must be allowed, measures to achieve an outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB in DNL 65-69 and NLR of 30 dB in DNL 70-74 should be incorporated into building codes and be in individual approvals; for transient housing a NLR of at least 35 dB should be incorporated in DNL 75-79. Normal permanent construction can be expected to provide a NLR of 20 dB, thus the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation, upgraded Sound Transmission Class (STC) ratings in windows and doors and closed windows year round. Additional consideration should be given to modifying NLR levels based on peak noise levels and vibrations”⁵.

¹ California Building Code, Division II—Sound Transmission Control, Annex Chapter 12, 1208A.8.3 Airport Noise Sources, 1998.

² Table 7c, Noise Compatibility Criteria Alternatives – New Residential Land Uses, California Airport Land Use Planning Handbook, January 2002.

³ Guidelines for the Preparation and Content of Noise Elements of the General Plan, Office of Noise Control and Governors Office of Planning and Research, 1976.

⁴ Pg. 20, OPNAC Instruction 11010.36B, *AICUZ Program Procedures and Guidelines*, Department of the Navy Office of the Chief of Naval Operations, December 19, 2002.

⁵ *ibid*

NOISE GENERATION IN LEMOORE

The major noise sources in Lemoore are related to vehicle traffic on highways and major arterial roads, and secondarily, aircraft based at the Naval Air Station Lemoore (NAS Lemoore). Other noise sources include rail transportation, industrial activities, and the Lemoore Midget Raceway.

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 generally located at ground level, truck noise sources can be located 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.

Noise exposure contours for Lemoore were modeled by Charles Salter Associates by applying the Federal Highway Administration's noise modeling procedure. These noise contours are conservative, meaning that the contours are modeled with minimal noise attenuation by natural barriers, buildings, etc. The noise level measured at a specific location may be lower than what is shown on the noise contour map. An 8 foot tall block masonry wall constructed along the length of the highway can provide a noise reduction of around 5 dB. Landscaping and trees can also provide an additional degree of shielding and noise reduction.

Noise from Trains along the San Joaquin Valley Railroad

The San Joaquin Railroad provides east-west train services on land owned by Union Pacific Railroad on an average of two trips a day. The trains generally travel with speeds ranging from 10 to 40 miles per hour, depending if they make a stop in Lemoore on that particular trip. The trains currently stop on-demand only, providing service for industrial and agricultural shippers in the city. However, there is a possibility of expanding the service to include passenger rail in the future (for a discussion on this, refer to the Circulation Element). As trains approach railroad crossings in the City, they blow their horns to signal their arrival. The noise generated by a typical diesel operated train (with horn and without horn), at 10 mph with 15 cars is shown in the table below. The corresponding noise contours generated are shown in **Figure 8-4**.

Table 8.5 Typical Noise Generated by a Train

<i>Noise Level (dB)</i>	<i>Distance heard without horn (feet)</i>	<i>Distance heard with horn (feet)</i>
55	113.0	821.0
60	35.7	259.6
65	11.3	82.1
70	3.6	26.0

Source: Charles Salter Associates, 2007.

Noise from Industrial Zones

There are two industrial zones in Lemoore with the potential to cause noise hazards. The first is located south of Iona Avenue along both sides of 19th Avenue, and the second is located northwest between the San Joaquin Railroad tracks and SR-41. Activities carried out in both of these areas are primarily related to food processing and light manufacturing. At full buildout of the General Plan, more industries are expected to locate in both areas, adding to the number of noise sources.

To minimize noise impacts to surrounding residents, industrial uses are usually separated from residential areas by a road or other physical element. The amount of noise present will depend on the type of industrial activity carried out, and is not expected to be as severe as noise from vehicular traffic or airplanes.

Noise from Lemoore Raceway

The Lemoore Raceway, located at the southwest corner of SR-41 and Idaho Avenue is another source of noise in the City. The raceway operates on most Saturdays from April through October from 3:00 p.m. to midnight. The track is a 1/5+ mile semi-banked oval, with wide corners and straight-aways with a clay racing surface. It accommodates ¼ midget junior sprints, restrictor plate 600s, stock 600s, and 600 modified winged midget racecars. Engines range from 100s motorcycle engines to multi-cylinder 4-cycle engines pulling 619 cc's. Generators are occasionally brought to the site by race crews. During race nights, noise measurements can range from 80 dB to 102 dB when measured 50 feet away from the edge of the track, and up to 81 dB when measured at 150 feet.⁶

Due to the infrequency of races and its location amid industrial properties, this use is not expected to cause noise disturbance to residents.



Aerial view showing Lemoore Raceway south of Idaho Avenue.



The Lemoore Raceway is a source of noise for the City on race nights.

⁶ Readings taken by the City of Lemoore during the races of junior sprint cars, 600 stocks,, and 600 multits on 28 October 2007.

Figure 8-4 Insert Future Noise Contours

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Aircraft Noise from NAS Lemoore

NAS Lemoore, located just west of the City, is a valued asset to the community, providing numerous jobs for City residents. However, one of the principal concerns of airport land use planning is noise compatibility—or minimizing the effects of aircraft noise on communities adjacent to airports and preventing incompatible land use development in areas adjacent to airports.

Noise modeling was completed in February of 2007 in order to determine the likely noise impact of aircraft flying over West Lemoore. Aircraft operations at NAS Lemoore are typically F-18 aircraft flying 1,500-feet above ground level in a ‘Radar’ landing pattern near the west side of the City. The predicted noise exposure is related to land use noise compatibility criteria, community response criteria, and sleep interference criteria that are normally used in community land use planning. The two cases modeled yielded similar noise exposure results for residents of the prospective residential and mixed use development, and for students and faculty at the college. The projected noise levels are significantly higher than the exterior noise level standards for single family development and multi-family residential development set in the current General Plan. Following is a summary of the noise exposure and response results for the two cases for a 26,000 foot wide cross section beneath the flight tracks:

- DNL⁷ or CNEL⁸: **51 dB – 70 dB**
- Maximum exterior Single Event Levels⁹ (SEL values): **93 dB – 106 dB**
- Maximum exterior sound pressure levels: **86 dB – 99 dB.**
- Predicted percentage of population highly annoyed: **3 percent - 23 percent**
- Predicted percentage of population awakened (ANSI criteria¹⁰) by each flyover in a well-noise-insulated home: **2 – 4 percent**

A follow-up noise monitoring study was completed in April of 2007 in order to provide “hard” data to compare against the modeling predictions. Noise measurements were taken in locations at Liberty School, Lemoore Elementary School, Meadow Lane School and the Lemoore Golf Course. This study found the present single event noise levels in various locations in the City east of Highway 41 to be 10-15 dBA lower than modeling calculations for West Lemoore. Looking ahead, one of the objectives of the new General Plan will be to support a land use pattern that maintains compatibility and livability between the air station and City residents and visitors; particularly as the future is expected to bring troops home from Iraq and with them increased frequency of flyover activities.

⁷ Day-night average sound level, Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety (aka the EPA “Levels Document”), Report No. 550/9-74-004, 1974.

⁸ Community Noise Equivalent Level, 21CAC5000.

⁹ Ibid.

⁴ ANSI S 12.9-Part 6-2000, American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound, Part 6: Methods of Estimation of Awakenings Associates with Aircraft Noise Events heard in Homes.



Aircrafts from the Naval Air Station Lemoore are a major source of noise in Lemoore.

NAS Lemoore is very concerned about the City growing closer to their facility due to the potential noise conflicts their future aircraft might cause and, as noted previously is preparing an AICUZ study, which is currently scheduled to be completed in mid-2008. The urban expansion westwards, however, is unavoidable given the City's desire to preserve farmland in the north and east and to support the West Hills College with compatible land use. To minimize noise conflicts, the City has taken steps to ensure appropriate noise mitigation measures are in place before allowing development, including measures such as the noise level reduction (NLR) criteria in AICUZ instructions¹¹. The UGB stops development at 21st Avenue, and in addition to UGB restrictions, the recreated wetlands located west of the 21st Avenue/Marsh Drive will help provide a permanent buffer between the City and the base.

PROJECTED CONDITIONS UNDER GENERAL PLAN BUILDOUT

Higher traffic volumes, more industrial and commercial noise sources, and a larger population will all contribute to the noise environment in Lemoore by 2030. In addition to noise generated in Lemoore itself, this Plan anticipates on-going and perhaps increased noise generated by NAS Lemoore. The General Plan anticipates these trends in traffic, stationary source, and aircraft noise and supplies policies to actively and efficiently combat these changes to the noise environment for health, safety, and aesthetic reasons. Future Noise Contours are provided in **Figure 8-4**.

¹¹ *Ibid.*

GUIDING POLICIES

- SN-G-6 *Strive to achieve an acceptable noise environment for present and future residents of Lemoore.*
- SN-G-7 *Ensure new development is compatible with the noise environment.*
- SN-G-8 *Protect especially sensitive uses from excessive noise, including schools, hospitals, and senior care facilities.*
- SN-G-9 *Enforce stricter noise abatement measures for development within the high-noise contours from NAS Lemoore.*

IMPLEMENTING POLICIES

General Noise Policies

- SN-I-31 Enact a Noise Control Ordinance with specific noise measurement standards, required noise insulation standards for new residential development exposed to aircraft noise and other noise sources, and enforcement procedures.
- The new ordinance will be enacted in the Zoning section of the Municipal Code, and will complement the existing Noise Ordinance in the Public Safety section. It will be generally oriented toward limiting the generation of noise emissions, but may also include provisions for mandatory mitigation actions.*
- SN-I-32 Use the community noise compatibility standards, shown in **Table 8.6**, as review criteria for new land uses.
- These standards show noise levels that are “normally acceptable”, “conditionally acceptable”, “normally unacceptable”, and “clearly unacceptable” for different types of land use. Indoor noise level reductions (NLR) exceeding minimum standards for NLR in the Navy’s AICUZ instructions will be required for any new residential development in areas where the CNEL will exceed 65 dBA; see Policy SB-I-35. SN-I-36, SN-I-37 and SN-I-38.*
- SN-I-33 Consider an increase of five or more dBA to be “significant” if the resulting noise level would exceed that described as “normally acceptable” in **Table 8.6**.
- SN-I-34 Apply performance-based noise standards within zoning classifications likely to encompass sensitive land uses.
- Performance-based standards have the benefit of flexibility in that they do not attempt to regulate precisely what uses may locate in the particular zone, but rather what sort of noise environment those uses produce. Performance-based standards can work well with community noise compatibility criteria such as those listed in **Table 8.6**.*

Table 8.6 Land Use Compatibility For Community Noise Environments

Land Use Category	Community Noise Exposure, L_{dn} or CNEL, dB						
	55	60	65	70	75	80	85
Residential – Low Density Single Family			Light Gray	Light Gray	Light Gray	Dark Gray	Dark Gray
Residential – Multi Family				Light Gray	Light Gray	Dark Gray	Dark Gray
Mixed-Use and High Density Residential				Light Gray	Light Gray	Light Gray	Dark Gray
Transient Lodging – Motels, Hotels		Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray
Schools, Libraries, Churches, Hospitals, Nursing Homes		Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray
Auditoriums, Concerts, Halls, Amphitheaters	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray
Sports Area, Outdoor Spectator Sports	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Light Gray	Dark Gray
Playgrounds, Neighborhood Parks				Light Gray	Light Gray	Dark Gray	Dark Gray
Golf Courses, Riding Stables, Water Recreation, Cemeteries					Light Gray	Light Gray	Light Gray
Office Buildings, Businesses Commercial and Professional				Light Gray	Light Gray	Light Gray	Dark Gray
Industrial, Manufacturing Utilities, Agriculture					Light Gray	Light Gray	Light Gray

Legend:

- Normally Acceptable
- Conditionally Acceptable
- Normally Unacceptable
- Clearly Unacceptable

Specified land use is satisfactory, based upon the assumption that any building involved is of normal conventional construction, without any special noise insulation requirements.

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

New construction or development should not be undertaken.

Table 8.6 Land Use Compatibility For Community Noise Environments

Land Use Category	Community Noise Exposure, L_{dn} or CNEL, dB					
	55	60	65	70	75	80

Source: City of Lemoore, 2007.

Residential Development

SN-I-35 Require that all new residential development achieve noise level reductions to meet the land use compatibility standards through acoustical design and construction of the building elements:

- Residential building designs must be based upon a minimum interior design noise level reduction of 40 dB in all habitable areas (i.e., garages, storage areas, etc. are excepted). The 40 dB criteria must provide a minimum constructed noise level reduction of 35 dB; and
- Residential building designs must also be based upon a minimum design noise level reduction of 45 dB in all bedrooms. The 45 dB criteria must provide a minimum constructed noise level reduction of 40 dB.

SN-I-36 Establish standards for the basic elements of noise reduction design for new dwellings exposed to DNL above 65 dB (anticipated for areas west of SR-41), including the following:

- All facades must be constructed with substantial weight and insulation;
- Sound-rated windows providing noise reduction performance similar to that of the façade must be included for habitable rooms;
- Sound-rated doors or storm doors providing noise reduction performance similar to that of the façade must be included for all exterior entries;
- Acoustic baffling of vents is required for chimneys, fans and gable ends;
- Installation of a mechanical ventilation system affording comfort under closed-window conditions is required; and
- To meet the highest noise level reduction requirements it will likely be necessary to use double-stud construction, double doors, and heavy roofs with ceilings of two layers of gypsum board on resilient channels.

Alternative acoustical designs that achieve the prescribed noise level reduction in Policy SN-I-35 may be approved if a Board Certified Acoustical Engineer submits information demonstrating that the required reductions can be achieved and maintained.

SN-I-37 Prohibit construction materials and methods that do not provide enough noise insulation to ensure compliance with compatibility standards, including:

- Pre-manufactured housing and mobile homes built with framing less than 2 x 4 inches;

- Facades using aluminum, vinyl or other exterior siding weighing less than 5 psf;
- Façade construction without insulation;
- Flat roofs without an interstitial cavity space or with a space less than 10 inches (i.e., no monolithic T&G roof/ceiling systems);
- Jalousie or other lightweight or poor-sealing window systems; and
- Packaged terminal air-conditioning (PTAC) units (i.e., through-the-wall air-conditioning).

SN-I-38 Require that all residential building designs, for sites where the CNEL 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 Lemoore Building Department 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 Lemoore Building Department for review and approval prior to the issuance of an occupancy permit.

The City will establish noise monitoring procedures and review criteria in the Zoning Ordinance. General review and approval of groups of buildings or prototype designs may be sufficient to meet these requirements. All acoustical engineering and measurement must be conducted under the direction of an Acoustical Engineer who is currently Board Certified by the Institute of Noise Control Engineering, USA.

SN-I-39 Develop uniform guidelines for acoustical studies based on current professional standards in the Noise Control Ordinance.

Uniform guidelines for the preparation of noise studies will help applicants understand City requirements for adequate acoustical evaluations.

SN-I-40 Require developers to mitigate the noise impacts of new development on adjacent properties as a condition of permit approval through appropriate means, including, but not limited to:

- Screen and control noise sources, such as parking and loading facilities, outdoor activities, and mechanical equipment;
- Increase setbacks for noise sources from adjacent dwellings;

- Retain fences, walls, and landscaping that serve as noise buffers;
- Use soundproofing materials and double-glazed windows;
- Use open space, building orientation and design, landscaping and running water to mask sounds;
- Control hours of operation, including deliveries and trash pickup, to minimize noise impacts; and
- As a last resort, construct noise walls along highways and arterials when compatible with aesthetic concerns and neighborhood character. This would be a developer responsibility.

Proposed development may introduce new potential noise sources even where, from a zoning perspective, it is compatible with existing adjacent uses. An example is the handling of large trash bins for multi-family housing. Site design and/or screening techniques can help mitigate the resulting noise. Within urban residential neighborhoods where medium and high density residential development and mixed use development is planned, the City will balance the need for noise mitigation with urban design considerations. The construction of sound walls will be considered where reducing noise to acceptable levels by other means is not feasible.

- SN-I-41 Promote the use of noise attenuation measures to improve the acoustic environment inside residences where existing single-family residential development is located on an arterial street.

These measures may include those listed under policy SN-I-36.

- SN-I-42 Establish criteria for evaluating applications from residents for exceptions to residential noise level requirements for the operation of standby electrical equipment used to meet medical needs.

This assumes that equipment noise will be mitigated to reduce the noise level at the property line to the 60 decibel level requirement.

- SN-I-43 Require new noise sources to use best available control technology (BACT) to minimize noise emissions.

- SN-I-44 Require noise from permanent mechanical equipment to be reduced by soundproofing materials and sound-deadening installation.

- SN-I-45 Minimize vehicular and stationary noise sources and noise emanating from temporary activities, such as those arising from construction work.

Aircraft Noise Policies

- SN-I-46 Require a noise study and mitigation measures for all new projects that have aircraft noise exposure greater than “normally acceptable” levels. Mitigation measures may include noise insulation, noise disclosure, buyer beware programs, or avigation easements, as shown in **Table 8.7**.

SN-I-47 Coordinate with NAS Lemoore to incorporate their Air Installation Compatible Use Zone (AICUZ) study into future updates to the City Zoning Ordinance and

General Plan to the extent consistent with the City’s compatibility standards and noise level reduction requirements.

The boundaries of the Air Installation Compatible Use Zone (AICUZ) are depicted on the Land Use Diagram.

SN-I-48 Minimize noise impacts of NAS Lemoore flight operations on noise-sensitive development.

*NAS Lemoore is a valued element of the Lemoore community. The City will work with NAS Lemoore to identify existing sensitive receptors and develop strategies for implementing noise mitigation measures such as those suggested for new development in **Table 8.7**.*

Table 8.7 Aircraft Noise Mitigation Measures

<i>Mitigation Approach</i>	<i>Impact Reduction</i>
<p>Noise Insulation <i>Develop and enforce noise insulation standards for new residential construction in aircraft noise-impacted areas.</i></p>	<p>Insulation improves the indoor noise environment over that of conventionally constructed homes. It is most effective on higher frequency sounds and typically allows for uninterrupted speech, TV listening, etc. during flyovers.</p>
<p>Noise Disclosure <i>Disclose the noise environment to prospective homebuyers. This is typically done on a lengthy checklist of issues where each item may be designated as a problem, not a problem or unknown.</i></p>	<p>All potentially adverse aspects of a property, including noise, must be disclosed to prospective buyers.</p>
<p>Buyer Beware Program <i>Maintain a ‘buyer beware’ program for future noise complainers, requiring all home buyers to sign a noise acknowledgement and “hold harmless” agreement when buying a home in an aircraft noise-impacted area.</i></p>	<p>This measure is designed to avoid conflict by facilitating better consumer decision-making.</p>
<p>Avigation Easement <i>Require residential developers to grant an ‘avigation noise easement’ to the City of Lemoore or Kings County at the time of subdivision or parcel map recording. The FAA typically requires avigation easements for homeowners receiving noise insulation treatment.</i></p>	<p>The avigation easement is a legal document granting the right to fly over homes and holding the air station harmless from the noise consequences of all aircraft activity; it is transferred unconditionally at the time of sale to the new homeowners.</p>

Source: Charles Salter Associates, 2007.