4.11 NOISE

This section identifies the impacts to the noise environment that would result from the development of each alternative described in **Section 2.0**. Impacts are measured against the environmental baseline presented in **Section 3.11**. Indirect and cumulative impacts are identified in **Section 4.14** and **Section 4.15**, respectively. Noise mitigation measures are presented in **Section 5.2.10**.

SIGNIFICANCE CRITERIA

The City of Richmond's (City's) General Plan, 1994 (General Plan) outlines significance criteria for noise in the city limits. For non-transportation noise sources that affect single-family residential land uses, the exterior noise thresholds of significance are a daytime (7 a.m. to 10 p.m.) median (L_{50}) value of 60 decibel (dB), and nighttime equivalence level (L_{eq}) (see **Section 3.11**) value (not to be exceeded for more than five minutes in any hour) of 50 dB, or the ambient noise level. For multi-family residential uses, the daytime exterior threshold is a median value of 65 dB, and the nighttime L_{eq} standard is 50 dB, or the ambient noise level (City of Richmond, 1994).

For transportation noise sources that affect residential land uses, the General Plan exterior noise threshold of significance is 60 dB 24-hour A-weighted (see **Section 3.11**) noise level (L_{dn}) /Community Noise Equivalent Level (CNEL), except that an exterior noise level of up to 70 dB Ldn/CNEL may be allowed, provided that practical exterior noise level reduction measures have been implemented and that an interior noise level standard of 45 dB L_{dn}/CNEL is achieved (City of Richmond, 1994).

For transportation noise sources affecting transient lodging, the General Plan exterior noise threshold of significance is 65 dB L_{dn}/CNEL, except that an exterior noise level of up to 70 dB L_{dn}/CNEL may be allowed, provided that practical exterior noise level reduction measures have been implemented and that an interior noise level standard of 45 dB L_{dn}/CNEL is achieved (City of Richmond, 1994).

Some additional guidance as to the significance of changes in ambient noise levels is provided by the 1992 findings of the Federal Interagency Committee on Noise (FICON), which assessed the annoyance effects of changes in ambient noise levels resulting from aircraft operations. The FICON findings are based upon studies that relate aircraft and traffic noise levels to the percentage of persons highly annoyed by the noise. Annoyance is a summary measure of the general adverse reaction of people to noise that generates speech interference; sleep disturbance, or interference with the desire for a tranquil environment.

The rationale for the FICON findings is that it is possible to consistently describe the annoyance of people exposed to transportation noise in terms of L_{dn} or CNEL. The changes in noise exposure that are shown in **Table 4.11-1** are expected to result in equal changes in annoyance at sensitive land uses. Although the

FICON findings were specifically developed to address aircraft noise impacts, they are considered in this analysis as the thresholds of noise impacts for traffic noise.

TABLE 4.11-1
SIGNIFICANT INCREASES IN NOISE EXPOSURE
FOR TRANSPORTATION SOURCES

Ambient Noise Level Without Project (Ldn or CNEL)	Change in Ambient Noise Level Due to Project
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Brown-Buntin Associates, 2008

A noise impact of a project alternative would be considered significant if it directly or indirectly:

- Exposure of persons to, or generation of, noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies;
- Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- For a project located within 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; and/or
- For a project within the vicinity of a private airstrip, if the project expose people residing or working in the project area to excessive noise levels.

The project site is not within the vicinity of an airport or under any airport land use plan; therefore, airport-related significant criteria will not be discussed further.

ANALYSIS METHODOLOGY

The Federal Highway Administration (FHWA) Highway Traffic Noise Prediction Model was used to predict traffic noise levels for future conditions. The reference distances are 50 feet from the centerlines of the major roadways adjacent to the project site, and 150 feet from the Interstate 580 (I-580) centerline. These distances represent the possible location of a typical first-floor building facade that faces each of the roadways, and may be used to approximate the noise exposure for typical noise sensitive uses.

4.11.1 ALTERNATIVE A – MIXED-USE TRIBAL DESTINATION RESORT AND CASINO

IMPACTS OF ALTERNATIVE A

4.11.1 Noise and vibration from construction activities of the proposed development under Alternative A could result in a temporary increased ambient noise level. This is a less-than-significant impact.

During construction of Alternative A, noise from construction activities would dominate the noise environment in the immediate area. Equipment used for various construction phases would generate noise levels as indicated in **Table 4.11-2**. Maximum noise levels from different types of equipment under different operating conditions could range from 80 to 95 decibels (dBA) at a distance of 50 feet. The most noticeable project-generated construction noise source would be truck traffic associated with transport of heavy materials and equipment. Construction activities would be temporary in nature and would generally occur during daylight hours. Construction noise impacts could have a significant impact if noise from construction results in annoyance of sensitive receptors; however, there are no sensitive receptors in the vicinity of the project site, as discussed in **Section 3.11**. Because of the temporary nature of construction and the distance to the closest sensitive receptor at the project site, there will be a *less-than-significant* impact. Nonetheless, **Improvement Measures 10-1** and **10-2** have been proposed in **Section 5.2.10,** which when implemented, would further reduce construction-related noise impacts.

TABLE 4.11-2
TYPICAL CONSTRUCTION NOISE LEVELS

Construction Phase	Loudest Construction Equipment	Equipment Noise Level at 50 feet (dBA)
Site Clearing and Excavation	Dump Truck	84
	Backhoe	80
Prior to Steel Erection	Impact Pile Driver	95
Concrete Pouring	Concrete Pump Truck	82
	Concrete Mixer Truck	85
Steel Erection	Crane	85
	Jack Hammer	85
Mechanical	Crane	85
	Pneumatic Tools	85
Clean-Up	Front End Loader	80
	Flat Bed Truck	84

Source: Brown-Buntin Associates, 2008

The level of perception for groundborne vibration is 65-vibration decibel (VdB) and vibration attenuates at a rate of 7.5 to 10 VdB per doubling of distance (FTA, 1995). The construction

equipment with the greatest vibration potential is a pile driver, which can produce 112 VdB at 25 feet (Brown-Buntin, 2008). The nearest receptor or building is over 7,000 feet southeast of the project site (**Section 3.11**). Thus, groundborne vibrations at the nearest receptor would be less than the perceptible vibration level and would be a *less-than-significant* impact.

4.11.2 Noise and vibration from operational activities of the proposed development under Alternative A could result in increased ambient noise level due to traffic, HVAC, and refuse handling. This is a potentially significant impact.

Significance After Mitigation

Implementation of **Mitigation Measures 10-3** through **10-5** as included in **Section 5.2.10** would reduce impacts to ambient noise levels to a *less-than-significant* level.

Impact Discussion

Alternative A has the potential to result in on-site operational noise, primarily from parking structure activity, use of fans for heating, ventilation, and air conditioning (HVAC), truck loading and unloading, tour bus idling, and off-site traffic noise.

Traffic

Table 4.11-3 shows the predicted worst-case traffic noise levels for background, background plus project traffic volumes, and increase in traffic noise for Alternatives A, B, C, and D (although Alternatives A, B, C, and D have different traffic volumes, the increase in the noise level is the same) at the reference distances cited above. Upper-floor receivers adjacent to the roadways would be exposed to noise levels about 3 dB higher than shown, due to reduced ground absorption of sound.

With the exception of Western Drive, existing traffic noise levels predicted at the reference distances approach or exceed "Clearly Unacceptable" noise exposures for residential land uses, as described by the City's General Plan. The background plus Alternative A, with the exception of Western Drive; however, would not audibly increase the ambient noise levels. The ambient noise levels along Western Drive would increase the ambient noise levels above the City's noise standards; therefore this would be a potentially significant impact. Implementation of mitigation measures in **Section 5.2.10** would reduce noise impacts to a *less-than-significant* level.

Refuse Haul Noise

Alternative A would result in the introduction of commercial and business uses, although, not in the proximity of residential uses. These commercial and business uses would include refuse-handling activity. Noise levels due to typical refuse trucks may be as high as 84 dB at 50 feet.

Noise conflicts may arise when garbage pickup occurs adjacent to residential uses at nighttime or early morning. However, given the distance to the nearest receptor (greater than one mile) even nighttime refuse-handling noise would not reach noise sensitive receptors (see **Section 3.10**). This would be a *less-than-significant* impact.

TABLE 4.11-3
PREDICTED 2012 TRAFFIC NOISE WITH PREDICTED CHANGES FOR ALTERNATIVES A - D

Roadway	Segment Description	Predicted, Ldn, dB at 50 feet		Difference, Ldn, dB at 50 feet
		Background	Background Plus Project	
Western Drive	Project Entrance and Marina	51.2	69.2	18.3
Richmond Parkway	Redwood Way and Hensley Street	74.0	74.2	0.2
Richmond Parkway	Hensley Street and Gertrude Street	73.9	74.1	0.2
Richmond Parkway	Gertrude Street and Parr Boulevard	75.9	76.2	0.2
Richmond Parkway	Parr Boulevard and San Pablo Avenue	74.7	75.0	0.3
Richmond Parkway	San Pablo Avenue and Blume Drive	74.5	74.9	0.3
EB I-580 off ramps	Standard Avenue and Castro Street	72.7	72.9	0.2
Garrard Boulevard	WB I-580 ramps and Ohio Avenue	71.2	71.8	0.6
Canal Boulevard	WB I-580 ramps and Cutting Boulevard	70.1	70.1	0.0
Garrard Boulevard	Macdonald Avenue and Barrett Avenue	71.4	71.9	0.5
I-580	Canal and Western	74.3	74.4	0.1

Source: Brown and Buntin Associates, 2008.

HVAC Noise and Vibration

Commercial/retail uses would bring the possibility of noise conflicts due to operations of roof-mounted air handling units associated with building HVAC equipment. The noise levels produced by HVAC systems vary with the capacities of the units, as well as with individual unit design. In this case, the commercial buildings would be located at the same grade as the residential area, so that the buildings themselves would tend to shield the noise from nearby residences. Standard HVAC systems would not cause a significant noise increase at adjacent residential land uses; therefore, this is a *less-than-significant* impact.

Residential and commercial/retail uses do not ordinarily include sources of perceptible vibration. Therefore, impacts of vibration from Alternative A would be *less-than-significant*.

4.11.2 ALTERNATIVE B – MIXED-USE TRIBAL DESTINATION RESORT AND CASINO WITH RESIDENTIAL COMPONENT

IMPACTS OF ALTERNATIVE B

4.11.3 Noise and vibration from construction activities of the proposed development under Alternative B could result in a temporary increased ambient noise level. This is a less-than-significant impact.

During construction noise impacts would be similar to those discussed under Alternative A. Grading, trenching, and other activities that involve heavy equipment would generate noise. However, the surrounding area is dominated by industrial and traffic noise generated along I-580. Construction activities would be temporary in nature and of the same duration as Alternative A. Vibration impacts to Alternative B would be similar to Alternative A. As discussed in **Section 3.11**, because of the temporary nature of construction and the lack of sensitive noise and vibration receptors in the project vicinity, there would be a *less-than-significant* impact. Nonetheless **Implementation Measures 10-1** and **10-2** have been proposed in **Section 5.2.10,** which when implemented would further reduce construction-related noise impacts.

4.11.4 Noise and vibration from operational activities of the proposed development under Alternative B could result in increased ambient noise level due to traffic, HVAC, and refuse handling. This is a potentially significant impact.

Significance After Mitigation

Implementation of **Mitigation Measures 10-3** through **10-5** as included in **Section 5.2.10** would reduce impacts to ambient noise levels to a *less-than-significant* level.

Impact Discussion

Traffic

Alternative B would have the same noise sources as Alternative A, with the addition of on-site residential traffic noise. Residential traffic would not increase the ambient noise level due to the low residential traffic volumes and speeds at which residential traffic travels. **Table 4.11-3** shows the predicted traffic noise levels for background and background plus Alternative B traffic volumes (Alternative B's traffic volumes are slightly different than Alternative A; however, the predicted noise levels are the same) at the reference distances cited above. Upper-floor receivers adjacent to the roadways would be exposed to noise levels about 3 dB higher than shown, due to reduced ground absorption of sound.

With the exception of Western Drive, existing traffic noise levels predicted at the reference distances approach or exceed "Clearly Unacceptable" noise exposures for residential land uses, as described by the City of Richmond's General Plan. The background plus Alternative B, with the exception of Western Drive; however, would not perceptibly increase the ambient noise levels. The ambient noise levels along Western Drive would increase noise levels above the City's noise standards; therefore, this would be a potentially significant impact. Implementation of mitigation measures in **Section 5.2.10** would reduce the ambient noise level to a *less-than-significant* level.

Refuse Haul Noise

Alternative B would result in the introduction of commercial and business uses, in the proximity of proposed residential uses (approximately 2,000 feet east of the Point Hotel). These commercial and business uses would include refuse-handling activity. Noise levels due to typical refuse trucks may be as high as 84 dB at 50 feet. Noise conflicts may arise when garbage pickup occurs in the vicinity of residential uses at nighttime or early morning. However, given that noise of this nature attenuates at a rate of 4 to 6 dBA per doubling of distance the resulting noise at the nearest residence would be approximately 60 dBA. This would equal or exceed the General Plan significance noise level. This is a potentially significant impact. Implementation of mitigation measures in **Section 5.2.10** would reduce excessive noise from refuse hauling activities.

HVAC and Vibration

HVAC and vibration impacts in Alternative B would be the same as Alternative A. There would be a *less-than-significant* impact due to HVAC and vibration during operation of the Proposed Project.

4.11.5 Noise from operational activities of the proposed development under Alternative B could result in increased ambient noise level at on-site residential noise receptors. This is a less-than-significant impact.

The residential units proposed at the project site under Alternative B would be subject to Title 24, which provides that indoor noise levels be less than 45 db. This noise standard is consistent with the City of Richmond's General Plan ambient noise levels (see **Section 4.11**, significance criteria); therefore, the indoor noise level at residential units on the project site would not exceed the City of Richmond's noise level significance criteria. This is a *less-than-significant* impact.

4.11.3 ALTERNATIVE C – REDUCED INTENSITY MIXED-USE TRIBAL DESTINATION RESORT AND CASINO

IMPACTS OF ALTERNATIVE C

4.11.6 Noise and vibration from construction activities of the proposed development under

Alternative C could result in a temporary increased ambient noise level. This is a less-than-significant impact.

During construction noise impacts would be similar to those discussed under Alternative A, although for a shorter time period. Grading, trenching, and other activities that involve heavy equipment would generate noise. However, the surrounding area is dominated by industrial and traffic noise generated along I- 580. Construction activities would be temporary in nature and of a shorter duration as Alternative A. Vibration impacts to Alternative C would be less than Alternative A due to the reduced intensity. As discussed in **Section 3.11**, because of the temporary nature of construction and the lack of sensitive noise and vibration receptors in the project vicinity, there would be a *less-than-significant* impact. Nonetheless **Improvement Measures 10-1** and **10-2** have been proposed in **Section 5.2.10,** which when implemented would further reduce construction-related noise impacts.

4.11.7 Noise and vibration from operational activities of the proposed development under Alternative C could result in increased ambient noise level due to traffic, HVAC, and refuse handling. This is a potentially significant impact.

Significance After Mitigation

Implementation of **Mitigation Measures 10-3** through **10-5** as included in **Section 5.2.10**, would reduce impacts to ambient noise levels to a *less-than-significant* level

Impact Discussion

Traffic

Alternative C would have the same noise sources as Alternative A. **Table 4.11-3** shows the predicted traffic noise levels for background and background plus Alternative C traffic volumes at the reference distances cited above. Upper-floor receivers adjacent to the roadways would be exposed to noise levels about 3 dB higher than shown, due to reduced ground absorption of sound.

With the exception of Western Drive, existing traffic noise levels predicted at the reference distances approach or exceed "Clearly Unacceptable" noise exposures for residential land uses, as described by the City's General Plan. The background plus Alternative C, with the exception of Western Drive; however, would not have a perceptible increase in the ambient noise levels. The ambient noise levels along Western Drive would increase noise levels above the City of Richmond's noise standards; therefore, this could be a potential significant impact. Implementation of mitigation measures in **Section 5.2.10** would reduce traffic noise impacts to a *less-than-significant* level.

HVAC, Refuse Haul Noise, and Vibration

HVAC, refuse haul noise, and vibration in Alternative C would be less than Alternative A, and due to the distance to the nearest receptor (approximately 1.5 miles) noise and vibration would not be audible or felt (**Section 3.11**). Therefore, this is considered a *less-than-significant* impact.

4.11.4 ALTERNATIVE D – NON-TRUST ACQUISITION WITH NON-GAMING MIXED-USE DEVELOPMENT

IMPACT OF ALTERNATIVE D

4.11.8 Noise and vibration from construction activities of the proposed development under Alternative D could result in a temporary increased ambient noise level. This is a less-than-significant impact.

During the construction phase of Alternative D, noise from construction would be similar to Alternative B, with the exception of the casino. Grading, trenching, and other activities that involve heavy equipment would generate noise. However, as discussed above for Alternative B the surrounding area is dominated by industrial noise and traffic generated noise along I-580. Construction activities would be temporary in nature and have a similar duration as Alternative B. Because of the temporary nature of construction and the lack of sensitive receptors in the project vicinity, Alternative D would not expose persons to noise or vibration levels in excess of established standards (**Section 3.11**). Alternative D would not permanently increase ambient noise levels or would not temporarily or periodically substantially increase ambient noise levels in the area. There would be a *less-than-significant* impact to ambient noise levels due to construction noise. Nonetheless **Improvement Measures 10-1** and **10-2** have been proposed in **Section 5.2.10,** which when implemented would further reduce construction-related noise impacts.

4.11.9 Noise and vibration from operational activities of the proposed development under Alternative D could result in increased ambient noise level due to traffic, HVAC, and refuse handling. This is a potentially significant impact.

Significance After Mitigation

Implementation of **Mitigation Measures 10-3** through **10-5** as included in **Section 5.2.10** would reduce impacts to ambient noise levels to a *less-than-significant* level.

Impact Discussion

Traffic

Alternative D would have the same noise sources as Alternative B, with the exception of the

casino. Residential traffic would not increase the ambient noise level due to the low residential traffic volumes and speed at which residential traffic travels. **Table 4.11-3** shows the predicted traffic noise levels for background and background plus Alternative D traffic volumes at the reference distances cited above. Upper-floor receivers adjacent to the roadways would be exposed to noise levels about 3 dB higher than shown, due to reduced ground absorption of sound.

With the exception of Western Drive, existing traffic noise levels predicted at the reference distances approach or exceed "Clearly Unacceptable" noise exposures for residential land uses, as described by the City of Richmond's General Plan. The background plus Alternative D, with the exception of Western Drive; however, would not perceptibly increase the ambient noise levels. The ambient noise levels along Western Drive would increase noise levels above the City's noise standards; therefore this would be a potentially significant impact. Implementation of mitigation measures in **Section 5.2.10** would reduce the ambient noise to a *less-than-significant* level.

Refuse Haul Noise

Alternative D would result in the introduction of commercial and business uses, in the proximity of proposed residential uses (approximately 200 feet northeast of the hotel and conference center). These commercial and business uses would include refuse-handling activity. Noise levels due to typical refuse trucks may be as high as 84 dB at 50 feet. Noise conflicts may arise when garbage pickup occurs in the vicinity of residential uses at nighttime or early morning. However, given that noise of this nature attenuates at a rate of 4 to 6 dBA per doubling of distance the resulting noise at the nearest residence would be approximately 72 dBA. This would exceed the General Plan significance noise level. This is a potentially significant impact. Implementation of mitigation measures in **Section 5.2.10** would reduce noise from refuse hauling activities to a *less-than-significant* level.

HVAC and Vibration

HVAC and vibration impacts in Alternative D would be the same as Alternative B. There would be a *less-than-significant* impact due to HVAC and vibration during operation of the Proposed Project.

4.11.10 Noise from operational activities of the proposed development under Alternative B could result in increased ambient noise level at on-site residential noise receptors. This is a less-than-significant impact.

Alternative D would have the same Title 24 restrictions as Alterative B; therefore, Alternative D would have a *less-than-significant* impact due to an increase in indoor ambient noise levels.

4.11.5 ALTERNATIVE E – TOTAL PARKLAND

IMPACT OF ALTERNATIVE E

4.11.11 Noise and vibration from construction activities of the proposed development under Alternative E could result in a temporary increased ambient noise level. This is a less-than-significant impact.

Development of Alternative E may include grading and other construction activities associated with the development of the Bay Trail segment and the stabilization of the existing Winehaven buildings that may involve heavy equipment, which would generate noise. However, the surrounding area is dominated by industrial noise and traffic generated noise along I-580. Construction activities would be temporary in nature over a short duration of time. Due to the temporary nature of construction activities and the lack of sensitive receptors in the project vicinity, Alternative E would not expose persons to noise levels in excess of established standards (**Section 3.11**). Alternative E would not permanently increase ambient noise levels, nor would it temporarily or periodically increase ambient noise levels substantially in the area. There would be a *less-than-significant* impact to ambient noise levels due to construction noise.

4.11.12 Noise and vibration from operational activities of the proposed development under Alternative E could result in increased ambient noise level due to traffic and refuse handling. This is a less-than-significant impact.

The predominant noise source under Alternative E would be from traffic in the vicinity of the project site. Alternative E would attract 638 vehicles per day (**Section 4.8**). The peak hour traffic was estimated to be 146 vehicles per PM peak hour. Traffic noise increases by three dB with the addition of 200 cars per hour. Three dB is considered the threshold of human perception. Peak hour traffic would not exceed 200 vehicles per hour; therefore, no audible increase in noise level would occur. This is a *less-than-significant* impact.

4.11.6 ALTERNATIVE F – NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the project site would not be used in the near-term and none of the noise impacts identified for the alternatives would occur. However, the project site may be developed in the long-term. Development of the project site would have similar noise-related impacts; however, these impacts would be reduced as other projects would generally not operate or be occupied 24-hours a day.

IMPACT OF ALTERNATIVE F

4.11.13 Alternative F would not result in a temporary increases in the ambient noise level, due to noise and vibration from construction activities. No impact would occur.

As stated in **Section 2.0**, the No-Action Alternative would not result in construction on the Point Molate property. Because of this there would not be any temporary increases in the ambient noise levels due to construction activities or vibrations. Therefore, *no impact* would occur.

4.11.14 Alternative F would not result in a permanent increase in the ambient noise level due to traffic, HVAC, and refuse handling. No impact would occur.

As stated in **Section 2.0**, the No-Action Alternative would not result in construction on the Point Molate property. Because of this there would not be a permanent increase in the ambient noise levels due to traffic, HVAC, or refuse handling. Therefore, *no impact* would occur.