12
NOISE

This chapter provides a description of the existing environment in the Specific Plan area in terms of noise levels, background information concerning the analysis of noise impacts, standards of significance for noise impacts, and an analysis of noise impacts related to the proposed Specific Plan.

12.1 SETTING

General Information on Noise and Noise Measurement

Noise is defined as unwanted sound. The effects of noise can range from interference with sleep, concentration, verbal communication, physiological stress, and, at higher noise levels, to hearing loss. The method commonly used to quantify environmental noise involves evaluation of all frequencies of sound, with an adjustment to reflect the fact that human hearing is less sensitive to low and high frequencies than to midrange frequencies. This measurement adjustment is called "A-weighting." A noise level so measured is called the A-weighted sound level measured in A-weighted decibels (dBA). In practice, environmental noise is conveniently measured using a sound level meter that includes an electronic filter corresponding to the A-weighted curve. Table 12-1 provides examples of typical A-weighted noise levels:

TABLE 12-1

Typical Sound Levels

Jet takeoff at 200 feet	125 dBA
Ambulance siren at 100 feet	100 dBA
Freight train at 50 feet	95 dBA
Freeway traffic at 50 feet	80 dBA
Vacuum cleaner at 10 feet	70 dBA
Average office	50 dBA
Average residence	40 dBA
Recording studio	20 dBA

Environmental noise also fluctuates in intensity over time. Therefore, time-averaged noise levels are typically used to quantify noise conditions and determine impacts. The two units of noise most commonly used for environmental noise measurement and control purposes are "L_{dn}" and "CNEL." L_{dn}, the day/night average noise level, is the computed 24-hour noise level average,

with a 10 dBA "penalty" added for nighttime noise (10:00 p.m. to 7:00 a.m.). This "penalty" is used to account for the greater human sensitivity to noise during this period. CNEL, the community noise equivalent level, is similar to L_{dn}, but also includes a 5 dBA "penalty" for early evening noise (7:00 p.m. to 10:00 p.m.).

A single number called the average sound level or "L_{eq}" is used widely to quantify a given noise environment. This measurement reflects the average A-weighted sound level in a stated time period. The L_{eq} is useful particularly in describing the subjective change in an environment where the source of noise remains the same but there is change in the level of activity (e.g., increasing traffic levels).

One way of estimating a person's subjective reaction to a new noise is to compare the new noise with the existing noise environment to which the person has become adapted; i.e., the increase over the so-called "ambient" noise level. With regard to such perceived impacts of various degrees of increase in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding the discussion in this chapter:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3 dBA change is considered a just-perceivable difference.
- A change in noise level of at least 5 dBA is required before any noticeable change in community response would be expected. A 5 dBA increase is often considered a significant impact.
- A 10 dBA increase is subjectively heard as approximately a doubling in loudness and almost always causes an adverse community response.

Existing Noise Environment

Noise generation in the Specific Plan area derives primarily from vehicular traffic on State Route 4. Vehicles on Bailey Road and Willow Pass Road, as well as BART trains, comprise the other major noise sources in the plan area.

Existing noise levels in the vicinity were measured as part of the City of Pittsburg's General Plan Update in 1998.[1] Results of these measurements show a corridor extending about 375 feet on either side of the centerline of State Route 4 in which noise levels reach or exceed 70 dB. The predicted distance from State Route 4 to the future 60 L_{dn} contour in the Specific Plan area is 2,000 feet.[2] Along both Bailey and Willow Pass Roads, noise levels were measured at 65 dB. The *Contra Costa County General Plan* includes a predicted distance of 270 feet between the center of Willow Pass Road and the 60 L_{dn} contour in the future.

Other portions of the Specific Plan area were mapped at a noise level of approximately 60 dB. A site 60 feet west of the Bailey Road median centerline between Mims Avenue and Canal

Road was selected as a key monitoring location for the Pittsburg General Plan Update. Noise measurements taken in February 1998 produced an L_{eq} value for this site of 66.1 dBA.

The Pittsburg/Bay Point BART Station began operations in 1996. It is located at the southwest corner of the State Route 4/Bailey Road interchange. On a typical weekday, 75 trains provide service from this station to others in the BART system. BART rail tracks traverse the center of State Route 4, contributing to the general noise environment of the Specific Plan area. BART has established maximum passby exterior noise levels for its transit operations, shown in Table 12-2. These noise levels are higher than typical standards for noise sensitive uses because they are based on individual noise events rather than average noise levels over a period of time.[3] The impact of BART train passby noise on CNEL levels depends on the frequency and duration of the train passbys.

TABLE 12-2

Maximum Airborne Noise Criteria, BART Transit Operations

	Maximum Passby Noise Levels (dBA)		
Residences and Commercial Buildings	**Single Family**	**Multiple Family**	**Commercial**
Low Density Residential	70	75	80
Average Residential	75	75	80
High Density Residential	75	80	85
Commercial	80	80	85
Industrial / Highway	80	85	85

Source: Bay Area Rapid Transit District.

As part of the *State Route 4/Bailey Road Interchange Improvement Project EIR*, noise measurements were made near the interchange in 1991. This location falls within the Specific Plan area. Some of the noise data generated in this study are summarized here as setting information. One monitoring location was established approximately 1,000 feet north-northeast of the BART station adjacent to the Far Hills mobile home park. At this site, an hourly L_{eq} value of 58 dBA during late morning sampling was recorded. A second relevant sampling site was established about 1,000 feet south of the BART station on the east side of Bailey Road. This site produced the following noise information: hourly L_{eq} (peak hour)—72 dBA; DNL—73 dBA; CNEL—74 dBA.

Noise Compatibility Standards and Guidelines

The following discussion applies to the development of commercial and residential land uses as proposed by the Specific Plan. Applicable policies from City of Pittsburg and Contra Costa County planning documents are summarized below, along with other pertinent information relating to noise and its relationship to land use.

City of Pittsburg Policies Related to Noise

The *City of Pittsburg General Plan's* Noise Element contains policies aimed at reducing traffic and railroad noise levels and protecting noise-sensitive uses.[4] Policies relevant to the proposed Specific Plan include:

- Require an acoustic study for all proposed projects that would have noise exposures greater than normally acceptable as indicated by the land use compatibility standards contained in the Noise Element.
- Require construction of sound walls for new development where noise mitigation to acceptable levels by other means is not practical. Require that the effects of the construction of sound walls on noise levels at other areas be considered, and taken into account in the design and location of sound walls.

The Pittsburg General Plan Update refines these policies by suggesting alternatives to the use of sound walls unless otherwise infeasible. Other noise-reduction strategies which avoid visible sound walls, such as use of landscaping or other buildings, are encouraged. Another option cited in the update is to evaluate the use of sound walls only along specifically defined corridors.

The *City of Pittsburg General Plan* Noise Element suggests maximum community threshold noise levels for various land uses based on recommendations of the California Department of Health Services (DHS) Office of Noise Control. For example, for residential and hotel development, an exterior CNEL of up to 60 dBA would be considered "normally acceptable"; noise levels in excess of a CNEL of 60 dBA would warrant special noise studies and possible mitigation. For commercial uses, an exterior CNEL of up to 65 dBA would be considered "normally acceptable"; noise levels in excess of a CNEL of 65 dBA would warrant mitigation. For parks, an exterior CNEL of up to 70 dBA would be considered "normally acceptable"; noise levels in excess of a CNEL of 70 dBA would warrant mitigation, and CNELs above 73 dBA would be "normally unacceptable."

Contra Costa County Policies Related to Noise

The *Contra Costa County General Plan* Noise Element includes the following policies intended to limit the impacts of noise in all areas of the County:

- New projects shall be required to meet acceptable exterior noise level standards as established in the Noise and Land Use Compatibility Guidelines. These guidelines, along with the future noise levels shown in the future noise contours policies from the maps, should be used by the County as a guide for evaluating the compatibility of "noise-sensitive" projects in potentially noisy areas.

- The standard for outdoor noise levels in residential areas is an L_{dn} of 60 dB. However, an L_{dn} of 60 dB or less may not be achievable in all residential areas due to economic or aesthetic constraints.

- If the primary noise source is train passbys, then the standard for outdoor noise levels in residential areas is an L_{dn} of 70 dB.

- Title 24, Part 2, of the California Code of Regulations requires that new multi-family housing projects, hotels, and motels exposed to an L_{dn} of 60 dB or greater have a detailed acoustical analysis describing how the project will provide an interior L_{dn} of 45 dB or less. The County also shall require new single-family housing projects to provide for an interior L_{dn} of 45 dB or less.

- In developing residential areas exposed to a DNL in excess of 65 dB due to single events such as airport, helicopter, or train operations, indoor noise levels due to these single events shall not exceed a maximum A-weighted noise level of 50 dB in bedrooms and 55 dB in other habitable rooms.

- If an area is currently below the maximum "normally acceptable" noise level, an increase in noise up to the maximum should not be allowed necessarily.

- Public projects shall be designed and constructed to minimize long-term noise impacts on existing residents.

- Construction activities shall be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours of the day to provide relative quiet during the more sensitive evening and early morning periods.

- Sensitive land use shall be encouraged to be located away from noise areas, or the impacts of noise on these uses shall be mitigated. If residential areas are planned adjacent to industrial noise sources, then a noise study shall be performed to determine the extent of any noise impacts and recommend appropriate noise mitigation measures.

- Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.

The County routinely implements these policies through development review and the CEQA process. Development review is intended to encourage the use of appropriate site planning, architectural layout, noise barriers, and construction modifications to achieve required noise levels for new developments. Noise mitigation features are to be incorporated into the design and construction of new projects or are to be required as conditions of project approval.[5]

State Building Standards to Minimize Noise

The State has enacted into law a set of California Sound Transmission Control Standards (California Code of Regulations, Title 24, Building Standards, Chapter 2.35) establishing minimum noise insulation performance criteria to protect persons within new hotels, motels, apartment houses and dwellings other than detached single-family dwellings. Under this State-mandated criterion, interior noise attributable to exterior sources, with windows closed, shall not exceed an average level of 45 dBA CNEL in a habitable room. In addition, residences or hotels within a 60 dBA CNEL contour related to airport, vehicular, or industrial noise sources shall require an acoustical analysis showing that the proposed building has been designed to limit intruding noise to the allowable 45 dBA CNEL interior noise level.

12.2 STANDARDS OF SIGNIFICANCE

The Specific Plan would be considered to have a significant impact related to noise if it would:

- conflict with adopted environmental plans and goals of the City of Pittsburg and the County pertaining to noise;
- substantially increase (e.g., by 5 decibels or greater) the ambient noise levels of adjoining areas; or
- expose people to unacceptable noise levels in excess of the City or County general plans' or State-established standards of acceptability.

12.3 IMPACTS AND MITIGATION MEASURES

Development proposed under the Specific Plan would increase traffic volumes on local roads and lead to an incremental increase in traffic-generated noise. Land uses proposed by the Specific Plan are not industrial and/or otherwise noise-intensive and are not expected to create long-term or chronic noise incompatibilities. These impacts would not be considered significant.

Impact on Surrounding Land Uses

IMPACT 12-1. Construction of projects proposed under the Specific Plan would create short-term noise impacts on surrounding land uses. This impact is considered less than significant.

For projects developed under the Specific Plan, construction noise would occur as a result of demolition, grading, heavy vehicles, and construction work. Noise would be generated by diesel-powered heavy equipment such as dump trucks, cement trucks, graders and bulldozers. Most diesel-powered heavy construction equipment produces noise levels of 80 to 90 dBA at a distance of 50 feet. Noise levels decrease by 6 dBA for every doubling of the distance of separation from a fixed source, so that at 100 feet, most construction noises would range from 74 dBA to 84 dBA.

Significant but short-term construction-period impacts would be expected at sensitive receptors that would not be displaced by the projects. Examples of these receptors include existing residences, parks, and the Ambrose Community Center. Although the high levels of noise generated by construction equipment may annoy residents, they would be a short-term impact.

MITIGATION MEASURE 12-1. Construction equipment and operations must comply with local noise ordinances. Unless nighttime or weekend work is specified in project contracts, or special provisions are approved in writing by the Zoning Administrator, construction operations should be prohibited in residential areas between 7:00 p.m. and 7:00 a.m. Monday through Friday, on weekends, and on holidays. Implementation of local noise ordinances would reduce this impact to a less-than-significant level.

Impact to People Exposed to Noise

IMPACT 12-2. Development proposed under the Specific Plan would increase the number of people exposed to noise levels above those considered "normally acceptable." This impact is considered potentially significant.

Specific Plan-related development near State Route 4 and along Bailey Road and Willow Pass Road would be exposed to noise levels above the acceptable CNEL of 60 dBA. Although the proposed land uses would not generate a significant change in noise levels, mitigation of existing high noise levels appears to be warranted, especially in Zone I. In this zone, new residential and commercial uses would be developed adjacent to State Route 4 and the BART station. Future

residents of the housing and users of the proposed commercial retail and office development in Zone I would be subject to these noise sources. All proposed Specific Plan development is required to comply with City, County, and State building design guidelines as described in Sections 12.1 and 12.2 of this chapter. Future projects are also subject to acoustical studies to identify any noise exposures greater than normally acceptable. These standards for noise control would be required for all proposed projects in the Specific Plan.

MITIGATION MEASURE 12-2

(a) All applicants for proposed projects shall submit a noise study verifying compliance with interior/exterior noise standards. Based on the results of the study, noise exposures greater than normally acceptable shall be mitigated by incorporating site design and acoustic insulation techniques, such as sound-rated windows, to achieve acceptable interior noise levels.

(b) Require construction of sound walls for new development where noise mitigation to acceptable levels by other means (i.e., site design, setbacks, etc.) is not practical. Require that the effects of the construction of sound walls on noise levels at other areas be considered, and taken into account in the design and location of sound walls.

NOTES: Noise

[1] City of Pittsburg, *Pittsburg General Plan Update: Existing Conditions and Planning Issues Report*, June 1998.

[2] Contra Costa County Community Development Department, *Contra Costa County General Plan 1995–2010*, Chapter 11, Noise Element, July 1996.

[3] City of Pittsburg, op. cit.

[4] City of Pittsburg, *City of Pittsburg General Plan*, 1988.

[5] Contra Costa County Community Development Department, op. cit.