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4.11 Noise

This section discusses the project's potential impacts relating to noise and groundborne vibration. Impacts are assessed relative to the environmental baseline, which consists of the current use of the site as the Sandpiper Golf Course. Construction noise modeling outputs are included in Appendix M.

4.11.1 Setting

Environmental Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013).

Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response. Decibels are measured on a logarithmic scale that quantifies sound intensity. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease.

Human perception of noise has no simple correlation with sound energy: the perception of sound is not linear in terms of dBA or in terms of sound energy. Two sources do not "sound twice as loud" as one source. It is widely accepted that the average healthy ear can barely perceive changes of 3 dBA, increase or decrease (i.e., twice the sound energy); that a change of 5 dBA is readily perceptible; and that an increase (or decrease) of 10 dBA sounds twice (or half) as loud.

Sound changes in both level and frequency spectrum as it travels from the source to the receptor. The most obvious change is the decrease in level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line, the path the sound will travel, site conditions, obstructions). Noise levels from a point source typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance (e.g., construction, industrial machinery, ventilation units). Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site, such as a parking lot or smooth body of water, receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) result from simply the geometric spreading of the source. An additional ground attenuation value of 1.5 dBA per doubling of distance applies to a soft site (i.e., soft dirt, grass, or scattered bushes and trees) (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels. Natural terrain features such as hills and dense woods, and man-made features such as buildings and walls, can significantly alter noise levels. Generally, any large structure blocking the line of sight will provide at least a 5-dBA reduction in source noise levels at the receptor (Federal Highway Administration [FHWA] 2011). Structures can substantially reduce exposure to noise as well. The FHWA's guidelines indicate that modern building construction generally provides an exterior-to-interior noise level reduction of 20 to 35 dBA with closed windows.

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. One of the most frequently used noise metrics is the equivalent noise level (L_{eq}); it considers both duration and sound power level. L_{eq} is defined as the single steady A-weighted level equivalent to the same amount of energy as that contained in the actual fluctuating levels over time. Typically, L_{eq} is summed over a one-hour period. L_{max} is the highest root mean squared (RMS) sound pressure level within the sampling period, and L_{min} is the lowest RMS sound pressure level within the measuring period.

Noise that occurs at night tends to be more disturbing than that occurring during the day. Community noise is usually measured using Day-Night Average Level (L_{dn}), which is the 24-hour average noise level with a +10 dBA penalty for noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. It is also measured using CNEL, which is the 24-hour average noise level with a +5 dBA penalty for noise occurring from 7:00 p.m. to 10:00 p.m. and a +10 dBA penalty for noise occurring from 10:00 p.m. to 7:00 a.m. (Caltrans 2013). Noise levels described by L_{dn} and CNEL usually differ by about 1 dBA. The relationship between the peak-hour L_{eq} value and the L_{dn}/CNEL depends on the distribution of traffic during the day, evening, and night. Quiet suburban areas typically have CNEL noise levels in the range of 40 to 50 dBA, while areas near arterial streets are in the 50 to 60-plus CNEL range. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

Groundborne Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent structures. The number of cycles per second of oscillation makes up the vibration frequency, described in terms of hertz (Hz). The frequency of a vibrating object describes how rapidly it oscillates. The normal frequency range of most groundborne vibration that can be felt by the human body starts from a low frequency of less than 1 Hz and goes to a high of about 200 Hz.

While people have varying sensitivities to vibrations at different frequencies, in general they are most sensitive to low-frequency vibration. Vibration in buildings, such as from nearby construction activities, may cause windows, items on shelves, and pictures on walls to rattle. Vibration of building components can also take the form of an audible low-frequency rumbling noise, referred to as groundborne noise. Groundborne noise is usually only a problem when the originating vibration spectrum is dominated by frequencies in the upper end of the range (60 to 200 Hz), or when foundations or utilities, such as sewer and water pipes, physically connect the structure and the vibration source (FTA 2018). Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants and vibration-sensitive land uses.

Vibration energy spreads out as it travels through the ground, causing the vibration level to diminish with distance away from the source. High-frequency vibrations diminish much more rapidly than low frequencies, so low frequencies tend to dominate the spectrum at large distances from the source. Discontinuities in the soil strata can also cause diffractions or channeling effects that affect the propagation of vibration over long distances (Caltrans 2020). When a building is impacted by vibration, a ground-to-foundation coupling loss will usually reduce the overall vibration level.

However, under rare circumstances, the ground-to-foundation coupling may actually amplify the vibration level due to structural resonances of the floors and walls.

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (Caltrans 2020).

Existing Ambient Noise Environment

The primary noise source on the project site is vehicular traffic from Hollister Avenue and Highway 101. Existing noise levels at the project site were documented using two 24-hour and four 15-minute ambient noise measurements. Long-term measurements were collected at the Barnsdall Rio Grande Gas Station (LT-1) and near the residences located off Whimbrel Lane (LT-2); short-term measurements were also captured at the Barnsdall Rio Grande Gas Station (ST-1) and near Whimbrel Lane (ST-2) locations, as well as at the clubhouse area (ST-3) and in Santa Barbara Shores Park, just south of The Bluffs neighborhood (ST-4). Noise measurements were conducted using a Piccolo II Type 2 sound-level meter positioned at a height of approximately 5 feet above ground level. Figure 4.11-1 depicts the measurement locations, Table 4.11-1 describes the short-term measurement results, and Table 4.11-2 describes the long-term measurement results.

Figure 4.11-1 Ambient Noise Monitoring Locations

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24-15959 EPS
Figure NOI-1 Noise Measurements

Table 4.11-1 Short-term Ambient Noise Monitoring Results

Measurement	Measurement Location	Sample Times[1]	Approximate Distance to Primary Noise Source	L_{eq} (dBA)	L_{max} (dBA)	L_{min} (dBA)
ST-1	At the Barnsdall Rio Grande Gas Station	4:04-4:19 p.m.	160 feet to Hollister Avenue centerline	59.3	73.7	45.5
ST-2	Near the residences located off Whimbrel Lane	4:32-4:47 p.m.	50 feet to Hollister Avenue centerline	65.3	73.5	44.6
ST-3	Clubhouse area	2:51-3:06 p.m.	120 feet to Hollister Avenue centerline	50.2	57.9	45.7
ST-4	Santa Barbara Shores Park	3:29-3:44 p.m.	250 feet to Sora Court	54.6	73.3	38.7

[1] Measurements occurred on January 14, 2025

dBA = A-weighted decibel; Leq = equivalent noise level; L_{min} = minimum noise level; L_{max} = maximum noise level

Table 4.11-2 Long-term Ambient Noise Monitoring Results

Sample Time[1]	dBA L_{eq}	Sample Time	dBA L_{eq}
LT-1: Barnsdall Rio Grande Gas Station			
5:00 p.m.	58.1	5:00 a.m.	55.8
6:00 p.m.	57.3	6:00 a.m.	58.0
7:00 p.m.	56.2	7:00 a.m.	60.8
8:00 p.m.	57.1	8:00 a.m.	59.0
9:00 p.m.	54.1	9:00 a.m.	57.0
10:00 p.m.	51.5	10:00 a.m.	56.2
11:00 p.m.	52.2	11:00 a.m.	56.7
12:00 a.m.	46.9	12:00 p.m.	55.7
1:00 a.m.	49.4	1:00 p.m.	57.8
2:00 a.m.	44.1	2:00 p.m.	57.3
3:00 a.m.	47.5	3:00 p.m.	57.4
4:00 a.m.	50.2	4:00 p.m.	59.1
24-hour Noise Level (CNEL)			**60.3**
LT-2: Near Residences off Whimbrel Lane			
5:00 p.m.	70.0	5:00 a.m.	62.6
6:00 p.m.	67.8	6:00 a.m.	66.4
7:00 p.m.	66.4	7:00 a.m.	69.0
8:00 p.m.	65.3	8:00 a.m.	70.2
9:00 p.m.	62.9	9:00 a.m.	70.9
10:00 p.m.	60.4	10:00 a.m.	67.1
11:00 p.m.	58.7	11:00 a.m.	67.0
12:00 a.m.	54.7	12:00 p.m.	67.4
1:00 a.m.	52.8	1:00 p.m.	72.5
2:00 a.m.	51.7	2:00 p.m.	68.1
3:00 a.m.	53.5	3:00 p.m.	68.9
4:00 a.m.	58.1	4:00 p.m.	69.4
24-hour Noise Level (CNEL)			**69.5**

[1] Measurements occurred January 14 – 15, 2025

dBA = A-weighted decibel; Leq = equivalent noise level; L_{min} = minimum noise level; L_{max} = maximum noise level

Sensitive Noise Receptors

The City of Goleta's General Plan/Coastal Land Use Plan Noise Element defines sensitive receptors as users or types of uses that are interrupted (rather than merely annoyed) by relatively low levels of noise. These include residential neighborhoods, schools, libraries, hospitals and rest homes, auditoriums, certain open space areas, and public assembly places. Sensitive receptors nearest to the project site consist of single-family residences adjacent to the east of the project site. Single-family residences are also located across Hollister Avenue to the north at an approximate distance of 100 feet from the nearest proposed improvements along Hollister Avenue, at the Barnsdall Rio Grande Gas Station, and at the existing maintenance yard. In addition, the nearest school is the Ellwood Elementary School, located 1,100 feet to the east.

4.11.2 Regulatory Setting

State

The State of California regulates freeway noise, sets standards for sound transmission, provides occupational noise control criteria, identifies noise standards, and provides guidance for local land use compatibility. State law requires each county and city to adopt a General Plan that includes a Noise Element prepared per guidelines adopted by the Governor's Office Land Use and Climate Innovation (formerly the Governor's Office of Planning and Research). The purpose of the Noise Element is to limit the exposure of the community to excessive noise levels. The California Environmental Quality Act requires all known environmental effects of a project be analyzed, including environmental noise impacts.

California General Plan Guidelines

The California General Plan Guidelines, published by the Governor's Office of Land Use and Climate Innovation, indicate acceptable, specific land use types in areas with specific noise exposure. The guidelines also offer adjustment factors that may be used to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution. These guidelines are advisory, and local jurisdictions, including the City of Goleta, have the responsibility to set specific noise standards based on local conditions.

California Noise Control Act of 1973

California Health and Safety Code Sections 46000 through 46080, known as the California Noise Control Act, find that excessive noise is a serious hazard to public health and welfare and that exposure to certain levels of noise can result in physiological, psychological, and economic damage. The act also finds that there is a continuous and increasing bombardment of noise in urban, suburban, and rural areas. The California Noise Control Act declares that the State of California has a responsibility to protect the health and welfare of its citizens by the control, prevention, and abatement of noise. It is the policy of the State to provide an environment for all Californians that is free from noise that jeopardizes their health or welfare.

Local

City of Goleta Noise Element

The Noise Element of the City of Goleta's General Plan/Coastal Land Use Plan establishes noise standards for various land use categories based on the U.S. Department of Housing and Urban Development Guidelines and standards from the California Office of Noise Control. The City recommends 50-70 dBA as the "normally acceptable" range and 70-80 dBA as the "normally unacceptable" range for golf course uses. According to the City of Goleta's General Plan/Coastal Land Use Plan, golf course uses within the "normally acceptable range" are deemed satisfactory. Table 4.11-3 shows the normally acceptable and conditionally acceptable ranges for each land use category. According to Noise Element Policy NE 1.1, the City requires mitigation for development that would subject proposed land uses to noise levels that exceed the acceptable levels shown in Table 4.11-3.

Table 4.11-3 Goleta Noise and Land Use Compatibility Criteria

	Community Noise Exposure Ldn or CNEL, dBA			
Land Use Category	**Normally Acceptable**	**Conditionally Acceptable**	**Normally Unacceptable**	**Clearly Unacceptable**
Residential – Low Density	50-60	60-65	65-75	75-85+
Residential – Multi-Family	50-60	60-65	65-75	75-85+
Transient Lodging – Motels, Hotels	50-65	65-70	70-80	80-85+
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-60	60-65	65-80	80-85+
Auditoriums, Concert halls, Amphitheaters	NA	50-65	NA	65-85+
Sports Arena, Outdoor Spectator Sports	NA	50-70	NA	70-85+
Playgrounds, Neighborhood Parks	50-70	NA	70-75	75-85+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-70	NA	70-80	80-85+
Office Buildings, Business Commercial and Professional	50-67.5	67.5-75	75-85+	NA
Industrial, Manufacturing, Utilities, Agriculture	50-70	70-75	75-85+	NA

Normally Acceptable – Specified land uses is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable – new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made, needed noise reduction requirements are 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.

Source: City of Goleta 2006

City of Goleta Noise Element Policy NE 6.4 restricts construction activities near or adjacent to residential buildings and other sensitive receptors to the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday, and 7:00 a.m. to 4:00 p.m., Monday through Friday, for construction in nonresidential areas. Noise Element Policy NE 6.5 requires the following measures to be incorporated into grading and building plan specifications to reduce construction noise:

- All construction equipment shall have properly maintained sound-control devices, and no equipment shall have an unmuffled exhaust system.

- Contractors shall implement appropriate additional noise mitigation measures including but not limited to changing the location of stationary construction equipment, shutting off idling equipment, and installing acoustic barriers around significant sources of stationary construction noise.
- To the extent practicable, adequate buffers shall be maintained between noise-generating machinery or equipment and any sensitive receptors. The buffer should ensure that noise at the receptor site does not exceed 65 dBA CNEL. For equipment that produces a noise level of 95 dBA at 50 feet, a buffer of 1600 feet is required for attenuation of sound levels to 65 dBA.

Goleta Municipal Code Chapter 9.09

Goleta Municipal Code Chapter 9.09 regulates noise in the City. The purpose of the chapter is to preserve public peace and comfort for citizens of Goleta from unwarranted noise and disturbances. The Goleta Municipal Code prohibits loud and unreasonable noise from 10:00 p.m. to 7:00 a.m. every day of the week. Loud and unreasonable noise is defined as sound which is clearly discernible at a distance of 100 feet from the property line of the property upon which it is broadcast or sound which is above 60 dBA at the edge of the property line upon which the sounds is broadcast. The City's code requirements related to construction noise are contained in Section 17.39.070(G), which restates the construction standards from City of Goleta Noise Element Policy NE 6.4.

4.11.3 Impact Analysis

a. Methodology and Significance Thresholds

Methodology

Construction Noise

Short-term noise impacts associated with construction activities were analyzed based on typical construction equipment noise levels derived from the FHWA's Roadway Construction Noise Model (RCNM). Main construction activities would involve various activities in several areas, including the golf clubhouse and parking lot, golf course improvements, maintenance facility, comfort station, Barnsdall Rio Grande Gas Station, and Hollister Avenue improvements. For general construction activities, predicted average-daily construction noise levels (in dBA L_{eq}) were calculated assuming three louder pieces of equipment operating simultaneously[1] with the equipment operating in approximately the center of each construction area to the nearest sensitive receptor. Default equipment assumptions from CalEEMod were included in the air quality analysis (see Appendix C); from this list, a grader, excavator, and dozer were used as the three louder pieces of equipment. Noise levels are predicted in RCNM based on an average noise-attenuation rate of 6 dB per doubling of distance from the source.

Construction Vibration

Groundborne vibration levels associated with construction activities were estimated based on the estimates in the Caltrans' *Transportation and Construction Vibration Guidance Manual* (Caltrans 2020). Potential vibration levels were identified for locations that are sensitive to vibration, including nearby residences. The greatest vibratory source during construction in the project vicinity would be potentially from a vibratory roller used during paving phases; outside of paving phases, the greatest

[1] On most typical construction sites, up to three pieces of heavy-duty equipment would be operating in a work area simultaneously.

vibratory source would be from a dozer. Construction vibration estimates are based on vibration levels reported by Caltrans and the FTA (Caltrans 2020, FTA 2018). Table 4.11-4 shows typical vibration levels for various pieces of construction equipment used in the assessment of construction vibration (FTA 2018).

Table 4.11-4 Typical Vibration Levels From Construction Activities

Equipment	PPV at 25 ft (in/sec)
Vibratory Roller	0.210
Large Bulldozer	0.089
Loaded Trucks	0.076
Small Bulldozer	0.003

Source: FTA 2018

Vibration limits used in this analysis to determine a potential impact to local land uses from construction activities are based on information contained in Caltrans' *Transportation and Construction Vibration Guidance Manual* (Caltrans 2020). To assess the damage potential from ground vibration induced by construction equipment, Caltrans created a synthesis of various vibration criteria that are identified in Table 4.11-5. Based on Caltrans recommendations, limiting vibration levels to below 0.5 PPV in/sec for transient sources and 0.3 PPV in/sec for continuous sources at older residential structures would prevent structural damage.

Table 4.11-5 Caltrans Vibration Damage Potential Threshold Criteria

	Maximum PPV (in/sec)	
Structure and Condition	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

Source: Caltrans 2020

Stationary Noise

On-site noise sources may include roof-top mounted heating, ventilation, and air conditioning (HVAC) equipment. For the noise analysis, it was conservatively assumed that the new clubhouse building, new café next to the Barnsdall Rio Grande Gas Station, and comfort station would each have an HVAC unit. This analysis assumes a typical commercial rooftop unit such as a six-ton Carrier 50HCQA06, which generates a sound power level of 79 dBA that is equivalent to 68.8 dBA L_{eq} at three feet (Carrier 2011).

To analyze noise impacts from the pump stations located at the comfort station and maintenance yard, a reference noise level measured for a 100-horsepower pump at a water treatment plant was used (Padre Dam Municipal Water District 2015). This 100-horsepower pump had a sound power level of 93.2 dBA, which is equivalent to a sound pressure level of 85.2 dBA L_{eq} at a distance of three feet. The pump station would be located within an enclosure, which would provide noise attenuation. This enclosure was assumed to not include windows. Noise was assumed to be attenuated by at least 35 dBA from the inside of the building to the outside of the structure (FHWA 2011).[2]

The replacement of maintenance facilities would include a cart blow/wash and pump station. The cart blow/wash would be equipped with a hose with a shut off nozzle and air nozzle and power washer which would be utilized to wash vehicles once or twice per day. This would be similar to existing activities to wash vehicles in the maintenance yard, and thus is considered an existing noise source.

Traffic Noise

The project's operational vehicle trips would primarily generate additional traffic noise on nearby roadways such as Hollister Avenue. According to the project's *Traffic, Parking and VMT Study* (Appendix N), the project would generate 399 new daily one-way trips.

Significance Thresholds

As described in more detail in Section 4, *Environmental Impact Analysis,* the following thresholds are based on the County's 2024 *Environmental Thresholds and Guidelines Manual* and Appendix G of the *State CEQA Guidelines*. An impact would be considered potentially significant if the project would result in one or more of the following conditions:

1. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
2. Generation of excessive groundborne vibration or groundborne noise levels; or
3. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, exposure of people residing or working in the project area to excessive noise levels.

Short-Term Construction Noise

The City of Goleta Noise Element restricts construction activities near or adjacent to residential buildings and other sensitive receptors to the hours of 8:00 a.m. to 5:00 p.m., Monday through Friday, and 7:00 a.m. to 4:00 p.m., Monday through Friday, for construction in nonresidential areas. According to the County's 2024 *Environmental Thresholds and Guidelines Manual* (refer to Section 4, *Environmental Impact Analysis*), impacts would be significant if construction noise exceeds 65 dBA at nearby sensitive receptors.

Long-Term Operational Noise Impacts

According to the County's *Environmental Thresholds and Guidelines Manual*, if existing exterior noise levels, including at outdoor living areas, experienced by sensitive receptors is below 65 dBA CNEL, and if the proposed project will generate noise that will cause the existing noise levels experienced by the sensitive receptors to exceed 65 dBA CNEL – either individually or cumulatively when combined with other noise-generating sources – then the proposed project is presumed to have a significant impact. If existing exterior noise levels, including at outdoor living areas, experienced by sensitive receptors

[2] Windows allow for more noise to pass through compared to a masonry wall.

exceeds 65 dBA CNEL, and if the proposed project will generate noise that will cause the existing noise levels experienced by the sensitive receptors to increase by 3 dBA CNEL – either individually or cumulatively when combined with other noise-generating sources – then the proposed project is presumed to have a significant impact.

For traffic-related noise, impacts would be considered significant if project-generated traffic would result in exposure of sensitive receptors to an unacceptable increase in noise levels. For the purpose of this analysis, a significant impact would occur if project-related traffic increases the ambient noise environment of noise-sensitive locations by 3 dBA or more if the locations are subject to noise levels in excess of the conditionally acceptable noise levels in Table 4.11-3, or by 5 dBA or more if the locations are not subject to noise levels in excess of the aforementioned standards.

Groundborne Vibration Impacts

Based on Caltrans recommendations, limiting vibration levels to below 0.5 PPV in/sec for transient sources and 0.3 PPV in/sec for continuous sources at older residential structures would prevent structural damage.

Exposure to Excessive Airport Noise Levels

A significant impact would occur if a project would expose people residing or working in the project area to excessive noise levels for a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport.

b. Project Impacts and Mitigation Measures

Threshold 1:	Would the project result in generation of a substantial temporary increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Construction)

Impact NOI-1 Short-term construction of the project would temporarily increase local noise levels that may exceed Goleta's construction noise standard of 65 dBA. Through implementation of Mitigation Measure NOI-1, impacts would be Class II, *less than significant with mitigation incorporated*.

Using the construction assumptions described under *Methodology*¸ estimated construction noise levels are provided in Table 4.11-6. As shown in the table, noise from construction activities at the clubhouse and comfort station would not exceed 65 dBA at the nearest sensitive receptors, and no noise control is needed during construction to reduce noise levels for these receptors. However, noise levels from all other improvements (construction activities for golf course improvements, maintenance yard, Rio Grande Coffee Shop/Barnsdall Rio Grande Gas Station, and Hollister Avenue improvements) may exceed Goleta's 65 dBA standard at the nearest residences to those activities. Specifically, construction activities would exceed 65 dBA within 400 feet of sensitive receptors. Impacts would be potentially significant, and mitigation is required.

Table 4.11-6 Construction Noise Levels

Construction Equipment	Clubhouse (500 feet)	Golf Course Improvements (200 feet)	Maintenance Yard (100 feet)	Comfort Station (900 feet)	Barnsdall Area (150 feet)	Hollister Ave Improvements (100 feet)
	Estimated Noise Levels (dBA L_{eq}) at Nearest Residence from Construction Areas[1]					
Grader, Excavator, Dozer	64	72	78	59	74	78
Exceed 65 dBA Threshold?	No	Yes	Yes	No	Yes	Yes

[1] Construction activities would exceed 65 dBA within 400 feet of sensitive receptors.

RCNM outputs are included in Appendix M.

Mitigation Measures

NOI-1 Construction Noise Reduction

The construction contractor shall prepare and submit a Construction Noise Control Plan to the City of Goleta Planning and Environmental Review Director or designee for review and approval prior to issuance of a Zoning Clearance for a grading permit/demolition permit. The Construction Noise Control Plan shall specify the noise reduction measures to be implemented during project construction that uses heavy-duty equipment within 400 feet of residences, which may include improvements to the golf course (e.g., grading of the course), maintenance yard, Barnsdall area, and Hollister Avenue to ensure noise levels do not exceed 65 dBA at nearby sensitive receptors at the nearest residences. The measures specified in the Construction Noise Control Plan shall be included on the building and grading plans and shall be implemented by the construction contractor during construction. Measures in the Construction Noise Control Plan may include, but would not be limited to, the following:

- Prior to the start of and for the duration of construction, the contractor shall properly maintain and tune all construction equipment in accordance with the manufacturer's recommendations to minimize noise emissions.
- Prior to use of any construction equipment, the contractor shall fit all equipment with properly operating mufflers, air intake silencers, and engine shrouds no less effective than as originally equipped by the manufacturer.
- Staging and delivery areas shall be located as far as feasible from existing residences.
- Installation of temporary sound barriers/blankets to break the line of sight between construction equipment and residences within 400 feet of heavy-duty equipment operation. The barriers shall be constructed with a solid material that has a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the barrier.
- To the extent consistent with applicable safety regulations, trucks operating with reverse motions alarms shall be outfitted with SAE J994 Class D or equivalent alarms (ambient-adjusting, or "smart alarms" that automatically adjust the alarm to 5 dBA above the ambient near the operating equipment), or switch off back-up alarms and replace with human spotters in compliance with all safety requirements and laws.
- A construction notification sign shall be posted at the job site, clearly visible to the public, that includes permitted construction days and hours, as well as the telephone numbers of the City of Goleta's and the contractor's authorized representatives that are assigned to respond in the event of a noise complaint.

- If the authorized contractor's representative receives a complaint, either City code enforcement or a contractor-retained and Goleta-approved noise consultant shall conduct noise measurements at the properties that registered the complaint. The noise measurements shall be conducted for a minimum of one hour to determine if noise levels are compliant with City's 65 dBA standard. The consultant shall prepare a letter report for code enforcement summarizing the measurements, calculation data used in determining impacts, and potential measures to reduce noise levels to the maximum extent feasible.

Plan Requirements and Timing: The Planning and Environmental Review Director or designee shall approve the Construction Noise Control Plan prior to issuance of the zoning clearance for the grading permit/demolition permit. The measures specified in the Construction Noise Control Plan shall be included on the building and grading plans.

Monitoring: The City shall monitor compliance with the requirements of the Construction Noise Control Plan periodically during construction and shall promptly investigate and respond to all noise complaints.

Significance After Mitigation

Implementation of Mitigation Measure NOI-1 would ensure that construction noise levels do not exceed Goleta's 65 dBA construction noise standard. Measures would include a temporary noise barrier to break the line of sight between construction equipment and residences within 400 feet of heavy-duty equipment operation. To estimate the sound level reduction from a temporary noise barrier, the barrier was assumed to be constructed with a solid material that has a density of at least 1.5 pounds per square foot with no gaps from the ground to the top of the barrier. With these assumptions, the estimated noise reduction from a temporary noise barrier which would block the line-of-sight between the equipment exhaust stacks and receptors to the east would be 15 dBA. With this reduction, noise levels at the closest residences as shown in Table 4.11-6 would be 63 dBA or lower. Therefore, with implementation of a Construction Noise Control Plan, construction noise levels would not exceed Goleta's 65 dBA construction noise standard, and impacts would be less than significant with mitigation.

Threshold 1:	Would the project generate a substantial permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Stationary)

Impact NOI-2 The project would include mechanical equipment that would increase noise levels during project operation. However, noise levels generated during project operation would not exceed the City's noise thresholds at the nearest properties. Impacts would be Class III*, less than significant*.

HVAC Units

The proposed project may include HVAC units on the new building, new café next to the restored Barnsdall Rio Grande Gas Station, and comfort station. Noise levels from these HVAC units to the nearest residences from each unit are shown in Table 4.11-7. The table shows that the HVAC noise level would be highest at the houses located off Sanderling Lane, with a noise level of 27 dBA. The noise levels would be well below the City's 65 dBA CNEL standard. Due to the large distances between the HVAC units (i.e. 1,900 feet or greater), the additional noise from each HVAC unit would be negligible compared to the closest unit shown in the table and therefore combined noise levels from multiple HVAC units are not displayed.

Table 4.11-7 HVAC Noise Levels

Receptor	Land Use Type	Direction from HVAC Unit	Distance from Source (feet)	HVAC Unit Noise Level (dBA)	Exceed Threshold?[1]
Houses located off Whimbrel Lane	Single-family	Northeast of Clubhouse	575	23	No
Houses located off Sanderling Lane	Single-family	North of Barnsdall Rio Grande Gas Station	380	27	No
Houses in The Bluffs neighborhood	Single-family	Northeast of Comfort Station	940	19	No

[1] The City of Goleta threshold is if operation increases noise levels to exceed 65 dBA CNEL at sensitive receptors if existing noise levels are below 65 dBA CNEL, or if operation increases noise levels by 3 dBA CNEL or more if existing noise levels already exceed 65 dBA CNEL.

Pump Station

Noise levels from the proposed pump stations, which would be located in the maintenance yard area and near the comfort station, are shown in Table 4.11-8. The table shows that pump station noise levels would be highest at the houses located off Sanderling Lane, with a noise level of 18 dBA. The noise levels would be well below the City's 65 dBA CNEL standard.

Table 4.11-8 Pump Station Noise Levels

Receptor	Land Use Type	Direction from Pump Station	Distance from Source (feet)	Pump Station Noise Level (dBA)	Exceed Threshold?[1]
Maintenance Yard Pump Station					
Houses located off Whimbrel Lane	Single-family	Northwest	750	2	No
Houses located off Sanderling Lane	Single-family	North	130	18	No
Houses in The Bluffs neighborhood	Single-family	East	200	14	No
Comfort Station Pump Station					
Houses located off Whimbrel Lane	Single-family	Northwest	2,700	<1	No
Houses located off Sanderling Lane	Single-family	North	2,400	<1	No
Houses in The Bluffs neighborhood	Single-family	East	880	1	No

[1] The City of Goleta threshold is if operation increases noise levels to exceed 65 dBA CNEL at sensitive receptors if existing noise levels are below 65 dBA CNEL, or if operation increases noise levels by 3 dBA CNEL or more if existing noise levels already exceed 65 dBA CNEL.

Conversational Noise

Existing conditions at the project site include users of the golf course. The project would not decrease the number of golfers on-site, as the proposed project would reduce the rounds of golf by incrementally increasing the time between tee-offs. This reduction in rounds would lead to decreasing noise from golfers. However, the project would add café users at the Barnsdall Rio Grande Gas Station, which may increase conversational noise in the area. Typically, a conversation between two people using a normal voice (not raised) at a distance of three feet is 60 dBA, and a raised voice at a distance of three feet is 66 dBA (Engineering ToolBox 2005). Noise levels from conversations at the café area are estimated in Table 4.11-9. As shown therein, conversational noise levels would be well below the City's 65 dBA CNEL standard.

Table 4.11-9 Conversation Noise Levels from the Barnsdall Rio Grande Gas Station Cafe

Receptor	Land Use Type	Direction from Café	Distance from Source (feet)	HVAC Unit Noise Level (dBA)	Exceed Threshold?[1]
Houses located off Whimbrel Lane	Single-family residence	Northeast of Clubhouse	120	34	No
Houses located off Sanderling Lane	Single-family residence	North of Barnsdall Rio Grande Gas Station	600	20	No
Houses in The Bluffs neighborhood	Single-family residence	Northeast of Comfort Station	350	25	No

[1] The City of Goleta threshold is if operation increases noise levels to exceed 65 dBA CNEL at sensitive receptors if existing noise levels are below 65 dBA CNEL, or if operation increases noise levels by 3 dBA CNEL or more if existing noise levels already exceed 65 dBA CNEL.

Combined Operational Noise Levels

The combined noise levels from HVAC units at the clubhouse, comfort station, and restored Barnsdall Rio Grande Gas Station, pump station equipment at the maintenance yard and comfort station, and conversational noise at the new café are shown in Table 4.11-10. These noise levels would be well below the City's 65 dBA CNEL standard, and below the existing ambient noise levels. Therefore, operational noise from the proposed project would be less than significant.

Table 4.11-10 Combined Operational Noise Levels

Receptor	Land Use Type	HVAC Units Noise Level (dBA)	Pump Station Noise Level (dBA)	Conversation Noise Level (dBA)	Combined Noise Level (dBA)	Exceed Threshold?[1]
Houses located off Whimbrel Lane	Single-family	23	2	34	34	No
Houses located off Sanderling Lane	Single-family	27	18	20	28	No
Houses in The Bluffs neighborhood	Single-family	19	14	25	26	No

[1] The City of Goleta threshold is operation increases noise levels to exceed 65 dBA CNEL at sensitive receptors if existing noise levels are below 65 dBA CNEL, or operation increases noise levels by 3 dBA CNEL or more if existing noise levels already exceed 65 dBA CNEL.

Mitigation Measures

No mitigation measures are required.

Threshold 1:	Would the project generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Traffic)

Impact NOI-3 Project construction and operation would generate new vehicle trips that would increase noise levels on nearby roadways. Project construction and operation would not result in a traffic noise increase of 3 dBA or more. Impacts would be Class III, *less than significant*.

Operational Off-Site Traffic Noise

Construction

Construction generates temporary worker, vendor, and soil import haul trips, and the number of trips vary by activity phase. According to the project's *Air Quality and Greenhouse Gas Emissions Technical Memorandum for the Sandpiper Golf Course Redevelopment Project* (Appendix C), the greatest number of construction vehicle trips would occur during the demolition phase, with 78 one-way trips between worker, vendor, and hauling trips. As shown in Table 4.11-11, noise levels related to the project's construction trips would increase by less than 0.1 dBA. Therefore, the project would not result in a traffic noise increase of 3 dBA or more, and impacts would be less than significant.

Table 4.11-11 Predicted Increases in Traffic Noise Levels - Construction

	Average Daily Trips (ADT)			
Roadway Segment	Existing	Existing Plus Project	Noise Level Increase (dBA)	Significant Impact? [1]
Hollister Avenue, east of Cathedral Oaks Road	8,800	8,878	<0.1	No
Cathedral Oaks Road, north of Hollister Avenue	10,800	10,878	<0.1	No

[1] A significant impact would occur if project-related traffic increases the ambient noise environment of noise-sensitive locations by 3 dBA or more if.

Operation

Project operation would generate new vehicle trips that would increase noise levels on nearby roadways, such as Hollister Avenue and Cathedral Oaks Road. As shown in Table 4.11-12, noise levels related to the additional trips would increase by only 0.1 dBA. Therefore, the project would not result in a traffic noise increase of 3 dBA or more, and impacts would be less than significant.

Table 4.11-12 Predicted Increases in Traffic Noise Levels - Operation

	Average Daily Trips (ADT)			
Roadway Segment	Existing	Existing Plus Project	Noise Level Increase (dBA)	Significant Impact? [1]
Hollister Avenue, east of Cathedral Oaks Road	8,800	9,047	0.1	No
Cathedral Oaks Road, north of Hollister Avenue	10,800	11,112	0.1	No

[1] A significant impact would occur if project-related traffic increases the ambient noise environment of noise-sensitive locations by 3 dBA or more if.

Mitigation Measures

No mitigation measures are required.

Threshold 2:	Would the project generate excessive groundborne vibration or groundborne noise levels?

Impact NOI-4 Project construction would result in groundborne vibration in the project site vicinity and potentially cause damage to the Barnsdall Rio Grande Gas Station. This impact would be Class II, *less than significant with mitigation incorporated*. The proposed project would not involve substantial vibration sources associated with operation, and operational impacts would be Class III, *less than significant*.

Construction

Construction activities known to generate excessive ground-borne vibration, such as pile driving, would not be used for project construction as those activities typically occur when a foundation of a is needed to be at a greater depth than typical projects (e.g., for marine projects or building on unstable soil). The greatest anticipated source of vibration during general project construction activities would potentially be from a vibratory roller, which would be used as close as 75 feet during construction from the nearest off-site residential structures to the east. A vibratory roller would create a vibration level of approximately 0.210 PPV in/sec. at a distance of 25 feet (Caltrans 2020). This would equal a vibration level of approximately 0.063 PPV in/sec. at a distance of 75 feet.[3] This vibration level would be well below the Caltrans vibration damage potential threshold for older structures of 0.5 PPV in/sec for transient sources. Therefore, temporary impacts associated with the vibratory roller (and other potential equipment) to off-site residential structures would be less than significant.

Construction vibration would also occur on-site near the Barnsdall Rio Grande Gas Station, a historical structure. Equipment may be used within 15 feet of the building when accounting for equipment setbacks; at a distance of 15 feet, a vibratory roller would generate a vibration level of 0.37 in/sec PPV and a large bulldozer would generate a vibration level of 0.16 in/sec PPV. The equipment would exceed the Caltrans vibration damage potential threshold for historical structures of 0.12 PPV in/sec for transient sources within a distance of 42 feet and 20 feet, respectively. Therefore, if a vibratory roller, large bulldozer, or similar heavy-duty construction equipment is used within these distances to the Barnsdall Rio Grande Gas Station, building damage could occur from vibration and impacts would be potentially significant from construction vibration.

Operation

Operational activities known to generate excessive ground-borne vibration include projects involving railroads and subways. The proposed project would not involve substantial vibration sources associated with operation such as this because operation of a golf course does not include these uses. Therefore, the proposed project's operational groundborne vibration and noise impacts would be less than significant.

[3] PPVEquipment = PPVRef $(25/D)^n$ (in/sec), PPVRef = reference PPV at 25 feet, D = distance ,and n = 1.1

Mitigation Measures

NOI-2 Construction Vibration Reduction Measures

Prior to the issuance of Zoning Clearance for grading and building permit, the City of Goleta Planning and Environmental Review Director or designee shall verify that the construction plans include the following requirements:

- For paving activities within 42 feet of the Barnsdall Rio Grande Gas Station, a static roller shall be used in lieu of a vibratory roller.
- For grading and earthwork activities within 20 feet of the Barnsdall Rio Grande Gas Station, off-road equipment shall be limited to 100 horsepower or less.

Plan Requirements and Timing: The Planning and Environmental Review Director or designee shall confirm the requirements are included on the grading and building permits prior to the issuance of Zoning Clearance for grading and building permits.

Monitoring: The City shall monitor compliance with the requirements of the vibration reduction measure periodically during grading and construction activities within 50 feet of Barnsdall Rio Grande Gas Station.

Significance After Mitigation

Alternative equipment near the Barnsdall Rio Grande Gas Station would be used to reduce construction related vibration. Specifically, use of a static roller would generate vibration levels of approximately 0.09 in/sec PPV at a distance of 15 feet (McIver 2012). Grading and earthwork equipment that is limited to 100 horsepower or less would generate 0.006 in/sec PPV within 15 feet of Barnsdall Rio Grande Gas Station. With implementation of Mitigation Measure NOI-2, project groundborne vibration would be less than the significance threshold of 0.08 in/sec PPV at the Barnsdall Rio Grande Gas Station. Therefore, with mitigation, project construction vibration impacts would be less than significant.

Threshold 3:	For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Impact NOI-5 The project site is located outside of the noise contours for the Santa Barbara Airport. The project would not result in exposure of people working in the area to excessive airport noise levels. Construction and operational impacts would be Class III, *less than significant*.

The project site is located outside the 60 to 65 CNEL noise contour from Santa Barbara Airport, which is approximately 2.6 miles to the west (SBCAG 2023). This would be within the City's "normally acceptable" recommendation for noise levels for golf course uses, which is up to 70 CNEL. Therefore, construction workers building the proposed project or workers of the golf course would not be exposed to excessive airport noise levels, and impacts would be less than significant.

Mitigation Measures

No mitigation measures are required.

4.11.4 Cumulative Impacts

Construction noise is localized and rapidly attenuates within an urban environment. Accordingly, the cumulative impact analysis for noise considers impacts that would occur from the construction and operation of cumulative projects, identified in Table 3-1 of Section 3, *Environmental Setting*, that would occur within 0.1-mile from the project site. These projects include the following:

- Beach Hazards Removal
- Ellwood Butterfly Habitat Management Plan Implementation
- Ellwood Tree Safety Emergency Permit and Ellwood North Restoration
- Annual Pavement Rehabilitation Project and Pavement Management Program
- Hazardous Fuel Reduction at Ellwood Mesa/Sperling Preserve Open Space
- Viajero Battery Storage Project
- Greenbark Battery Energy Storage Project
- City of Goleta Fire Station 10

The general approach to cumulative impact analysis used in this EIR is discussed in Section 3, *Environmental Setting*.

Some construction activities from the cumulative projects listed above may occur within several hundred feet of the nearest sensitive receptors and therefore may expose these receivers to construction noise simultaneously with construction noise generated from the project site. Theoretically this could result in increased noise exposure to the sensitive receivers from combined noise levels; however, real world conditions would result in less of a cumulative effect through noise direction, angles, attenuation, and dispersion. In addition, cumulative projects would also be required to comply with City of Goleta standards (e.g., restricting construction noise levels to 65 dBA or less). The project would implement Mitigation Measure NOI-1 to reduce project construction noise levels to comply with Goleta's construction noise thresholds. Therefore, while cumulative construction noise may occur from the project and simultaneous construction of another project within several hundred feet, a substantial cumulative construction noise impact would not occur as in practice this effect would be minimal as previously explained.

Similar to construction noise, construction vibration is localized and rapidly attenuates within an urban environment. Potential vibration from the cumulative projects listed above would occur from a different direction from the nearest sensitive receptor than the proposed project and thus approach different angles of the nearest vibration sensitive receivers, thus ensuring the vibration travels further distances before it could theoretically combine with the project's vibration. As those projects would be constructed at a similar or further distance from the nearest sensitive receiver, their vibration levels would be anticipated to be well below vibration limits as well. While higher vibration levels can occur from activities such as blasting or pile driving, construction that occurs in bedrock areas or involves substantial underground excavation requiring building piles would not be anticipated for the types of cumulative projects proposed nearby. Therefore, the combined vibration level from cumulative projects would still be well below vibration limits, and no cumulative construction vibration impact would occur.

Some cumulative projects listed above would include similar operational noise sources as the proposed project (e.g., mechanical equipment noise). Operational noise from these sources is localized and rapidly attenuates due to the effects of distance, intervening structures, and topography that block the line of sight. In addition, other ambient noise sources in closer proximity to the receptors would dominate the soundscape, effectively masking project-related noise leading to a cumulative increase. Therefore, the ability of on-site project noise to combine with noise from off-site sources to create a substantial increase in noise levels would not occur. However, cumulative projects could create a cumulative increase in off-site traffic noise if the cumulative increase in vehicle trips resulting from cumulative development would result in a 3 dBA or greater increase in traffic noise on Hollister Avenue or Cathedral Oaks Road. As discussed in Impact NOI-3, the project's addition to traffic would not result in a noticeable off-site traffic noise increase; thus, the project's traffic noise increase would not be considerable.