

H. NOISE

This section describes existing noise conditions in the vicinity of the Master Plan area, describes criteria for determining the significance of noise impacts, and estimates noise levels that would result from implementation of the proposed project. Where appropriate, mitigation measures are recommended to reduce noise impacts.

1. Setting

The setting section begins with an introduction to several key concepts and terms that are used in evaluating noise. It then explains the various agencies that regulate the noise environment in the City and summarizes key standards that are applied to proposed development. This setting section concludes with a description of current noise sources that affect the project area and the noise conditions that are experienced in the project site vicinity.

(1) Fundamentals of Noise. Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Table V.H-1 contains a list of typical acoustical terms and definitions.

Most of the sounds that we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all the frequencies of a sound in accordance with a weighting that reflects the facts that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called “A” weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Table V.H-2 shows representative outdoor and indoor A-weighted sound levels.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources that creates a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise descriptors, L_{01} , L_{10} , L_{50} , and L_{90} , are commonly used. They are the A-weighted noise levels equaled or exceeded during 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period. A single number descriptor called the L_{eq} is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. Most people sleep at night and are very sensitive to noise intrusion at that time. To account for human sensitivity to nighttime noise levels, a descriptor, L_{dn} (day/night average sound level), was developed. The L_{dn} divides the 24-hour day into the “daytime” of 7:00 a.m. to 10:00 p.m. and the “nighttime” of 10:00 p.m. to 7:00 a.m. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Community Noise Equivalent Level (CNEL) is another 24-hour average that includes both an evening and nighttime weighting.

Table V.H-1: Definitions of Acoustical Terms

Term	Definitions
Decibel, dB	A unit of level that denotes the ratio between two quantities proportional to power; the number of decibels is 10 times the logarithm (to the base 10) of this ratio.
Frequency, Hz	Of a function periodic in time, the number of times that the quantity repeats itself in one second (i.e., number of cycles per second).
A-Weighted Sound Level, dBA	The sound level obtained by use of A-weighting. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this report are A-weighted, unless reported otherwise.
L ₀₁ , L ₁₀ , L ₅₀ , L ₉₀	The fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of a stated time period.
Equivalent Continuous Noise Level, L _{eq}	The level of a steady sound that, in a stated time period and at a stated location, has the same A-weighted sound energy as the time-varying sound.
Community Noise Equivalent Level, CNEL	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of five decibels to sound levels occurring in the evening from 7:00 p.m. to 10:00 p.m. and after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
Day/Night Noise Level, L _{dn}	The 24-hour A-weighted average sound level from midnight to midnight, obtained after the addition of 10 decibels to sound levels occurring in the night between 10:00 p.m. and 7:00 a.m.
L _{max} , L _{min}	The maximum and minimum A-weighted sound levels measured on a sound level meter, during a designated time interval, using fast time averaging.
Ambient Noise Level	The all encompassing noise associated with a given environment at a specified time, usually a composite of sound from many sources at many directions, near and far; no particular sound is dominant.
Intrusive	The noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Source: Harris, Cyril M., 1998. *Handbook of Acoustical Measurements and Noise Control*.

Table V.H-2: Typical A-Weighted Sound Levels

Noise Source	A-Weighted Sound Level in Decibels	Noise Environments
Near Jet Engine	140	Deafening
Civil Defense Siren	130	Threshold of pain
Hard Rock Band	120	Threshold of feeling
Accelerating Motorcycle at a Few Feet Away	110	Very loud
Pile Driver; Noisy Urban Street/Heavy City Traffic	100	Very loud
Ambulance Siren; Food Blender	95	Very loud
Garbage Disposal	90	Very loud
Freight Cars; Living Room Music	85	Loud
Pneumatic Drill; Vacuum Cleaner	80	Loud
Busy Restaurant	75	Moderately loud
Near Freeway Auto Traffic	70	Moderately loud
Average Office	60	Moderate
Suburban Street	55	Moderate
Light Traffic; Soft Radio Music in Apartment	50	Quiet
Large Transformer	45	Quiet
Average Residence Without Stereo Playing	40	Faint
Soft Whisper	30	Faint
Rustling Leaves	20	Very faint
Human Breathing	10	Very faint

Source: Compiled by LSA Associates, Inc., 2008.

b. Noise Regulatory Framework. The following section summarizes the regulatory framework established by the City of Foster City. The City of Foster City addresses noise in the Noise Element of the General Plan¹ and in the Municipal Code². The goals, policies and programs listed in the Noise Element that are applicable to the proposed project are summarized as follows:

- The Land Use Compatibility Standards identify acceptable noise exposure levels for new development according to land use. Community noise exposure levels up to 65 dBA L_{dn} are considered normally acceptable for office buildings, business, and commercial uses. Interior noise levels are a function of the use of space but should generally be limited to 45 dBA L_{eq} or less.
- The noise environment in existing residential areas is required to be protected. The City will require mitigation measures for projects that would cause the L_{dn} to increase by 3 dBA or more where noise levels would exceed or currently exceed 60 dBA L_{dn}. Noise created by commercial or industrial sources associated with new projects are required to be controlled so as not to exceed the standards presented in the “Noise and Land Use Compatibility Standards for Industrial and Commercial Noise Sources” table as measured at any affected residential land use (Table V.H-3).

Table V.H-3: Noise and Land Use Compatibility Standards for Industrial and Commercial Noise Sources

Cumulative Duration of Noise Event in any One-hour Period (In Minutes)	Exterior Noise Level Standards	
	Daytime (7:00 a.m. – 10:00 p.m.)	Nighttime (10:00 p.m. – 7:00 a.m.)
30	50	45
15	55	50
5	60	55
1	65	60
0	70	65

Source: Foster City, City of. 1993. *General Plan, Chapter 6: Noise Element*, page 6-15. May.

The City of Foster City further addresses noise in the Municipal Code in section 17.68.030. The ordinance limits, only in residential districts or within 100 yards of a residential district, noise-generating construction activities to the hours of 7:30 a.m. to 8:00 p.m. on weekdays and from 9:00 a.m. to 8:00 p.m. on weekends and legal holidays. In addition, at no time may the noise level from single or multiple sources exceed 100 dBA at the producer’s property plane unless prior authorization is obtained from the Community Development Director.

c. Existing Noise Environment. The Master Plan area comprises approximately 40 acres located north of SR 92 and east of Mariners Island Boulevard. There are noise sensitive residential areas to the south, southwest, and west of the proposed development. Office, commercial, and open space land uses border the site to the southeast, east and north. The following section describes the existing noise environment and identifies primary noise sources in the vicinity of the project site.

(1) Existing Aircraft Noise Levels. San Francisco International Airport is located approximately 5 miles northwest of the project site. Although aircraft-related noise is audible on the project site, the site does not lie within the airport land use plan area nor within the 60 dBA CNEL noise contours of this airport. San Carlos Airport is located approximately 3.5 miles southeast of the project site. The project site does not lie within the 55 dBA CNEL noise contour of the San Carlos Airport,

¹ Foster City, 1993. *Foster City General Plan, Chapter 6: Noise Element*. May.

² Foster City, 2006. *City of Foster City Municipal Code*. October 3.

nor does it lie within the outer boundary of the Hazard Zoning Plan shown on page IV-36 of the San Mateo County Comprehensive Airport Land Use Plan.³

(2) Existing Noise Levels at Sensitive Land Uses. Long-term and short-term noise monitoring was conducted to establish the existing ambient noise environment at sensitive land uses in the vicinity of the project site. Long-term and short-term noise monitoring locations are shown in Figure V.H-1. One long-term (24-hour) noise measurement (LT-1) was made west of the project site from July 14-15, 2008. Site LT-1 is approximately 50 feet west of the centerline of Fathom Drive and approximately 65 feet east of the waterway, which is frequented by motorboats. Long-term ambient noise monitoring results show that the existing ambient noise levels at receivers west of the site are 55 dBA L_{dn} . The daily trend in noise levels is summarized in Figure V.H-2.

Four short-term noise measurements (ST-1, ST-2, ST-3, and ST-4) were made on the afternoon of July 14, 2008, between 2:00 p.m. and 4:00 p.m. for periods of 10 minutes each. The first short-term measurement (ST-1) was in the same general area as the long-term measurement, about 35 feet from Fathom Drive. Two motorboats and three autos passed during the measurement at ST-1. Noise measurement location ST-2 is about 35 feet from the centerline of Bridgepointe Circle, across the street from the Hilton Garden Inn. Twenty-nine autos and six jets (on approach to San Francisco International Airport) passed during the 10-minute measurement. Site ST-3 is located off Mariners Island Blvd. in front of Benoit Field. Location ST-4 is in the residential neighborhood west of the waterway near 1750 Lake Street. As supported by the data from Table V.H-4, noise levels measured on either side of the waterway (ST-1 and ST-4) were similar. Sites ST-2 and ST-3 are located in areas of heavier automobile traffic and are subject to higher ambient noise levels. Data collected during the short-term noise measurements are summarized in Table V.H-4.

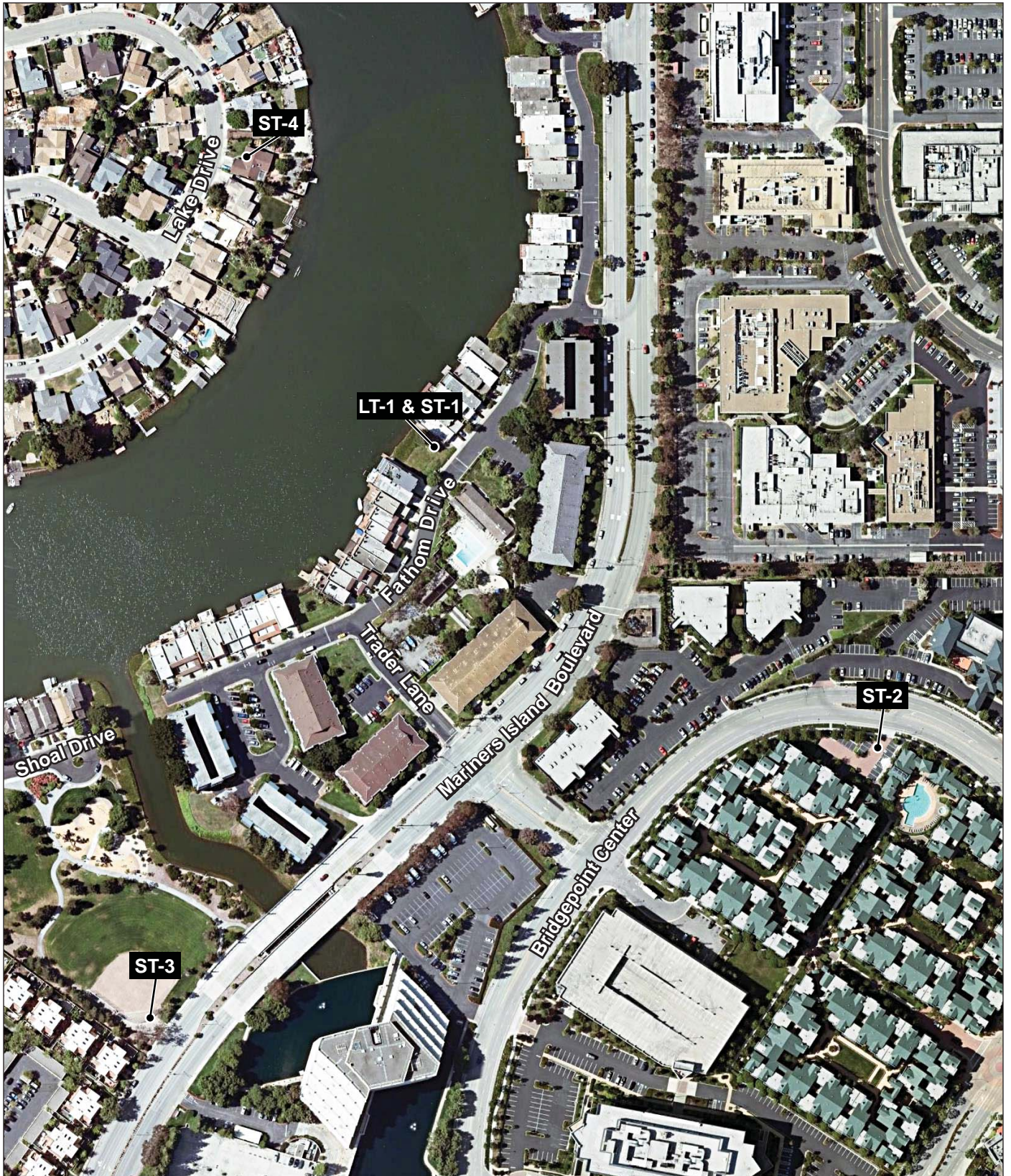
2. Impacts And Mitigation Measures.

This section evaluates potential noise impacts associated with implementation of the proposed Master Plan and mitigation measures to address these impacts, where appropriate.

a. Criteria of Significance. A project would have a significant noise effect if it would substantially increase the ambient noise levels for adjoining areas or conflict with adopted environmental plans and goals of Foster City. The applicable noise standards governing the project are the City of Foster City's Noise Element of the General Plan and applicable sections of the City's Municipal Code. For the purposes of this EIR, a project would result in a significant noise impact if it would:

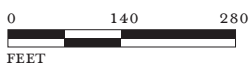
- Expose persons to or generate noise levels in excess of normally acceptable standards established in the General Plan or noise ordinance (i.e., L_{dn} of 60 dBA for residential uses and L_{dn} of 65 dBA for office and commercial uses);
- Expose persons to or generate excessive groundborne vibration or noise;
- Create a clearly noticeable permanent change (a 3 dBA increase) in the noise environment, even though the acceptability threshold (L_{dn} of 60 dBA for residential uses; L_{dn} of 65 dBA for office and commercial uses) has not been reached;

³ San Mateo County, 1996. *San Mateo County Comprehensive Airport Land Use Plan*. December.



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FIGURE V.H-1



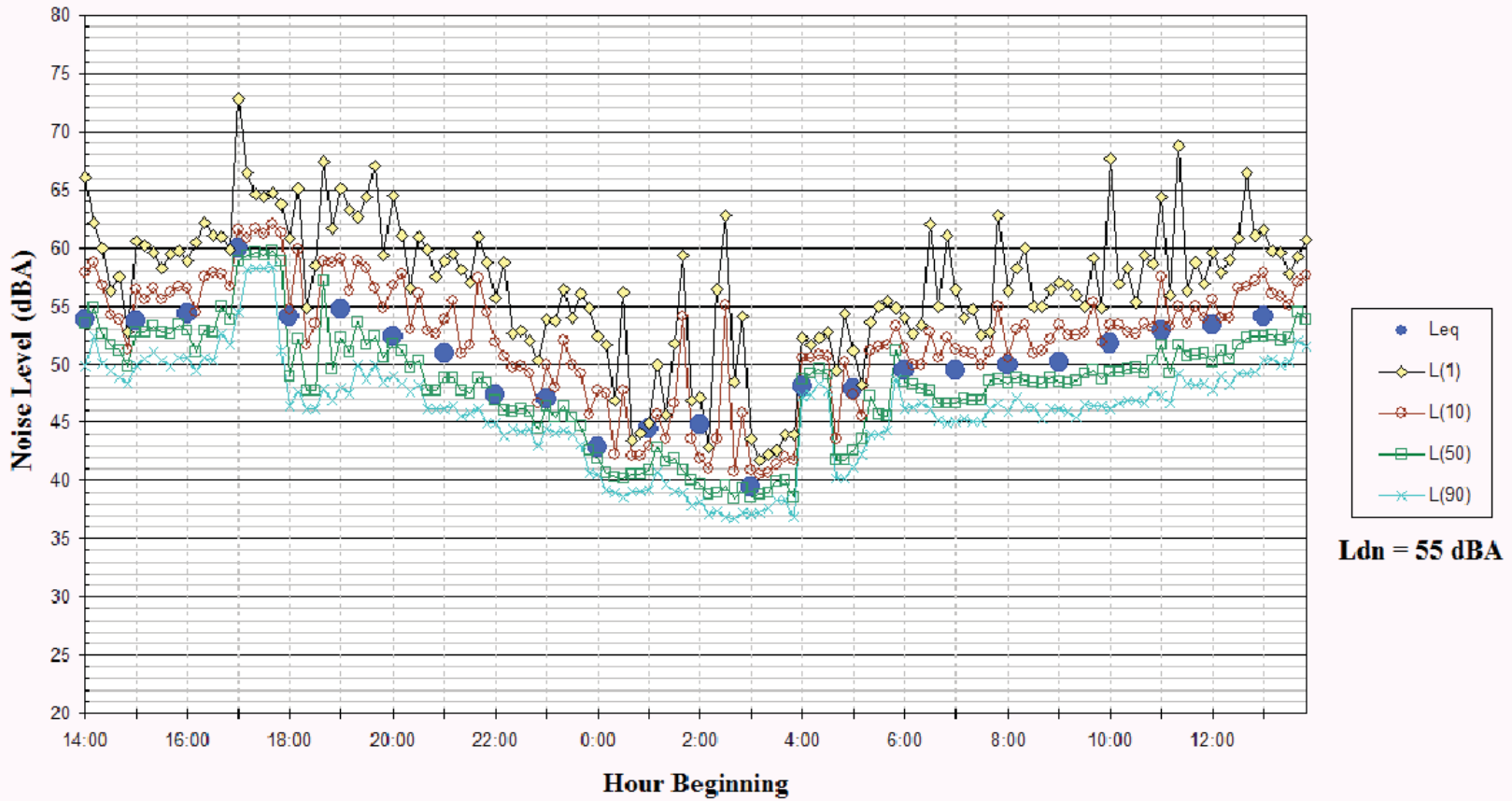
LT - LONG-TERM NOISE MEASUREMENT
 ST - SHORT-TERM NOISE MEASUREMENT

*Gilead Sciences Corporate
 Campus Master Plan EIR*
 Noise Monitoring Locations

SOURCE: ILLINGWORTH & RODKIN; GOOGLE EARTH, 2008

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**Noise Levels at LT-1
~ 50 feet from the Centerline of Fathom Drive
July 14-15, 2008**



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FIGURE V.H-2

Gilead Sciences Corporate Campus Master Plan EIR
Noise Data at Site LT-1

Table V.H-4: Short-Term Ambient Noise Monitoring Results, dBA

Noise Measurement Location (Date, Time)	L_{eq} ^a	L_{max} ^b	$L_{(1)}$ ^c	$L_{(10)}$ ^c	$L_{(50)}$ ^c	$L_{(90)}$ ^c	L_{dn} ^d
ST-1: ~ Lawn area west of 624 Fathom Drive. (7/14/2008, 13:53 – 14:10)	54	63	62	56	52	49	53
ST-2: ~ Front of 1987 Bridgepointe Circle, 35 feet from centerline. (7/14/2008, 14:30 – 14:40)	61	75	72	65	56	54	64
ST-3: ~South side of Mariners Island Boulevard in front of Benoit Field. (7/14/2008, 14:50 – 15:00)	62	75	71	66	57	52	65
ST-4: ~Across from 1750 Lake Street near vacant driveway/water access point. (7/14/2008, 15:30 – 15:40)	55	67	65	58	52	48	57

^a L_{eq} represents the average of the sound energy occurring over the measurement period.

^b L_{max} is the maximum instantaneous sound level occurring over the measurement period.

^c $L_{(1)}$, $L_{(10)}$, $L_{(50)}$, $L_{(90)}$ are the fast A-weighted noise levels equaled or exceeded by a fluctuating sound level for 1 percent, 10 percent, 50 percent, and 90 percent of the time period.

^d L_{dn} approximated by correlating to corresponding time period at long-term site.

Source: Illingworth & Rodkin, 2008.

- Be located within an airport land use plan or within two miles of a public airport or public use airport, and would expose people residing or working in the project area to excessive noise levels;
- Be located in the vicinity of a private airstrip and would expose people residing or working in the project area to excessive noise levels; or
- Construction related noise would be considered significant when a substantial temporary or periodic noise level increase would occur where:
 - 1) Noise from construction activities would exceed 60 dBA L_{eq} -hr and the ambient noise environment by at least 5 dBA L_{eq} -hr for a period of 1 year or more at exterior areas of uses sensitive to noise inside and outside (e.g., residences, residential care facilities, schools, libraries); or
 - 2) Noise from construction activities would exceed 70 dBA L_{eq} -hr and the ambient noise environment by at least 5 dBA L_{eq} -hr for a period of one year or more at the exterior of offices or other commercial, retail, or institutional uses with interior spaces sensitive to noise.

Acceptable interior noise level standards are reflected in the normally acceptable exterior noise standards established by the City (and incorporated into the criteria of significance above).

Acceptable interior noise levels are a function of the use of space, but should normally not exceed 45 dBA L_{eq} . If exterior noise level standards are met, the interiors of buildings constructed in compliance with the State Building Code would experience acceptable noise levels. Therefore, the criteria of significance listed above focus on exterior noise standards.

b. Less-Than-Significant Noise Impacts. The following project impacts would be considered less than significant and would not require mitigation.

(1) **Noise and Land Use Compatibility.** Laboratory and office buildings are proposed a minimum distance of 140 feet from the centerline of Mariners Island Boulevard and at least 250 feet from Vintage Park Drive, the two predominant sources of traffic noise that affect the site. Future traffic noise levels are calculated to be 61 dBA L_{dn} or less at the nearest proposed buildings adjoining these roadways. The future noise environment at the project site would be considered normally acceptable for the proposed land uses (65 dBA L_{dn} or less). Standard office construction (i.e., compliance with the State Building Code) would adequately reduce exterior noise levels such that indoor noise levels would be acceptable.

(2) **Vibration.** Demolition and construction activities proposed as part of the project may generate perceptible vibration levels when heavy equipment or impact tools (e.g. jackhammers, pile drivers, hoe rams) are used in the vicinity of nearby sensitive land uses. Distinctly perceptible groundborne vibration levels could be generated by heavy tracked vehicles (e.g., bulldozers or excavators) when this equipment operates within approximately 25 feet of sensitive land uses. Impact pile drivers can generate distinctly perceptible groundborne vibration levels at distances up to about 100 feet.

Buildings proposed for demolition or construction are a minimum distance of 75 feet from the nearest adjacent commercial use (i.e., Home Depot) and 150 feet or more from existing residences or hotels. Groundborne vibration levels generated by demolition or construction activities within the Master Plan area would not generally be perceptible at adjacent buildings because of the distance separating these receivers from such vibration producing events. Anticipated vibration levels would not be expected to result in cosmetic or structural damage to adjacent buildings. Therefore, groundborne vibration resulting from the project would result in a less-than-significant impact.

There are no other known sources of vibration that would affect the project site (e.g., railroad trains) or vicinity.

(3) **Project-Generated Traffic Conditions.** Traffic data contained in the Foster City Multi-Project Traffic Analysis prepared by Fehr & Peers Transportation Consultants⁴ were reviewed to calculate potential project-related traffic noise level increases along roadways in the project site vicinity. These data included turning movement counts at 31 intersections for existing conditions and projections for baseline and project conditions. Link volumes were calculated based on the turning movement data and compared to existing conditions to calculate the anticipated noise level increase in each scenario, and the project's relative contribution under each scenario. The review of the traffic data indicates that the project would not substantially increase noise levels above existing noise levels. Traffic noise level increases on area roadways resulting from the project would range from 0 to 1 dBA L_{dn} and would not be perceptible. Thus traffic-related noise increases would be considered less than significant because the project would not noticeably increase traffic noise levels (i.e., 3 dBA L_{dn} or more) at sensitive land uses adjoining roadways that serve the site, as indicated below in Table V.H-5.

⁴ Fehr & Peers, 2008. *Final Report, Foster City Multi-Project Traffic Analysis*. December.

Table V.H-5: Comparison of Existing and Baseline Plus Project Noise Levels, Ldn dBA

Noise Measurement Location (Date, Time)	Existing L_{dn}	Baseline Plus Project L_{dn}	Increase L_{dn}
ST-1: ~ Lawn area west of 624 Fathom Drive. (7/14/2008, 13:53 – 14:10)	53	53	0
ST-2: ~ Front of 1987 Bridgepointe Circle, 35 feet from centerline. (7/14/2008, 14:30 – 14:40)	64	64	0
ST-3: ~South side of Mariners Island Boulevard in front of Benoit Field. (7/14/2008, 14:50 – 15:00)	65	66	1
ST-4: ~Across from 1750 Lake Street near vacant driveway/water access point. (7/14/2008, 15:30 – 15:40)	57	57	0

Source: Illingworth & Rodkin, 2008.

(4) Cumulative Traffic Conditions. A project would make a significant contribution to a cumulative noise impact if its contribution is 1 dBA or greater. A noise increase of 1 dBA is the minimum change that can be detected with a sound level meter. The project would measurably contribute to substantial traffic noise level increases anticipated under cumulative conditions (i.e., result in increases of 1 dBA or greater). However, these increases are anticipated along roadway segments without sensitive receivers; more importantly, noise levels to which the project would contribute would dissipate to acceptable levels by the time traffic-related noise reaches sensitive receptors. Cumulative traffic volumes were reviewed to calculate future build-out traffic noise levels and the project's relative contribution to noise levels along roadway segments where noise levels would be substantially increased. This review indicated that the project would contribute a "cumulatively considerable" increase in noise (1 dBA L_{dn} or more) to cumulative noise level increases of 3 dBA L_{dn} or more anticipated along East Third Avenue, between Mariners Island Boulevard and Lakeside Drive, along Lakeside Drive south of Third Avenue, and along Vintage Park Drive, between Lakeside Drive and Chess Drive. Noise sensitive land uses were not identified along these affected roadway segments, and the cumulative traffic noise impact is therefore considered less than significant. Cumulative traffic noise to which the project would contribute would dissipate to acceptable levels by the time it reaches the nearest sensitive receptors. The substantial cumulative traffic-related noise increases identified along these roadway segments would not be perceptible at sensitive land uses.

(5) Aircraft Noise and Land Use Compatibility. San Francisco International Airport is located approximately 5 miles northwest of the project site. San Carlos Airport is located approximately 3.5 miles southeast of the project site. There are no private airstrips in the site vicinity. Maximum instantaneous noise levels resulting from jet aircraft passing the site on approach to San Francisco International Airport were typically 55 to 59 dBA. Although aircraft-related noise is audible at the project site, the project site does not lie within the airport land use plan areas nor within the 60 dBA CNEL noise contours of these airports. Exterior noise levels resulting from aircraft would be compatible with the proposed land uses. Interior noise level would be less than 45 dBA L_{eq} , taking into account aircraft operations around the site, and assuming standard construction methods.

c. **Significant Noise Impacts.** The following section discusses noise sources that would substantially increase ambient noise levels in the vicinity of the project site over a temporary or permanent basis.

(1) **Construction Period Impacts.** The project site is bordered by office buildings to the north and east and noise-sensitive residential land uses on the west side of Mariners Island Boulevard, and residential land uses and a hotel to the south. These sensitive uses are located approximately 150 to 200 feet from areas of the site where demolition and construction activities would occur. Construction of the project could result in a substantial temporary noise increase at existing sensitive land uses in the vicinity of the site. Construction activities could also substantially increase ambient noise levels at Gilead Sciences office buildings that remain in use during the construction of the project and at other nearby office buildings located to the north and east. Construction noise impacts that would occur as a result of the project are described below.

Impact NOI-1: Construction period activities could create significant temporary noise impacts on existing noise sensitive land uses adjacent to the site. (S)

It is expected that the Master Plan would be built out over an approximate 10-year period. The project would include the removal of up to eight structures and associated paved areas. Buildings to be removed include Buildings 320, 324, 331, 335, 346, 355, 366, and 368. Construction debris, such as old foundations, pavements, utilities, and structures, would be collected and hauled off-site. In all, two multi-level parking garages, three office buildings, four research and development buildings, and an annex would be constructed. The construction period for each building or parking structure would last approximately 12-18 months.

Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise-generating activities, and the distance between construction noise sources and noise sensitive receptors. Where noise from construction activities exceeds 60 dBA L_{eq} and exceeds ambient noise levels by at least 5 dBA L_{eq} at noise-sensitive residential uses in the project site vicinity for a period of more than 1 year, the impact would be considered significant. A significant noise impact would also be identified where noise from construction activities exceeds 70 dBA L_{eq} and exceeds ambient noise levels by at least 5 dBA L_{eq} at adjacent offices or other commercial, retail, or institutional uses with interior spaces sensitive to noise for a period of more than 1 year. Construction activities generate considerable amounts of noise, especially during the demolition phase and the construction of project infrastructure when heavy equipment is used. Table V.H-6 presents the typical range of hourly average noise levels generated by different phases of construction measured at a distance of 50 feet. Hourly average noise levels generated by demolition and construction are about 77 dBA to 89 dBA L_{eq} measured at a distance of 50 feet from the center of a busy construction site. Maximum noise levels generated during demolition would typically range from 85 to 90 dBA L_{max} with the operation of jackhammers and hoe rams.

Table V.H-6: Typical Ranges of Noise Levels at 50 Feet from Construction Sites (dBA L_{eq})

	Domestic Housing		Office Building, Hotel, Hospital, School, Public Works		Industrial Parking Garage, Religious Amusement & Recreations, Store, Service Station		Public Works Roads & Highways, Sewers, and Trenches	
	I	II	I	II	I	II	I	II
Ground Clearing	83	83	84	84	84	83	84	84
Excavation	88	75	89	79	89	71	88	78
Foundations	81	81	78	78	77	77	88	88
Erection	81	65	87	75	84	72	79	78
Finishing	88	72	89	75	89	74	84	84

I - All pertinent equipment present at site.

II - Minimum required equipment present at site.

Source: United States Environmental Protection Agency, 1973, Legal Compilation on Noise, Vol. 1, p. 2-104.

During construction, maximum noise levels would vary depending on the equipment operating on site. The typical range of maximum noise levels would be 80 to 105 dBA L_{max} (assuming impact pile driving, which would occur as part of the project) at a distance of 50 feet. Construction generated noise levels drop off at a rate of about 6 dBA per doubling of distance between the source and receptor. Shielding provided by barriers or structures can provide an additional 5 to 10 dBA noise reduction at distant receivers. Table V.H-7 presents the typical range of hourly average noise levels and maximum instantaneous noise levels generated by different phases of construction at the nearest sensitive receiver to the project site.

Construction noise levels are anticipated to exceed 60 dBA L_{eq} and the ambient noise level by 5 dBA L_{eq} at exterior areas of residences over extended periods of time. These noise levels may result in speech interference outdoors or interference with normal residential activities indoors (e.g., reading, watching television, etc.). It is conceivable that a particular residence or group of residential receivers would be subject to construction noise levels in excess of 60 dBA L_{eq} which would exceed the ambient noise level by 5 dBA L_{eq} for a period of time exceeding one construction season. Maximum noise levels would not normally exceed 100 dBA L_{max} at the nearest residential uses to the project site unless activities are occurring at or very close to the project site's property boundary. The construction of the project would thus result in a significant temporary noise level increase at neighboring noise-sensitive residential properties.

Construction activities occurring within about 440 feet of the project site would yield hourly average noise levels up to 70 dBA L_{eq} and exceed ambient noise levels by more than 5 dBA. As previously noted, noise-sensitive office uses are located approximately 150 to 200 feet from areas of the site where demolition and construction activities would occur. Maximum noise levels from most construction activities would be less than 100 dBA L_{max} at distances of 50 feet or greater, but impact pile driving would generate noise levels greater than 100 dBA L_{max} within about 90 feet of the pile driving rig. Project construction activities occurring within 440 feet of occupied office buildings or pile driving activities occurring within 90 feet of occupied office buildings would yield exterior noise levels in excess of 70 dBA L_{eq} and 100 dBA L_{max} , thus resulting in a significant temporary noise level increase at neighboring office uses.

Table V.H-7: Construction Related Noise Levels, dBA

Building	Activity	Distance to Nearest Sensitive Receiver (feet)	Hourly Average Noise Level Range (L_{eq}) at Nearest Receiver	Maximum Noise Level Range (L_{max}) at Nearest Receiver
320	Demolition	200	65-77	73-78
324	Demolition	200	65-77	73-78
331	Demolition	550	56-68	64-69
333	Demolition	850	52-64	60-65
346	Demolition	150	67-79	75-80
355	Demolition	850	52-64	60-65
366	Demolition	200	65-77	73-78
368	Demolition	200	65-77	78-78
PG-1	Construction	200	65-77	68-93
PG-2	Construction	200	65-77	68-93
NOB-1	Construction	550	56-68	59-84
NOB-2	Construction	850	52-64	55-80
NOB-3	Construction	850	52-64	55-80
NLB-1	Construction	150	67-79	70-95
NLB-2	Construction	200	65-77	68-93
NLB-3	Construction	600	55-67	58-83
NLB-4	Construction	280	62-74	65-90

Source: Illingworth and Rodkin, 2008.

Pursuant to the Foster City Municipal Code, the construction contractor is required to limit noise-generating construction activities to the hours of 7:30 a.m. to 8:00 p.m. on weekdays and from 9:00 a.m. to 8:00 p.m. on weekends and legal holidays, in residential districts or within 100 yards of a residential district. At no time may the noise level from single or multiple sources exceed 100 dBA at the producer’s property plane unless prior authorization is obtained from the Director of Planning and Development Services. The following multi-part mitigation measure would reduce the construction period noise impact of the project, but not to a less-than-significant level:

Mitigation Measure NOI-1a: The construction contractor(s) shall designate a “noise disturbance coordinator” who shall be responsible for responding to any local complaints about construction noise. The contractor(s) shall provide the City with the name and contact information of the coordinator. The disturbance coordinator shall determine the cause of the noise complaints (e.g., beginning work too early, bad muffler) and institute reasonable measures warranted to correct the problem. A telephone number for the disturbance coordinator shall be conspicuously posted at the construction site.

Mitigation Measure NOI-1b: The construction contractor(s) shall implement the following measures at the project site during all demolition and construction activities:

- Noise-generating construction activities shall be limited to the hours of 7:30 a.m. to 8:00 p.m. on weekdays and from 9:00 a.m. to 8:00 p.m. on weekends.
- During all project site excavation and on-site grading, fit all construction equipment, fixed or mobile, with properly operating and maintained mufflers consistent with manufacturers’ standards.

- Locate stationary noise generating equipment such as air compressors or portable power generators as far as possible from sensitive receptors. Construct temporary noise barriers to screen stationary noise generating equipment when located near adjoining sensitive land uses. Temporary noise barriers could reduce construction noise levels by 5 dBA.
- Locate equipment staging in areas that will create the greatest possible distance between construction-related noise sources and noise-sensitive receptors nearest the project site during all project construction.
- Utilize “quiet” air compressors and other stationary noise sources where such technology exists.
- Route all construction traffic to and from the project site via designated truck routes and prohibit construction related heavy truck traffic in residential areas where feasible.
- Control noise from construction workers’ radios to a point that they are not audible at existing residences bordering the project site.
- Prepare and submit to the City for approval a detailed construction plan identifying the schedule for major noise-generating construction activities.
- Pre-drill foundation pile holes to minimize the number of impacts required to seat the pile.
- Use multiple pile driving rigs to expedite this phase of construction.
- Use “acoustical blankets” to shroud the pile hammer.

Implementation of these measures would reduce construction-related noise levels by 5 to 10 dBA. However, construction noise levels would continue to exceed the applicable construction noise standards for more than 1 year at nearby sensitive uses. Therefore, the impact would remain significant and unavoidable. (SU)

(2) Operational Period Impacts. A substantial permanent noise increase could result from mechanical equipment necessary for the operation of the proposed parking garages, office buildings, or laboratories.

Impact NOI-2: Mechanical equipment proposed by the project may generate noise levels that would exceed the noise level standards in the Foster City Municipal Code. (S)

The operation of the project would introduce new sources of noise into the existing noise environment. Mechanical equipment normally associated with such land uses can include emergency diesel engine generators, cooling towers, heating, ventilation, and air conditioning systems, and exhaust fans. The Municipal Code requires that noise from the operation of such equipment during the hours of 7:00 a.m. to 10:00 p.m. not exceed 50 dBA for more than 30 minutes out of an hour, 55 dBA for more than 15 minutes out of an hour, 60 dBA for a period of more than 5 minutes out of the hour, 65 dBA for a period of more than 1 minute out of an hour, or 70 dBA for any period of time. The nighttime noise level limits are 5 dBA more restrictive (e.g., during the hours of 10:00 p.m. to 7:00 a.m. noise levels cannot exceed 45 dBA for more than 30 minutes out of an hour). Refer to Table V.H-3 for a summary of these noise and land use compatibility standards.

Noise levels generated by the project would be dependent on the number and type of equipment selected, the location of the equipment relative to nearby sensitive receivers, and the presence of

shielding. Noise levels generated by mechanical equipment, if not properly controlled, could result in a significant impact by exceeding the Municipal Code noise level limits.

Implementation of the following mitigation measure would reduce potential operational period noise impacts to a less-than-significant level:

Mitigation Measure NOI-2: At the time that specific buildings envisioned under the Master Plan are proposed, the project sponsor shall conduct a design level acoustical analysis to ensure that mechanical equipment noise resulting from the project complies with applicable General Plan policies and Municipal Code noise level limits. The acoustical analysis shall include a calculation of noise levels resulting from the proposed equipment at the nearest sensitive receiving land uses, an assessment of noise levels relative to applicable standards, and recommendations to control noise levels in accordance with the applicable limits. The report shall be completed and submitted to the Community Development Department for approval prior to the issuance of building permits. (LTS)