

Appendix C

Noise Study



City of Long Beach

Shoreline Gateway East Tower Project

Noise Study



August 2016

Environmental Scientists Planners Engineers

NOISE STUDY

SHORELINE GATEWAY EAST TOWER PROJECT

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Shoreline Gateway East Tower Project Noise Study

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SHORELINE GATEWAY EAST TOWER PROJECT CITY OF LONG BEACH NOISE STUDY

This report is an analysis of the potential noise impacts of the proposed Shoreline Gateway East Tower project located in the City of Long Beach. The report has been prepared by Rincon Consultants, Inc. under contract to the City of Long Beach, in support of the environmental documentation being prepared pursuant to the California Environmental Quality Act (CEQA). The purpose of this study is to analyze the Proposed Project's potential temporary noise impacts relating to construction activity and long-term noise impacts associated with operation of the Proposed Project, including roadway noise from Project generated vehicle trips.

PROJECT BACKGROUND AND DESCRIPTION

The Shoreline Gateway East Tower project (Proposed Project) is a revision to a previously approved 221-unit residential tower at the same location, 777 East Ocean Boulevard in the City of Long Beach, California. The Proposed Project was originally reviewed as part of the Shoreline Gateway Environmental Impact Report (2006 Shoreline EIR), which was certified in 2006. The 2006 EIR evaluated three multi-family residential buildings, ranging from 10 to 22 stories tall, and totaling 358 dwelling units. In 2007, a Supplemental Shoreline Gateway EIR was certified, changing one of the buildings to be 35 stories tall, with the total unit count remaining 358 units. That same year, the Planning Commission approved the Shoreline Gateway Master Plan, along with the Site Plan Review for the 35-story east tower, with 221 units and 6,367 square feet (SF) of retail/restaurant space, in accordance with the Shoreline Gateway Supplemental EIR (Approved Project).

In May 2013, the Long Beach Planning Commission approved the 17-story West Tower, with 224 units and 9,182 SF of retail/restaurant. The West Tower is now constructed, with 223 units and 6,502 SF of retail/restaurant space. The constructed West Tower plus the East Tower as approved in the 2007 Shoreline Gateway SEIR brings the overall development total for the Shoreline Gateway Project to 444 units and 15,449 SF of retail/restaurant.

The Proposed Project would add 94 units to the 221-unit Approved Project, bringing the unit count of the East Tower to 315 units. The Proposed Project would also add 344 square feet to the approved 6,367 SF of retail/restaurant, with the new total as 6,711 SF. Upon completion of the Proposed Project, the Shoreline Gateway Project would consist of two residential towers with a total of 538 units and 13,213 SF of retail/restaurant. Because it is already constructed, the West Tower is part of the existing conditions. Nevertheless, the West Tower has also been included as part of the cumulative impacts analysis for the Proposed Project.

Similar to the Approved Project, construction of the Proposed Project would occur in a single phase over an estimated 30 month construction schedule. Project grading and excavation is estimated to occur over a four to five month time period and would include the use of pile drivers, dump trucks for soil removal, and semi-trucks for equipment delivery. Pile driving during grading and excavation would be located around the perimeter of the building footprint. Building erection would occur over approximately 22 months and would include the use of a



heavy crane for lifting materials and formwork during building erection, cement trucks for foundations and deck erection, and semi-trucks for equipment and window delivery. Building completion would occur over the last four months of the 30-month construction phase and would include the use of semi-trucks for equipment drywall delivery, and finish materials.

SETTING

Overview of Sound Measurement

Noise level (or volume) is generally 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 to be consistent with that of human hearing response, which is most sensitive to frequencies around 4,000 Hertz (about the highest note on a piano) and less sensitive to low frequencies (below 100 Hertz).

Sound pressure level is measured on a logarithmic scale with the 0 dBA level based on the lowest detectable sound pressure level that people can perceive (an audible sound that is not zero sound pressure level). Based on the logarithmic scale, a doubling of sound energy is equivalent to an increase of 3 dBA, and a sound that is 10 dBA less than the ambient sound level has no effect on ambient noise. Because of the nature of the human ear, a sound must be about 10 dBA greater than the reference sound to be judged as twice as loud. In general, a 3 dBA change in community noise levels is noticeable, while 1-2 dBA changes generally are not perceived. Quiet suburban areas typically have noise levels in the range of 40-50 dBA, while arterial streets are in the 50-60+ dBA range. Normal conversational levels are in the 60-65 dBA range and ambient noise levels greater than 65 dBA can interrupt conversations.

Noise levels typically attenuate (or drop off) at a rate of 6 dBA per doubling of distance from point sources (such as industrial machinery). Noise from lightly traveled roads typically attenuates at a rate of about 4.5 dBA per doubling of distance. Noise from heavily traveled roads typically attenuates at about 3 dBA per doubling of distance. Noise levels may also be reduced by intervening structures; generally, a single row of buildings between the receptor and the noise source reduces the noise level by about 5 dBA, while a solid wall or berm reduces noise levels by 5 to 10 dBA (Federal Highway Administration [FHWA] updated 2011). The manner in which older homes in California were constructed (approximately 30 years old or older) generally provides a reduction of exterior-to-interior noise levels of about 20 to 25 dBA with closed windows (Federal Transit Administration [FTA] 2006). The exterior-to-interior reduction of newer residential units and office buildings is generally 30 dBA or more (FTA 2006).

In addition to the instantaneous measurement of sound levels, the duration of sound is important since sounds that occur over a long period of time are more likely to be an annoyance or cause direct physical damage or environmental stress. One of the most frequently used noise metrics that considers both duration and sound power level is the equivalent noise level (Leq). The Leq is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). Typically, Leq is summed over a one-hour period. Lmax is the highest



RMS (root mean squared) sound pressure level within the measuring period, and Lmin is the lowest RMS sound pressure level within the measuring period.

The time period in which noise occurs is also important since noise that occurs at night tends to be more disturbing than that which occurs during the day. Two commonly used noise metrics – the Day-Night average level (Ldn) and the Community Noise Equivalent Level (CNEL) – recognize this fact by weighting hourly Leqs over a 24-hour period. The Ldn is a 24-hour average noise level that adds 10 dBA to actual nighttime (10 PM to 7 AM) noise levels to account for the greater sensitivity to noise during that time period. The CNEL is identical to the Ldn, except it also adds a 5 dBA penalty for noise occurring during the evening (7 PM to 10 AM). In practice, CNEL and Ldn are often used interchangeably.

The CNEL value will usually be about 1 dBA higher than the Ldn value (California State Water Resources Control Board 1999). The relationship between peak hourly Leq values and associated Ldn values depends on the distribution of traffic over the entire day. There is no precise way to convert a peak hourly Leq value to an Ldn value. However, in urban areas near heavy traffic, the peak hourly Leq value is typically 2-4 dBA lower than the daily Ldn value. In less heavily developed areas, such as suburban areas, the peak hourly Leq is often equal to the daily Ldn value. For rural areas with little nighttime traffic, the peak hourly Leq value will often be 3-4 dBA greater than the daily Ldn value.

Vibration.

Vibration is a unique form of noise because its energy is carried through buildings, structures, and the ground, whereas noise is simply carried through the air. Thus, vibration is generally felt rather than heard. The ground motion caused by vibration is measured as particle velocity in inches per second and is referenced as vibration decibels (VdB) in the United States. Policies and standards related to ground-borne vibration are provided in Section 8.80.200 of the Long Beach Municipal Code (LBMC), where operating or permitting the operation of any device that creates vibration above the vibration perception threshold of an individual at or beyond the property boundary of the source, if on private property, or at 150 feet from the source if on a public space or public right-of-way, is a code violation. Section 8.80.200(g) is described in more detail below under *Regulatory Setting*.

The vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people (FTA 2006). Consequently, the FTA recommends an 80 VdB threshold for infrequent events at residences and buildings where people normally sleep (e.g., the future on-site residences and the residences and hotels in the vicinity). In terms of ground-borne vibration impacts on structures, the FTA states that ground-borne vibration levels in excess of 100 VdB would damage fragile buildings and levels in excess of 95 VdB would damage extremely fragile historic buildings.

Sensitive Receptors

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with each of these uses. Typically, noise sensitive land uses include single family



residential, multiple family residential, churches, hospitals and similar health care institutions, convalescent homes, libraries, and school classroom areas. The predominant noise sensitive land uses in the City are residential uses near the Project site.

Nearby residential uses are primarily condominium style housing. The nearest residences are adjacent to the Project site located approximately 50 feet to the north of the Project site. Additionally, residential apartments in the Shoreline Gateway West Tower are located approximately 50 feet to the west of the Project site. Other residential complexes include the International Tower complex approximately 250 feet southwest, the Long Beach Towers approximately 350 feet southwest, the Villa Riviera approximately 230 feet southeast, and existing residences approximately 250 feet east along East Ocean Boulevard. The closest hospital is St. Mary Medical Center of Long Beach, approximately 0.9 mile from the Project site. The closest school is St. Anthony High School, approximately 0.5 mile from the Project site.

Regulatory Setting

City of Long Beach Municipal Code. Chapter 8.80 of the Long Beach Municipal Code (LBMC) provides regulations regarding noise levels in the City. Section 8.80.160 sets exterior noise level limits for districts identified in the municipal code. The Project site is located in District 2. The following exterior noise level standards would therefore apply to the Project site:

- *Daytime (7:00 AM – 10:00 PM): 60 dBA*
- *Nighttime (10:00 PM – 7:00 AM) 55 dBA*

Section 8.80.150 states that the noise standards provided in Section 8.80.160 shall be applied as follows:

No person shall operate or cause to be operated any source of sound at any location within the incorporated limits of the City or allow the creation of any noise on property owned, leased, occupied, or otherwise controlled by such person, which causes the noise level when measured from any other property, either incorporated or unincorporated, to exceed:

- 1) *The noise standard for that land use district as specified in Table A in Section 8.80.160 for a cumulative period of more than thirty (30) minutes in any hour; or*
- 2) *The noise standard plus five (5) decibels for a cumulative period of more than fifteen (15) minutes in any hour; or*
- 3) *The noise standard plus ten (10) decibels for a cumulative period of more than five (5) minutes in any hour; or*
- 4) *The noise standard plus fifteen (15) decibels for a cumulative period of more than one (1) minute in any hour; or*
- 5) *The noise standard plus twenty (20) decibels or the maximum measured ambient, for any period of time.*



Section 8.80.170 of the LBMC sets interior noise levels for specific types of development, as shown in Table 1.

Table 1
City of Long Beach Interior Noise Level Standards

| Land Use | Time Interval | Allowable Noise Level (dBA) |
|---|--|-----------------------------|
| Residential | 10:00 PM – 7:00 AM | 35 |
| | 7:00 AM – 10:00 PM | 45 |
| School | 7:00 AM – 10:00 PM (While school is in session) | 45 |
| Hospital, designated quiet zones, and noise sensitive zones | Anytime | 40 |

Source: Long Beach Municipal Code Sec. 8.80.170

Section 8.80.202 of the Long Beach Municipal Code sets restrictions on construction activities as follows:

- *No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 PM and 7:00 AM the following day on weekdays or federal holidays, except for emergency work authorized by the Building Official.*
- *No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity which produce loud or unusual noise which annoys or disturbs a reasonable person of normal sensitivity between the hours of 7:00 PM on Friday and 9:00 AM on Saturday and after 6:00 PM on Saturday, except for emergency work authorized by the Building Official.*
- *No person shall operate or permit the operation of any tools or equipment used for construction, alteration, repair, remodeling, drilling, demolition or any other related building activity at any time on Sunday, except for emergency work authorized by the Building Official or except for work authorized by permit issued by the Noise Control Officer.*

The Long Beach Municipal Code 8.80.200(n) requires that air conditioning equipment generate noise levels of no more than 55 dBA at any point on a neighboring property line. This standard would apply to all air conditioning and refrigerating equipment.

Section 8.80.200(g) of the Long Beach Municipal Code regulates vibration as follows:

Operating or permitting the operation of any device that creates vibration which is above the vibration perception threshold of an individual at or beyond the property boundary of the source if on private property or at one hundred fifty feet (150') (forty-six (46) meters) from the source if on a public space or public right-of-way. For the purposes of this subsection, "vibration perception threshold" means the minimum ground or structure-borne vibrational motion necessary to cause a normal person to be aware of the vibration by such directed means as, but not limited to, sensation by touch or visual observation of moving objects. The perception



threshold shall be presumed to be .001 g's in the frequency range 0 – 30 hertz and .003 g's in the frequency range between thirty and one hundred hertz.

City of Long Beach General Plan. The Long Beach General Plan Noise Element provides outdoor and indoor noise standards for different types of land uses, as summarized in Table 2.

**Table 2
 City of Long Beach General Plan Noise Level Standards**

| Land Use | Outdoor | | | Indoor (Ldn) |
|--------------------------------|---------|------------------|------------------|--------------|
| | Peak | L10 ¹ | L50 ² | |
| Residential (7:00 AM–10:00 PM) | 70 | 55 | 45 | 45 |
| Residential (10:00 PM–7:00 AM) | 60 | 45 | 35 | 35 |
| Commercial (any time) | 75 | 65 | 55 | - |
| Industrial (any time) | 85 | 70 | 60 | - |

*Source: Long Beach General Plan Noise Element.
 1 L10 volumes are levels exceeded 10% of the time
 2 L50 volumes are levels exceeded 50% of the time*

The Long Beach General Plan Noise Element also contains the following goal related to transportation noise.

Goal 2: Discouraging within transportation noise zones the development of noise sensitive uses that cannot be sufficiently insulated against externally generated noise at a reasonable cost.

The Long Beach General Plan Noise Element contains the following goals related to population and housing.

- *Goal 3 To reduce the level of noise generated by the population into the environment of the City.*
- *Goal 6 To require better sound deadening design on new housing units where acoustical problems could develop.*
- *Goal 7 To reduce the level of incoming and outgoing noise into and from residential dwellings within the City.*

California Department of Health Services. The California Department of Health Services establishes noise criteria for various land uses. Noise exposure for a residential land use is “normally acceptable” when the CNEL at exterior residential locations is equal or below 60 dBA, “conditionally acceptable” when the CNEL is between 60 and 70 dBA, “normally unacceptable” when the CNEL is between 70 and 75 dBA, and “clearly unacceptable” when the CNEL is greater than 75 dBA.

Project Site Noise Setting



The most common source of noise in the Project site vicinity is traffic on surrounding roads. Motor vehicle noise is of concern because it is characterized by a high number of individual events, which often create sustained noise levels. Ambient noise levels would be expected to be highest during the daytime and rush hour unless congestion slows speeds substantially. Existing noise sources within the Project site consist of parking lot car noise.

To determine ambient noise levels at nearby sensitive receptors, three 15-minute noise measurements were taken between 4:00 PM and 6:00 PM (peak hour) on June 15, 2016 using an ANSI Type II integrating sound level meter (refer to Appendix D for noise measurement data). Table 5 lists the ambient noise levels measured at these locations. See Figure 1 for the locations of noise measurements. Figure 1 also shows the locations of existing sensitive receptors in the vicinity of the project. Figure 2 shows the locations of the nearby existing and proposed sensitive receptors that are modeled in this analysis.

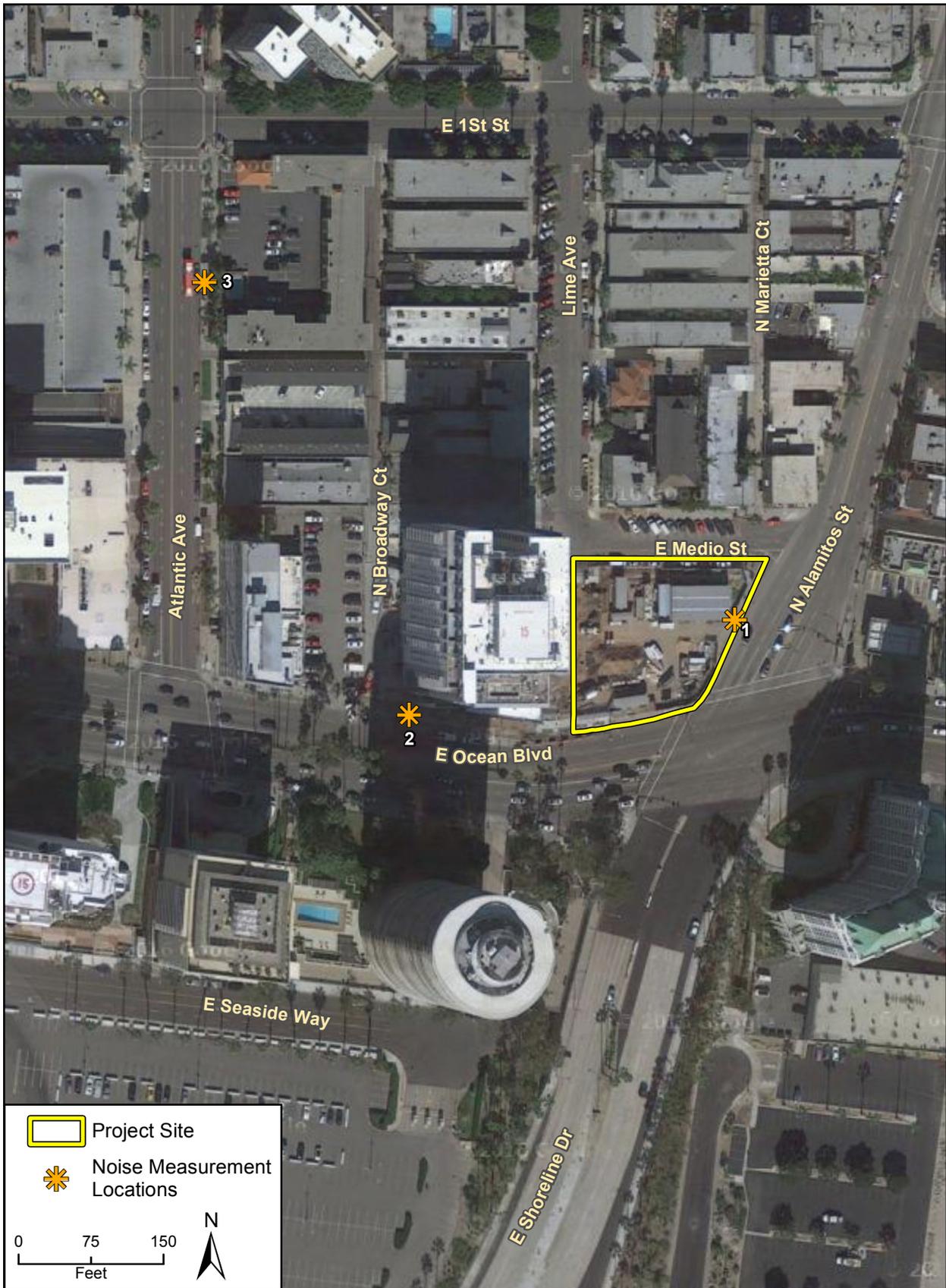
Table 3
Measured Noise Levels

| # | Measurement Location | Sample Time | Approximate Distance from centerline of nearby roadway | Leq[15] (dBA) ¹ |
|---|--|-------------------|--|----------------------------|
| 1 | East side of Project site, along Alamitos Avenue | 4:10 PM – 4:25 PM | 50 feet ² | 70 |
| 2 | North side of Ocean Boulevard, between Lime Ave. and Atlantic Ave. | 4:45 PM – 5:00 PM | 50 feet | 70 |
| 3 | East side of Atlantic Avenue, between E Malta Way and E Medio St. | 5:15 PM – 5:30 PM | 35 feet | 64.5 |

Source: Rincon Consultants, field measurements on June 15, 2016 field using ANSI Type II Integrating sound level meter. See Appendix for noise measurement data sheets.

¹ The equivalent noise level (Leq) is defined as the single steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual fluctuating levels over a period of time (essentially, the average noise level). For this measurement the Leq was over a 15-minute period (Leq[15]).





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Noise Measurement Locations

Figure 1



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Modeled Existing and Proposed Sensitive Receptors Figure 2

Previous Environmental Review

The 2006 Shoreline EIR examined the noise setting and potential noise impacts from development of the Approved Project. The 2006 Shoreline EIR concluded that short-term construction activities of the Approved Project could result in significant noise impacts to nearby receptors. Additionally, the 2006 Shoreline EIR concluded that long term mobile traffic noise impacts to receptors on the Project site could be significant. Several mitigation measures were included in the 2006 Shoreline EIR to reduce these noise impacts; however both impacts would remain significant.

The Proposed Project would generate short-term noise associated with construction, as well as long-term mobile source noise and stationary source noise, which would contribute to the noise impacts determined in the 2006 Shoreline EIR. Noise from the Proposed Project has the potential to contribute to a cumulatively considerable net increase ambient noise volumes in the Project area.

Construction of the Proposed Project would be subject to 2006 Shoreline EIR Mitigation Measure N-1, which requires that prior to issuance of the Grading Permit, the Proposed Project prove to the City of Long Beach that it complies with the following:

- *All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers;*
- *Construction noise reduction methods such as shutting off idling equipment, installing temporary acoustic barriers around stationary construction noise sources, maximizing the distance between construction equipment staging areas and occupied residential areas, and use of electric air compressors and similar power tools, rather than diesel equipment, shall be used where feasible;*
- *During construction, stationary construction equipment shall be placed such that emitted noise is directed away from sensitive noise receivers;*
- *During construction, stockpiling and vehicle staging areas shall be located as far as practical from noise sensitive receptors;*
- *Operate earthmoving equipment on the construction site, as far away from vibration sensitive sites as possible; and*
- *Construction hours, allowable workdays and the phone number of the job superintendent shall be clearly posted at all construction entrances to allow for surrounding owners and residents to contact the job superintendent. If the City or the job superintendent receives a complaint, the superintendent shall investigate, take appropriate corrective action and report the action taken to the reporting party.*

The 2006 Shoreline EIR determined that long term mobile and stationary noise impacts from the Approved Project on nearby receptors would be less than significant.

IMPACT ANALYSIS

Methodology

For the purposes of this analysis, the Approved Project is used as the baseline for the analysis as it represents what is currently permitted for development at the Project site today. The



Approved Project included a 221-unit residential tower with a restaurant, whereas the Proposed Project includes 35-story mixed use tower with retail. The Proposed Project would therefore result in an increase in 94 residential units.

The analysis of noise impacts considers the effects of both temporary construction-related noise and long-term noise associated with operation of the Approved Project and the Proposed Project. Construction noise estimates are based upon noise levels reported by the FTA, Office of Planning and Environment (FTA 2006), and the distance to nearby sensitive receptors. Reference noise levels from that document were then used to estimate noise levels at nearby sensitive receptors based on a standard noise attenuation rate of 6 dBA per doubling of distance (line-of-sight method of sound attenuation for point sources of noise). Construction noise level estimates do not account for the presence of intervening structures or topography, which could reduce noise levels at receptor locations. Therefore, the noise levels presented herein represent a conservative, reasonable worst-case estimate of actual construction noise.

As discussed above, to determine ambient noise levels at the Project site and at nearby sensitive receptors, Rincon Consultants, Inc. took three 15-minute noise measurements (see Figure 1 above for noise measurement locations relative to the Project site; see Appendix D for noise measurement data). At each location, consideration was given to site-specific characteristics, and the sound level meter was placed away from walls and topographic features which might skew noise measurements. The noise measurements recorded the equivalent noise level (Leq) at each location.

Rincon calculated noise levels associated with existing and future traffic along local roadways using the U.S. Department of Transportation, Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) Version 2.5 (FHWA 2004) (noise modeling data sheets can be viewed in Appendix). TNM 2.5 calculates the average noise level at specific locations based on traffic volumes, average speeds, roadway geometry, and site environmental conditions. Traffic volumes for peak hours (4 PM to 6 PM) were derived from the traffic impact analysis prepared by Linscott Law and Greenspan (2016) for existing and cumulative scenarios. The TNM model was calibrated by modeling noise at the three noise measurement locations at East Ocean Street, Atlantic Street, and Alamito Street (shown in Figure 1). Hourly exterior noise levels were then modeled at existing sensitive receptors at Medio Street across from the Project site, East Ocean Boulevard at the Shoreline Gateway West Tower (Noise Measurement 2), and existing residences on East Ocean Boulevard to the east of the Project site (Figure 2). The following scenarios were modeled:

- *Existing traffic volumes;*
- *Existing plus project traffic volumes;*
- *2020 cumulative traffic volumes;*
- *2020 cumulative plus project traffic volumes*

Table 4 provides a comparison of measured and modeled noise levels at the three noise measurement locations, where the primary noise source is motor vehicles. A close correspondence between measured ambient noise levels and modeled traffic noise levels at a given location is expected when motor vehicles are the primary noise source during the on-site measurement. While the modeled noise levels are slightly higher than measured noise levels at



two of the noise measurement locations, the model is within 2 dBA of the measured noise, indicating that the model is an appropriate tool for determining existing and future noise levels for this area.

**Table 4
 Comparison Between Measured Ambient Noise and
 Modeled Traffic Noise Levels**

| # | Measurement Location | Existing Noise Level (dBA Leq) | | Difference In Noise Level (2 minus 1) |
|---|--|--------------------------------|---------------------------|---------------------------------------|
| | | Measured Ambient Noise (1) | Modeled Traffic Noise (2) | |
| 1 | East side of Project site, along Alamitos Avenue | 70 | 69.7 | -0.3 |
| 2 | North side of Ocean Boulevard, between Lime Ave. and Atlantic Ave. | 70 | 70.7 | +0.7 |
| 3 | East side of Atlantic Avenue, between E Malta Way and E Medio St. | 64.5 | 66.2 | +1.7 |

Source: Rincon Consultants, field measurements on June 15, 2016 field using ANSI Type II Integrating sound level meter. See Appendix for noise measurement data sheets. Federal Highway Administration, Traffic Noise Model Version 2.5.

Significance Thresholds

Pursuant to Appendix G of the *State CEQA Guidelines*, potentially significant impacts would occur if the Proposed Project would result in any of the following conditions:

- *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 ground-borne vibration or ground-borne 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, exposure of people residing or working in the Project area to excessive noise levels; and/or*
- *For a project within the vicinity of a private airstrip, exposure of people residing or working in the Project area to excessive noise levels.*

The Project site is not located in the vicinity of a private airstrip nor is it located within two miles of an airport or within an airport land use plan. The Long Beach Airport is located approximately four miles to the northeast of the site. Therefore, impacts related to airport noise are not discussed in this study.



Consistent with the noise analysis in the 2006 Shoreline EIR, noise impacts related to construction would be significant if project-related construction activities would exceed the City's noise standards for residences of 60 dBA for any period of time during the day (Section 8.80.160) or if it would occur during hours when construction activity is prohibited under the Long Beach Municipal Code (see *Regulatory Setting*).

Vibration impacts would be considered significant if construction of the Proposed Project would generate ground-borne vibration in excess of 80 VdB for residences and buildings where people normally sleep and 100 VdB for damage to fragile buildings (LBMC 8.80.200(g); Federal Transit Administration, May 2006).

Roadway noise impacts would be significant if Project-related traffic would cause roadway noise to exceed the standards shown in Table 5.

Table 5
Significant Change in Ambient Noise Levels

| Existing Ambient Noise Level, CNEL/Ldn | Significant Increase |
|--|----------------------|
| < 60 dBA | + 5 dBA or greater |
| >60 dBA | + 3 dBA or greater |
| > 65 dBA | + 1 dBA or greater |

Source: 2006 Shoreline EIR Section 5.5, Noise.

Impacts to the sensitive receptors within the Proposed Project would be significant, if the Proposed Project would expose sensitive receptors to exterior noise levels exceeding 60 dBA and interior noise levels exceeding 45 dBA.

Temporary Construction Noise and Vibration

The Proposed Project would have a similar disturbance footprint, building footprint, construction equipment, and construction schedule as the Approved Project. Similar to the Approved Project, Proposed Project construction would intermittently generate high noise levels on and adjacent to the Project site during the construction period. Temporary noise impacts associated with construction may adversely affect adjacent residential noise sensitive uses. The main sources of noise during construction activities would be the heavy machinery used in grading and the driving of piles along the perimeter of the site. As shown in Table 6, average noise levels associated with the use of heavy equipment at construction sites can range from about 70 to 101 dBA at 50 feet from the source, depending upon the types of equipment in operation at any given time and phase of construction (FTA 2006).

Construction of the Proposed Project would involve pile driving along the perimeter of the Project site, approximately 50 feet from the nearest existing residence. As shown in Table 6, noise associated with pile driving equipment ranges from 96 dBA to 101 dBA at 50 feet. Therefore, noise levels would exceed the FTA 8 hour noise limit of 80 dBA Leq for residential land uses (FTA 2006).



The 2006 Shoreline EIR concluded that construction of the Approved Project would generate noise levels of approximately 92 dBA at a distance of 50 feet, which would exceed City standards. Mitigation measure N-1, described in more detail below, was required to reduce potential impacts of construction noise. However, temporary impacts from construction noise were found to be significant and unavoidable. Because the Proposed Project would have a similar disturbance footprint, building footprint, construction equipment, and construction schedule as the Approved Project, it would have similar temporary construction noise impacts and would not increase the severity of the impact identified in the 2006 Shoreline EIR. Temporary noise impacts from construction would impact the same sensitive receptors identified in the 2006 Shoreline EIR, including residences 50 feet to the north of the Project site on Medio Street, the International Tower complex approximately 250 feet southwest, the Long Beach Towers approximately 350 feet southwest, the Villa Riviera approximately 230 feet southeast, and existing residences approximately 250 feet east along East Ocean Boulevard. Additionally, the Proposed Project would impact residences within the recently completed West Tower, approximately 50 feet to the west.

**Table 6
 Typical Noise Levels Generated by Construction
 Equipment**

| Equipment | Typical Lmax (dBA) 50 Feet from the Source |
|----------------------|---|
| Air Compressor | 81 |
| Backhoe | 80 |
| Compactor (ground) | 83 |
| Concrete Mixer | 85 |
| Dump Truck | 76 |
| Excavator | 81 |
| Flat Bed Truck | 74 |
| Front End Loader | 79 |
| Generator | 81 |
| Paver | 89 |
| Pickup Truck | 75 |
| Pile Driver (Impact) | 101 |
| Pile Driver (Sonic) | 96 |
| Pneumatic Tools | 85 |
| Roller | 80 |
| Saw | 70 |
| Warning Horn | 83 |
| Welder/Torch | 74 |

Source: FTA 2006.

As discussed previously, the vibration velocity level threshold of perception for humans is approximately 65 VdB. A vibration velocity of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels for many people. The vibration thresholds established by the Federal Transit Administration (FTA) are 65 VdB for buildings where low ambient vibration is essential for interior operations (such as hospitals and recording studios),



80 VdB for residences and buildings where people normally sleep, including hotels, and 83 VdB for institutional land uses with primary daytime use (such as churches and schools). The thresholds for the Proposed Project include 80 VdB for residences, as these are the primary sensitive receptors in the vicinity of the site. In terms of ground-borne vibration impacts on structures, the FTA states that ground-borne vibration levels in excess of 100 VdB could damage fragile buildings and levels in excess of 95 VdB could damage extremely fragile historic buildings.

Project construction activities would result in vibration that may be felt on properties in the immediate vicinity of the Project site, as commonly occurs with construction projects. The nearest sensitive receptors are residences approximately 50 feet north and west of the Proposed Project. Based on the information presented in Table 7, during construction, these residences would be exposed to maximum vibration levels of approximately 95 Vdb from construction of Proposed Project because vibration, like noise, attenuates over distance.

**Table 7
Vibration Source Levels for Construction Equipment**

| Equipment | Approximate VdB | | | | |
|-----------------------------------|-----------------|---------|---------|---------|----------|
| | 25 Feet | 50 Feet | 60 Feet | 75 Feet | 100 Feet |
| Pile Driver (Impact) ¹ | 104 | 95 | 93 | 90 | 86 |
| Pile Driver (Sonic) ¹ | 93 | 84 | 81 | 78 | 75 |
| Loaded Trucks | 86 | 77 | 74 | 71 | 68 |
| Small Bulldozer | 58 | 48 | 46 | 43 | 39 |

¹Typical vibration level
Source: FTA 2006

As discussed above, 100 VdB is the general threshold where minor damage can occur in fragile buildings. Because vibration levels would not reach 100 VdB, structural damage would not be expected to occur as a result of construction activities. However, the vibration levels at residences to the north and west would exceed the ground borne velocity threshold level of 80 VdB established by the FTA for residences and buildings where people normally sleep due to construction of the Proposed Project. Additionally, construction activities would result in vibrations that would be felt at adjacent residences, thereby exceeding the thresholds established in the Long Beach Municipal Code. The 2006 Shoreline EIR determined the Approved Project’s construction-related vibration impacts would be significant and unavoidable, even with implementation of Mitigation Measure N-1. The Proposed Project would not increase the severity of the impact identified in the 2006 Shoreline EIR because it would not increase the duration of construction or the exposure of sensitive receptors to construction vibration

The City of Long Beach restricts construction activities to between the hours of 7:00 AM and 7:00 PM during weekdays and 9:00 AM and 6:00 PM on Saturdays (LBMC, Section 8.80.020). Based on these hours, construction would not occur during recognized sleep hours for residences. The Proposed Project would comply with construction hour restrictions. Mitigation



Measure N-1 from the 2006 Shoreline EIR for the Approved Project would apply to the Proposed Project.

Long-Term Operational Noise Exposure

Existing sensitive uses near the Project site may periodically be subject to noise associated with operation of the Proposed Project, including the operation of Heating Ventilation and Air Conditioning (HVAC) equipment, loading areas, parking areas, and delivery and trash collection trucks. The Proposed Project would shift the location of HVAC equipment to the north side of the roof, however, this equipment would remain located 35 stories above the ground. Therefore, the location of the HVAC equipment would not substantially change in comparison to the Approved Project. Additionally, location of loading areas and parking areas would not substantially change in comparison to the Approved Project. Moreover, the Proposed Project would include the same land uses (residential, retail, and restaurant) as the Approved Project. The 2006 Shoreline EIR determined that the Approved Project would have a less than significant long-term operational impact with implementation of Mitigation Measure N-2, which prohibits loading dock operations and the use of refuse disposal areas between the hours of 10:00 PM and 7:00 AM. The Proposed Project would add 94 additional units, however, this would not substantially increase the number of delivery or trash trips made to the Project site. Nonetheless, similar to the Approved Project, the Proposed Project would be subject to Mitigation Measure N-2 from the 2006 Shoreline EIR.

Long-Term Off-Site Traffic Noise Impacts

Table 8 compares noise levels at existing and proposed sensitive receptor locations near the Project site under the existing and existing plus Proposed Project traffic scenarios. As shown in Table 8, the greatest increase in traffic noise would be a 0.2 dBA increase along East Ocean Boulevard, east of Alamito Street (receptor location SR3 in Figure 2). Table 8 indicates that noise would decrease by 0.2 dBA at the existing receptor along East Ocean Boulevard, between Alamito Street and Atlantic Street (SR1 in Figure 2), under the existing plus project scenario. This is due to the fact that the proposed building would block noise from Alamito Street at the receptor location. Additionally, the results shown in Table 8 indicate that noise at the receptor along Medio Street, north of the Project site would also be reduced by 0.2 dBA. Similarly, this is due to the fact that the proposed building would block roadway noise from East Ocean Boulevard at this receptor location. As shown in Table 8, the Proposed Project traffic would not generate roadway noise in excess of the significance thresholds at any receptor location.



**Table 8
 Comparison of Pre-Project and Post-Project Traffic Noise
 On Local Roadways**

| SR # | Location ¹ | Projected Noise Level (dBA Leq) | | Change In Noise Level (dBA Leq) | Exceed Significance Threshold? ² |
|-------------|---|---------------------------------|------------------------|---------------------------------|---|
| | | Existing (1) | Existing + Project (2) | Due to Project Traffic (2-1) | |
| SR1/ NM2 | North Side of East Ocean Blvd. at Shoreline Gateway West Tower | 70.7 | 70.5 | -0.2 | No |
| SR2 | Existing Residences at north side of Medio Street north of the Project site | 65.3 | 65.1 | -0.2 | No |
| SR3 | Existing residences at north side of East Ocean Blvd., east of Project site | 66.5 | 66.7 | 0.2 | No |
| NM1 | West side of Alamito St. at Project site | 69.7 | 69.7 | 0 | No |
| NM3 | East side of Atlantic St. between 1st St. and Ocean Blvd. | 66.2 | 66.2 | 0 | No |

Source: TNM2.5, see Appendix for noise model outputs. Leq is the equivalent noise level over a period of time, typically one hour. Estimates of noise generated by traffic are from the centerlines of northbound/eastbound and southbound/westbound lanes on road segments during PM peak-hour traffic conditions.

¹ Noise measurement locations are shown on Figure 1, sensitive receptor locations are shown in Table 2

² See Table 5 for significance criteria established in the Long Beach Downtown Community Plan. For roadways with existing noise exposure less than 60 dBA, an increase of over 5 dBA is considered significant; between 60 and 65 dBA, an increase of 3 dBA is considered significant, and greater than 65 dBA, an increase of 1 dBA is considered significant.

Table 9 compares the future cumulative and future cumulative plus project traffic scenario to the existing traffic scenario. As shown therein, the greatest increase associated with 2020 future cumulative plus project traffic noise would be a 1.2 dBA increase over existing volumes at Atlantic Street between East Ocean Boulevard and 1st Street (NM3 in Figure 2). However, the Proposed Project's traffic would contribute 0.1 dBA to roadway noise under the future cumulative plus project traffic scenario, which is below the significance threshold. Additionally, the Proposed Project would result in noise level reductions at receptors located at Ocean Boulevard to the west of the site (SR1/NM2), Medio Street (SR2), and Alamito Street (NM1). Similar to the reductions shown in Table 8, these reductions are likely due to attenuation of traffic noise from Alamito Street and Ocean Boulevard provided by the proposed building. Overall, the Proposed Project's roadway noise impact would not be cumulatively considerable.



**Table 9
 Comparison of Pre-Project and Post-Project Traffic Noise
 On Local Roadways**

| SR # | Location ¹ | Projected Noise Level (dBA Leq) | | | Change In Noise Level (dBA Leq) | | Exceed City Threshold? ² |
|-------------|---|---------------------------------|-----------------------|---------------------------------|---------------------------------|---|-------------------------------------|
| | | Existing (1) | Future Cumulative (2) | Future Cumulative + Project (3) | Change in Noise Level (3-1) | Project Contribution to Change in Noise Level (3-2) | |
| SR1/ NM2 | North Side of East Ocean Blvd. at Shoreline Gateway West Tower | 70.7 | 71.4 | 71.3 | 0.6 | -0.1 | No |
| SR2 | Existing Residences at north side of Medio Street north of the Project site | 65.3 | 66.6 | 66.3 | 1 | -0.3 | No |
| SR3 | Existing residences at north side of East Ocean Blvd., east of Project site | 66.5 | 67.2 | 67.5 | 1 | 0.3 | No |
| NM1 | West side of Alamito St. at Project site | 69.7 | 70.8 | 70.7 | 1 | -0.1 | No |
| NM3 | East side of Atlantic St. between 1st St. and Ocean Blvd. | 66.2 | 67.3 | 67.4 | 1.2 | 0.1 | No |

Source: TNM2.5, see Appendix for noise model outputs. Leq is the equivalent noise level over a period of time, typically one hour. Estimates of noise generated by traffic are from the centerlines of northbound/eastbound and southbound/westbound lanes on road segments during PM peak-hour traffic conditions.

¹ Noise measurement locations are shown on Figure 1, sensitive receptor locations are shown in Table 2

² See Table 5 for significance criteria established in the Long Beach Downtown Community Plan. For roadways with existing noise exposure less than 60 dBA, an increase of over 5 dBA is considered significant; between 60 and 65 dBA, an increase of 3 dBA is considered significant, and greater than 65 dBA, an increase of 1 dBA is considered significant.

The 2006 Shoreline EIR compared roadway noise levels from a 2015 future cumulative scenario to the 2015 cumulative plus project scenario. The greatest increase in roadway noise was identified along Medio Street, where an increase of 4.3 dBA was attributed to the Approved Project. The difference in traffic noise changes along Medio Street between the Approved Project and the Proposed Project is due to higher existing traffic volumes than were analyzed under the 2015 future cumulative scenario in the 2006 Shoreline EIR. Nonetheless, the 2006 Shoreline EIR determined that the Approved Project’s roadway noise impacts would be less than significant. Table 10 shows the difference between traffic noise anticipated by the Approved Project and the Proposed Project. As discussed above, the Proposed Project would not exceed significance thresholds and, as shown in Table 10, the Proposed Project would not substantially increase roadway noise volumes in comparison to the Approved Project.



Table 10
Comparison of Traffic Noise Associated With the
Approved Project and Proposed Project

| Receptor/Road Segment | Approved Project (dBA) | Proposed Project (dBA) | Difference (dBA) ¹ |
|---|------------------------|------------------------|-------------------------------|
| Medio St., west of Alamito St. | 4.3 | -0.2 | -4.5 |
| East Ocean Blvd., west of Alamito St. | 0.1 | -0.2 | -0.3 |
| East Ocean Blvd., East of Alamito St. | 0.0 | 0.2 | 0.2 |
| Alamito St., north of East Ocean Blvd. | 0.0 | 0.0 | 0.0 |
| Atlantic St., north of East Ocean Blvd. | 0.6 | 0.0 | 0.0 |

¹Proposed Project – Approved Project

Source: City of Long Beach Shoreline Gateway Project EIR 2006

On-Site Exterior Noise Environment

Table 11 shows the estimated peak hour noise levels at proposed residences nearest to Alamitos Street and East Ocean Boulevard (Noise Measurement 1 and 2 shown in Figure 2). Noise Measurement 1 (NM1) coincides with the location of the proposed receptors along Alamitos Street (Figure 2). Therefore, traffic noise from NM1 is used to analyze residences along Alamitos Street (PR1). Projected noise levels shown in Table 11 indicate that noise along Alamitos Street (PR1) would be approximately 69.7 dBA and along East Ocean Boulevard (PR2) would be approximately 71.9. Therefore, noise at the Project site would exceed the City’s 60 dBA threshold for residential land uses in Zone 2. Similarly, the 2006 Shoreline EIR found that noise impacts to proposed receptors would be significant and unavoidable because exterior noise would exceed 60 dBA.

Table 11
Projected Exterior Noise Levels at Proposed Residences

| PR# | Existing Noise Level (dBA Leq) | Exceeds 60 dBA Threshold? |
|-----|--------------------------------|---------------------------|
| 1 | 69.7 | Yes |
| 2 | 71.9 | Yes |

Source: TNM 2.5, see Appendix

Future Interior Noise Environment

The manner in which newer dwelling units in California are constructed generally provides a reduction of exterior-to-interior noise levels of about 30 dBA with closed windows (FTA 2006). For example, a unit exposed to exterior noise levels of 70 dBA would be 40 dBA indoors with the windows shut. As shown in Table 11, exterior noise levels could reach 71.9 dBA at residences nearest to East Ocean Boulevard. Based on an estimate for noise reduction in interior spaces of approximately 30 dBA, interior noise levels for residences nearest to Alamitos Street would be approximately 39.7 dBA and residences nearest East Ocean Boulevard would be approximately 41.9 dBA, using newer construction techniques. Similarly, the interior noise levels determined in the 2006 Shoreline EIR would be approximately 32.9 dBA along East Ocean Boulevard and 28.2 dBA along Alamitos Street. Therefore, neither the Approved Project nor the Proposed Project would expose sensitive receptors to interior noise levels in excess of the City’s interior noise standard, 45 dBA.



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Appendix

Noise Measurement Data and Modeling Results



Noise Measurement #1

Noise Measurement 1**Alamitos Avenue**

Freq Weight A
Time Weight FAST
Level Range 40-101
Max dB 99.3
SEL 99.5
Leq 70

| No.s | Date | Time | dB |
|-------------|-------------|-------------|-----------|
| 1 | 6/15/2016 | 16:10:40 | 65.5 |
| 2 | 6/15/2016 | 16:10:42 | 67.6 |
| 3 | 6/15/2016 | 16:10:44 | 74.6 |
| 4 | 6/15/2016 | 16:10:46 | 79.6 |
| 5 | 6/15/2016 | 16:10:48 | 70.1 |
| 6 | 6/15/2016 | 16:10:50 | 67.2 |
| 7 | 6/15/2016 | 16:10:52 | 67.9 |
| 8 | 6/15/2016 | 16:10:54 | 68.4 |
| 9 | 6/15/2016 | 16:10:56 | 67.7 |
| 10 | 6/15/2016 | 16:10:58 | 67.4 |
| 11 | 6/15/2016 | 16:11:00 | 67 |
| 12 | 6/15/2016 | 16:11:02 | 67.4 |
| 13 | 6/15/2016 | 16:11:04 | 64.6 |
| 14 | 6/15/2016 | 16:11:06 | 62.7 |
| 15 | 6/15/2016 | 16:11:08 | 62.5 |
| 16 | 6/15/2016 | 16:11:10 | 63 |
| 17 | 6/15/2016 | 16:11:12 | 61.5 |
| 18 | 6/15/2016 | 16:11:14 | 57.3 |
| 19 | 6/15/2016 | 16:11:16 | 57 |
| 20 | 6/15/2016 | 16:11:18 | 59.4 |
| 21 | 6/15/2016 | 16:11:20 | 63.5 |
| 22 | 6/15/2016 | 16:11:22 | 58.4 |
| 23 | 6/15/2016 | 16:11:24 | 61.1 |
| 24 | 6/15/2016 | 16:11:26 | 63.5 |
| 25 | 6/15/2016 | 16:11:28 | 66.3 |
| 26 | 6/15/2016 | 16:11:30 | 67.3 |
| 27 | 6/15/2016 | 16:11:32 | 67 |
| 28 | 6/15/2016 | 16:11:34 | 66.4 |
| 29 | 6/15/2016 | 16:11:36 | 66 |
| 30 | 6/15/2016 | 16:11:38 | 64.3 |
| 31 | 6/15/2016 | 16:11:40 | 63.1 |
| 32 | 6/15/2016 | 16:11:42 | 63.6 |
| 33 | 6/15/2016 | 16:11:44 | 69.3 |
| 34 | 6/15/2016 | 16:11:46 | 71.4 |
| 35 | 6/15/2016 | 16:11:48 | 67.3 |
| 36 | 6/15/2016 | 16:11:50 | 65.2 |
| 37 | 6/15/2016 | 16:11:52 | 63.4 |

| | | | |
|----|-----------|----------|------|
| 38 | 6/15/2016 | 16:11:54 | 63.1 |
| 39 | 6/15/2016 | 16:11:56 | 63.8 |
| 40 | 6/15/2016 | 16:11:58 | 63.8 |
| 41 | 6/15/2016 | 16:12:00 | 64.9 |
| 42 | 6/15/2016 | 16:12:02 | 64.2 |
| 43 | 6/15/2016 | 16:12:04 | 65.5 |
| 44 | 6/15/2016 | 16:12:06 | 64.6 |
| 45 | 6/15/2016 | 16:12:08 | 63.7 |
| 46 | 6/15/2016 | 16:12:10 | 68.1 |
| 47 | 6/15/2016 | 16:12:12 | 64.8 |
| 48 | 6/15/2016 | 16:12:14 | 66.6 |
| 49 | 6/15/2016 | 16:12:16 | 68.6 |
| 50 | 6/15/2016 | 16:12:18 | 71.1 |
| 51 | 6/15/2016 | 16:12:20 | 73.3 |
| 52 | 6/15/2016 | 16:12:22 | 70.7 |
| 53 | 6/15/2016 | 16:12:24 | 68.1 |
| 54 | 6/15/2016 | 16:12:26 | 67.9 |
| 55 | 6/15/2016 | 16:12:28 | 67.3 |
| 56 | 6/15/2016 | 16:12:30 | 64.4 |
| 57 | 6/15/2016 | 16:12:32 | 64.4 |
| 58 | 6/15/2016 | 16:12:34 | 66 |
| 59 | 6/15/2016 | 16:12:36 | 61.6 |
| 60 | 6/15/2016 | 16:12:38 | 64.9 |
| 61 | 6/15/2016 | 16:12:40 | 64.6 |
| 62 | 6/15/2016 | 16:12:42 | 64.4 |
| 63 | 6/15/2016 | 16:12:44 | 64.2 |
| 64 | 6/15/2016 | 16:12:46 | 64.3 |
| 65 | 6/15/2016 | 16:12:48 | 65.1 |
| 66 | 6/15/2016 | 16:12:50 | 69.5 |
| 67 | 6/15/2016 | 16:12:52 | 72.9 |
| 68 | 6/15/2016 | 16:12:54 | 72.2 |
| 69 | 6/15/2016 | 16:12:56 | 69.5 |
| 70 | 6/15/2016 | 16:12:58 | 69.2 |
| 71 | 6/15/2016 | 16:13:00 | 69.8 |
| 72 | 6/15/2016 | 16:13:02 | 68.3 |
| 73 | 6/15/2016 | 16:13:04 | 70.5 |
| 74 | 6/15/2016 | 16:13:06 | 66.9 |
| 75 | 6/15/2016 | 16:13:08 | 66.5 |
| 76 | 6/15/2016 | 16:13:10 | 66.5 |
| 77 | 6/15/2016 | 16:13:12 | 60.7 |
| 78 | 6/15/2016 | 16:13:14 | 59.6 |
| 79 | 6/15/2016 | 16:13:16 | 60.1 |
| 80 | 6/15/2016 | 16:13:18 | 63.8 |
| 81 | 6/15/2016 | 16:13:20 | 66.8 |
| 82 | 6/15/2016 | 16:13:22 | 63 |
| 83 | 6/15/2016 | 16:13:24 | 64.4 |
| 84 | 6/15/2016 | 16:13:26 | 60.4 |

| | | | |
|-----|-----------|----------|------|
| 85 | 6/15/2016 | 16:13:28 | 58 |
| 86 | 6/15/2016 | 16:13:30 | 66.1 |
| 87 | 6/15/2016 | 16:13:32 | 62.6 |
| 88 | 6/15/2016 | 16:13:34 | 65.1 |
| 89 | 6/15/2016 | 16:13:36 | 66.9 |
| 90 | 6/15/2016 | 16:13:38 | 72.9 |
| 91 | 6/15/2016 | 16:13:40 | 82.1 |
| 92 | 6/15/2016 | 16:13:42 | 83.9 |
| 93 | 6/15/2016 | 16:13:44 | 82.2 |
| 94 | 6/15/2016 | 16:13:46 | 92.7 |
| 95 | 6/15/2016 | 16:13:48 | 85.8 |
| 96 | 6/15/2016 | 16:13:50 | 89.8 |
| 97 | 6/15/2016 | 16:13:52 | 76.2 |
| 98 | 6/15/2016 | 16:13:54 | 73.3 |
| 99 | 6/15/2016 | 16:13:56 | 71.3 |
| 100 | 6/15/2016 | 16:13:58 | 68.5 |
| 101 | 6/15/2016 | 16:14:00 | 67.1 |
| 102 | 6/15/2016 | 16:14:02 | 66.8 |
| 103 | 6/15/2016 | 16:14:04 | 66.2 |
| 104 | 6/15/2016 | 16:14:06 | 65.3 |
| 105 | 6/15/2016 | 16:14:08 | 65.2 |
| 106 | 6/15/2016 | 16:14:10 | 66.4 |
| 107 | 6/15/2016 | 16:14:12 | 65.2 |
| 108 | 6/15/2016 | 16:14:14 | 64.3 |
| 109 | 6/15/2016 | 16:14:16 | 65.1 |
| 110 | 6/15/2016 | 16:14:18 | 64 |
| 111 | 6/15/2016 | 16:14:20 | 63 |
| 112 | 6/15/2016 | 16:14:22 | 63 |
| 113 | 6/15/2016 | 16:14:24 | 63.8 |
| 114 | 6/15/2016 | 16:14:26 | 61.9 |
| 115 | 6/15/2016 | 16:14:28 | 63.2 |
| 116 | 6/15/2016 | 16:14:30 | 63.2 |
| 117 | 6/15/2016 | 16:14:32 | 62.9 |
| 118 | 6/15/2016 | 16:14:34 | 62.3 |
| 119 | 6/15/2016 | 16:14:36 | 61.8 |
| 120 | 6/15/2016 | 16:14:38 | 63.9 |
| 121 | 6/15/2016 | 16:14:40 | 67.3 |
| 122 | 6/15/2016 | 16:14:42 | 66.3 |
| 123 | 6/15/2016 | 16:14:44 | 64.6 |
| 124 | 6/15/2016 | 16:14:46 | 63.5 |
| 125 | 6/15/2016 | 16:14:48 | 67.8 |
| 126 | 6/15/2016 | 16:14:50 | 66.8 |
| 127 | 6/15/2016 | 16:14:52 | 67.8 |
| 128 | 6/15/2016 | 16:14:54 | 73.1 |
| 129 | 6/15/2016 | 16:14:56 | 70.6 |
| 130 | 6/15/2016 | 16:14:58 | 70.5 |
| 131 | 6/15/2016 | 16:15:00 | 66 |

| | | | |
|-----|-----------|----------|------|
| 132 | 6/15/2016 | 16:15:02 | 67.5 |
| 133 | 6/15/2016 | 16:15:04 | 66.6 |
| 134 | 6/15/2016 | 16:15:06 | 65.1 |
| 135 | 6/15/2016 | 16:15:08 | 63.8 |
| 136 | 6/15/2016 | 16:15:10 | 63.5 |
| 137 | 6/15/2016 | 16:15:12 | 62.6 |
| 138 | 6/15/2016 | 16:15:14 | 62.8 |
| 139 | 6/15/2016 | 16:15:16 | 63.5 |
| 140 | 6/15/2016 | 16:15:18 | 66.2 |
| 141 | 6/15/2016 | 16:15:20 | 64.1 |
| 142 | 6/15/2016 | 16:15:22 | 59.9 |
| 143 | 6/15/2016 | 16:15:24 | 61.9 |
| 144 | 6/15/2016 | 16:15:26 | 63.9 |
| 145 | 6/15/2016 | 16:15:28 | 68.9 |
| 146 | 6/15/2016 | 16:15:30 | 69.5 |
| 147 | 6/15/2016 | 16:15:32 | 69 |
| 148 | 6/15/2016 | 16:15:34 | 68.4 |
| 149 | 6/15/2016 | 16:15:36 | 68.1 |
| 150 | 6/15/2016 | 16:15:38 | 67.6 |
| 151 | 6/15/2016 | 16:15:40 | 67 |
| 152 | 6/15/2016 | 16:15:42 | 67 |
| 153 | 6/15/2016 | 16:15:44 | 66.4 |
| 154 | 6/15/2016 | 16:15:46 | 65.8 |
| 155 | 6/15/2016 | 16:15:48 | 66.8 |
| 156 | 6/15/2016 | 16:15:50 | 64.7 |
| 157 | 6/15/2016 | 16:15:52 | 65.2 |
| 158 | 6/15/2016 | 16:15:54 | 64.5 |
| 159 | 6/15/2016 | 16:15:56 | 64.2 |
| 160 | 6/15/2016 | 16:15:58 | 63.4 |
| 161 | 6/15/2016 | 16:16:00 | 62.9 |
| 162 | 6/15/2016 | 16:16:02 | 65.2 |
| 163 | 6/15/2016 | 16:16:04 | 63.8 |
| 164 | 6/15/2016 | 16:16:06 | 63 |
| 165 | 6/15/2016 | 16:16:08 | 64.9 |
| 166 | 6/15/2016 | 16:16:10 | 67.1 |
| 167 | 6/15/2016 | 16:16:12 | 65.2 |
| 168 | 6/15/2016 | 16:16:14 | 63.8 |
| 169 | 6/15/2016 | 16:16:16 | 61 |
| 170 | 6/15/2016 | 16:16:18 | 58.2 |
| 171 | 6/15/2016 | 16:16:20 | 57.3 |
| 172 | 6/15/2016 | 16:16:22 | 59.3 |
| 173 | 6/15/2016 | 16:16:24 | 63.5 |
| 174 | 6/15/2016 | 16:16:26 | 62.7 |
| 175 | 6/15/2016 | 16:16:28 | 65.2 |
| 176 | 6/15/2016 | 16:16:30 | 64.8 |
| 177 | 6/15/2016 | 16:16:32 | 61.9 |
| 178 | 6/15/2016 | 16:16:34 | 62.4 |

| | | | |
|-----|-----------|----------|------|
| 179 | 6/15/2016 | 16:16:36 | 62 |
| 180 | 6/15/2016 | 16:16:38 | 61.5 |
| 181 | 6/15/2016 | 16:16:40 | 64.2 |
| 182 | 6/15/2016 | 16:16:42 | 62.9 |
| 183 | 6/15/2016 | 16:16:44 | 64.5 |
| 184 | 6/15/2016 | 16:16:46 | 68.7 |
| 185 | 6/15/2016 | 16:16:48 | 62.8 |
| 186 | 6/15/2016 | 16:16:50 | 61.1 |
| 187 | 6/15/2016 | 16:16:52 | 64.8 |
| 188 | 6/15/2016 | 16:16:54 | 65.8 |
| 189 | 6/15/2016 | 16:16:56 | 67.4 |
| 190 | 6/15/2016 | 16:16:58 | 69.7 |
| 191 | 6/15/2016 | 16:17:00 | 69.2 |
| 192 | 6/15/2016 | 16:17:02 | 67.9 |
| 193 | 6/15/2016 | 16:17:04 | 67.2 |
| 194 | 6/15/2016 | 16:17:06 | 66 |
| 195 | 6/15/2016 | 16:17:08 | 62.7 |
| 196 | 6/15/2016 | 16:17:10 | 65 |
| 197 | 6/15/2016 | 16:17:12 | 69.2 |
| 198 | 6/15/2016 | 16:17:14 | 69.7 |
| 199 | 6/15/2016 | 16:17:16 | 62.8 |
| 200 | 6/15/2016 | 16:17:18 | 59.8 |
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| 225 | 6/15/2016 | 16:18:08 | 65 |

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| 448 | 6/15/2016 | 16:25:34 | 66.4 |
| 449 | 6/15/2016 | 16:25:36 | 68.2 |
| 450 | 6/15/2016 | 16:25:38 | 67.1 |

Noise Measurement #2

Noise Measurement 2

Ocean Boulevard

Freq Weight A
Time Weight FAST
Level Range 40-100
Max dB 89.3 dB
SEL 99.5 dB
Leq 70 dB

| No.s | Date | Time | dB |
|------|-----------|----------|------|
| 1 | 6/15/2016 | 16:45:40 | 64.8 |
| 2 | 6/15/2016 | 16:45:42 | 64.2 |
| 3 | 6/15/2016 | 16:45:44 | 65.2 |
| 4 | 6/15/2016 | 16:45:46 | 63.4 |
| 5 | 6/15/2016 | 16:45:48 | 62.9 |
| 6 | 6/15/2016 | 16:45:50 | 64 |
| 7 | 6/15/2016 | 16:45:52 | 66 |
| 8 | 6/15/2016 | 16:45:54 | 68.2 |
| 9 | 6/15/2016 | 16:45:56 | 71.5 |
| 10 | 6/15/2016 | 16:45:58 | 68.5 |
| 11 | 6/15/2016 | 16:46:00 | 69.5 |
| 12 | 6/15/2016 | 16:46:02 | 68 |
| 13 | 6/15/2016 | 16:46:04 | 66.9 |
| 14 | 6/15/2016 | 16:46:06 | 67.5 |
| 15 | 6/15/2016 | 16:46:08 | 67.5 |
| 16 | 6/15/2016 | 16:46:10 | 67.1 |
| 17 | 6/15/2016 | 16:46:12 | 71.2 |
| 18 | 6/15/2016 | 16:46:14 | 71.1 |
| 19 | 6/15/2016 | 16:46:16 | 71.9 |
| 20 | 6/15/2016 | 16:46:18 | 75.6 |
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| 23 | 6/15/2016 | 16:46:24 | 67.8 |
| 24 | 6/15/2016 | 16:46:26 | 70.6 |
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| 26 | 6/15/2016 | 16:46:30 | 68.5 |
| 27 | 6/15/2016 | 16:46:32 | 66.5 |
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| 35 | 6/15/2016 | 16:46:48 | 59.7 |
| 36 | 6/15/2016 | 16:46:50 | 58.3 |
| 37 | 6/15/2016 | 16:46:52 | 57.2 |

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|----|-----------|----------|------|
| 38 | 6/15/2016 | 16:46:54 | 58.2 |
| 39 | 6/15/2016 | 16:46:56 | 59.6 |
| 40 | 6/15/2016 | 16:46:58 | 70.5 |
| 41 | 6/15/2016 | 16:47:00 | 68.7 |
| 42 | 6/15/2016 | 16:47:02 | 67.7 |
| 43 | 6/15/2016 | 16:47:04 | 69 |
| 44 | 6/15/2016 | 16:47:06 | 60.6 |
| 45 | 6/15/2016 | 16:47:08 | 62.4 |
| 46 | 6/15/2016 | 16:47:10 | 60.8 |
| 47 | 6/15/2016 | 16:47:12 | 57.8 |
| 48 | 6/15/2016 | 16:47:14 | 56.6 |
| 49 | 6/15/2016 | 16:47:16 | 57.8 |
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| 60 | 6/15/2016 | 16:47:38 | 73.7 |
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| 72 | 6/15/2016 | 16:48:02 | 66.3 |
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| 74 | 6/15/2016 | 16:48:06 | 74.1 |
| 75 | 6/15/2016 | 16:48:08 | 81 |
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| 84 | 6/15/2016 | 16:48:26 | 69.5 |

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|-----|-----------|----------|------|
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| 88 | 6/15/2016 | 16:48:34 | 71.5 |
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| 90 | 6/15/2016 | 16:48:38 | 63 |
| 91 | 6/15/2016 | 16:48:40 | 62 |
| 92 | 6/15/2016 | 16:48:42 | 61.3 |
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| 130 | 6/15/2016 | 16:49:58 | 65.4 |
| 131 | 6/15/2016 | 16:50:00 | 62 |

| | | | |
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| 365 | 6/15/2016 | 16:57:48 | 64.5 |
| 366 | 6/15/2016 | 16:57:50 | 66.3 |

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| 369 | 6/15/2016 | 16:57:56 | 63 |
| 370 | 6/15/2016 | 16:57:58 | 63.5 |
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| 412 | 6/15/2016 | 16:59:22 | 57.9 |
| 413 | 6/15/2016 | 16:59:24 | 58.5 |

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| 414 | 6/15/2016 | 16:59:26 | 59.4 |
| 415 | 6/15/2016 | 16:59:28 | 57.4 |
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| 419 | 6/15/2016 | 16:59:36 | 64.5 |
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| 425 | 6/15/2016 | 16:59:48 | 62.7 |
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| 427 | 6/15/2016 | 16:59:52 | 64.3 |
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| 430 | 6/15/2016 | 16:59:58 | 65.9 |
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| 446 | 6/15/2016 | 17:00:30 | 73.8 |
| 447 | 6/15/2016 | 17:00:32 | 71.9 |
| 448 | 6/15/2016 | 17:00:34 | 74.5 |
| 449 | 6/15/2016 | 17:00:36 | 75.3 |
| 450 | 6/15/2016 | 17:00:38 | 69.8 |

Noise Measurement #3

Noise Measurement 2

Ocean Boulevard

Freq Weight A
Time Weight FAST
Level Range 40-100
Max dB 89.3 dB
SEL 99.5 dB
Leq 70 dB

| No.s | Date | Time | dB |
|------|-----------|----------|------|
| 1 | 6/15/2016 | 16:45:40 | 64.8 |
| 2 | 6/15/2016 | 16:45:42 | 64.2 |
| 3 | 6/15/2016 | 16:45:44 | 65.2 |
| 4 | 6/15/2016 | 16:45:46 | 63.4 |
| 5 | 6/15/2016 | 16:45:48 | 62.9 |
| 6 | 6/15/2016 | 16:45:50 | 64 |
| 7 | 6/15/2016 | 16:45:52 | 66 |
| 8 | 6/15/2016 | 16:45:54 | 68.2 |
| 9 | 6/15/2016 | 16:45:56 | 71.5 |
| 10 | 6/15/2016 | 16:45:58 | 68.5 |
| 11 | 6/15/2016 | 16:46:00 | 69.5 |
| 12 | 6/15/2016 | 16:46:02 | 68 |
| 13 | 6/15/2016 | 16:46:04 | 66.9 |
| 14 | 6/15/2016 | 16:46:06 | 67.5 |
| 15 | 6/15/2016 | 16:46:08 | 67.5 |
| 16 | 6/15/2016 | 16:46:10 | 67.1 |
| 17 | 6/15/2016 | 16:46:12 | 71.2 |
| 18 | 6/15/2016 | 16:46:14 | 71.1 |
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| 35 | 6/15/2016 | 16:46:48 | 59.7 |
| 36 | 6/15/2016 | 16:46:50 | 58.3 |
| 37 | 6/15/2016 | 16:46:52 | 57.2 |

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|----|-----------|----------|------|
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| 40 | 6/15/2016 | 16:46:58 | 70.5 |
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| 42 | 6/15/2016 | 16:47:02 | 67.7 |
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| 44 | 6/15/2016 | 16:47:06 | 60.6 |
| 45 | 6/15/2016 | 16:47:08 | 62.4 |
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| 49 | 6/15/2016 | 16:47:16 | 57.8 |
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| 446 | 6/15/2016 | 17:00:30 | 73.8 |
| 447 | 6/15/2016 | 17:00:32 | 71.9 |
| 448 | 6/15/2016 | 17:00:34 | 74.5 |
| 449 | 6/15/2016 | 17:00:36 | 75.3 |
| 450 | 6/15/2016 | 17:00:38 | 69.8 |

Existing

RESULTS: SOUND LEVELS

Shoreline Gateway East Project

| | | | | | | | | | | | | | | |
|-------------------------|--|-----|--------------------------------|------------------------|------------------------------|------------|-----------------------------------|------------------|-------------|--|----------------------------|------|-------------------------|--|
| <Organization?> | | | | | | | | | | | | | 5 August 2016 | |
| Skyler | | | | | | | | | | | | | TNM 2.5 | |
| RESULTS: SOUND LEVELS | | | | | | | | | | | | | Calculated with TNM 2.5 | |
| PROJECT/CONTRACT: | | | Shoreline Gateway East Project | | | | | | | | | | | |
| RUN: | | | Existing | | | | | | | | | | | |
| BARRIER DESIGN: | | | INPUT HEIGHTS | | | | | | | Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA. | | | | |
| ATMOSPHERICS: | | | 20 deg C, 50% RH | | | | | | | | | | | |
| Receiver | | | | | | | | | | | | | | |
| Name | | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal | |
| | | | | dB | dB | dB | dB | dB | | dB | dB | dB | dB | |
| NM1 (Alamito St) | | 13 | 1 | 0.0 | 69.7 | 66 | 69.7 | 10 | Snd Lvl | 69.7 | 0.0 | 8 | -8.0 | |
| NM2/SR1 (East Ocean St) | | 34 | 1 | 0.0 | 70.7 | 66 | 70.7 | 10 | Snd Lvl | 70.7 | 0.0 | 8 | -8.0 | |
| SR3 (East Ocean St) | | 43 | 1 | 0.0 | 66.5 | 66 | 66.5 | 10 | Snd Lvl | 66.5 | 0.0 | 8 | -8.0 | |
| NM3 (Atlantic Street) | | 49 | 1 | 0.0 | 66.2 | 66 | 66.2 | 10 | Snd Lvl | 66.2 | 0.0 | 8 | -8.0 | |
| SR2 (Medio St) | | 56 | 1 | 0.0 | 65.3 | 66 | 65.3 | 10 | ---- | 65.3 | 0.0 | 8 | -8.0 | |
| PR2 | | 60 | 1 | 0.0 | 71.9 | 66 | 71.9 | 10 | Snd Lvl | 71.9 | 0.0 | 8 | -8.0 | |
| Dwelling Units | | | # DUs | Noise Reduction | | | | | | | | | | |
| | | | | Min | Avg | Max | | | | | | | | |
| | | | | dB | dB | dB | | | | | | | | |
| All Selected | | | 6 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All Impacted | | | 5 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All that meet NR Goal | | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | |

Existing Plus Project

RESULTS: SOUND LEVELS

Shoreline Gateway East Project

| | | | | | | | | | | | | | | |
|------------------------------|--|------------|--------------------------------|------------------------|-------------------------------------|---------------|-------------------------------|------------------|--|--------------------------|------------------------|-------------|------------------------------|--|
| <Organization?> | | | | | | | | | | | | | 5 August 2016 | |
| Skyler | | | | | | | | | | | | | TNM 2.5 | |
| | | | | | | | | | | | | | Calculated with TNM 2.5 | |
| RESULTS: SOUND LEVELS | | | | | | | | | | | | | | |
| PROJECT/CONTRACT: | | | Shoreline Gateway East Project | | | | | | | | | | | |
| RUN: | | | Existing + Project | | | | | | | | | | | |
| BARRIER DESIGN: | | | INPUT HEIGHTS | | | | | | Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA. | | | | | |
| ATMOSPHERICS: | | | 20 deg C, 50% RH | | | | | | | | | | | |
| Receiver | | | | | | | | | | | | | | |
| Name | | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing | | With Barrier | | | | | |
| | | | | | | | Calculated | Crit'n | Type Impact | Calculated LAeq1h | Noise Reduction | | Calculated minus Goal | |
| | | | | | | | | Sub'l Inc | | | Calculated | Goal | Calculated minus Goal | |
| | | | | dBA | dBA | dBA | dB | dB | | dBA | dB | dB | dB | |
| NM1 (Alamito St) | | 13 | 1 | 0.0 | 69.7 | 66 | 69.7 | 10 | Snd Lvl | 69.7 | 0.0 | 8 | -8.0 | |
| NM2\SR1 (East Ocean St) | | 34 | 1 | 0.0 | 70.6 | 66 | 70.6 | 10 | Snd Lvl | 70.6 | 0.0 | 8 | -8.0 | |
| SR3 (East Ocean St) | | 40 | 1 | 0.0 | 66.7 | 66 | 66.7 | 10 | Snd Lvl | 66.7 | 0.0 | 8 | -8.0 | |
| NM3 (Atlantic Street) | | 42 | 1 | 0.0 | 66.2 | 66 | 66.2 | 10 | Snd Lvl | 66.2 | 0.0 | 8 | -8.0 | |
| PR1 | | 54 | 1 | 0.0 | 62.8 | 66 | 62.8 | 10 | ---- | 62.8 | 0.0 | 8 | -8.0 | |
| SR2 (Medio St) | | 56 | 1 | 0.0 | 65.1 | 66 | 65.1 | 10 | ---- | 65.1 | 0.0 | 8 | -8.0 | |
| Receiver60 | | 60 | 1 | 0.0 | 57.2 | 66 | 57.2 | 10 | ---- | 57.2 | 0.0 | 8 | -8.0 | |
| Dwelling Units | | | # DUs | Noise Reduction | | | | | | | | | | |
| | | | | Min | Avg | Max | | | | | | | | |
| | | | | dB | dB | dB | | | | | | | | |
| All Selected | | | 7 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All Impacted | | | 4 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All that meet NR Goal | | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | |

2020 Future Cumulative

RESULTS: SOUND LEVELS

Shoreline Gateway East Project

| | | | | | | | | | | | | | | |
|-------------------------|--|-----|--------------------------------|------------------------|------------------------------|------------|-----------------------------------|------------------|-------------|--|----------------------------|------|-------------------------|--|
| <Organization?> | | | | | | | | | | | | | 5 August 2016 | |
| Skyler | | | | | | | | | | | | | TNM 2.5 | |
| RESULTS: SOUND LEVELS | | | | | | | | | | | | | Calculated with TNM 2.5 | |
| PROJECT/CONTRACT: | | | Shoreline Gateway East Project | | | | | | | | | | | |
| RUN: | | | 2020 Future Cumulative | | | | | | | | | | | |
| BARRIER DESIGN: | | | INPUT HEIGHTS | | | | | | | Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA. | | | | |
| ATMOSPHERICS: | | | 20 deg C, 50% RH | | | | | | | | | | | |
| Receiver | | | | | | | | | | | | | | |
| Name | | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h Calculated | Crit'n | Increase over existing Calculated | Crit'n Sub'l Inc | Type Impact | With Barrier Calculated LAeq1h | Noise Reduction Calculated | Goal | Calculated minus Goal | |
| | | | | dB | dB | dB | dB | dB | | dB | dB | dB | dB | |
| NM1 (Alamito St) | | 13 | 1 | 0.0 | 70.8 | 66 | 70.8 | 10 | Snd Lvl | 70.8 | 0.0 | 8 | -8.0 | |
| NM2\SR1 (East Ocean St) | | 34 | 1 | 0.0 | 71.4 | 66 | 71.4 | 10 | Snd Lvl | 71.4 | 0.0 | 8 | -8.0 | |
| SR3 (East Ocean St) | | 41 | 1 | 0.0 | 67.2 | 66 | 67.2 | 10 | Snd Lvl | 67.2 | 0.0 | 8 | -8.0 | |
| NM3 (Atlantic Street) | | 43 | 1 | 0.0 | 67.3 | 66 | 67.3 | 10 | Snd Lvl | 67.3 | 0.0 | 8 | -8.0 | |
| SR2 (Medio St) | | 47 | 1 | 0.0 | 66.6 | 66 | 66.6 | 10 | Snd Lvl | 66.6 | 0.0 | 8 | -8.0 | |
| PR2 | | 49 | 1 | 0.0 | 72.6 | 66 | 72.6 | 10 | Snd Lvl | 72.6 | 0.0 | 8 | -8.0 | |
| Dwelling Units | | | # DUs | Noise Reduction | | | | | | | | | | |
| | | | | Min | Avg | Max | | | | | | | | |
| | | | | dB | dB | dB | | | | | | | | |
| All Selected | | | 6 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All Impacted | | | 6 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All that meet NR Goal | | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | |

2020 Future Cumulative Plus Project

RESULTS: SOUND LEVELS

Shoreline Gateway East Project

| | | | | | | | | | | | | | | |
|-------------------------|--|-----|----------------------------------|------------------------|-------------------|------------|------------------------|--------|-------------|--|-------------------|----------------------|-------------------------|------------|
| <Organization?> | | | | | | | | | | | | | 5 August 2016 | |
| Skyler | | | | | | | | | | | | | TNM 2.5 | |
| RESULTS: SOUND LEVELS | | | | | | | | | | | | | Calculated with TNM 2.5 | |
| PROJECT/CONTRACT: | | | Shoreline Gateway East Project | | | | | | | | | | | |
| RUN: | | | 2020 Future Cumulative + Project | | | | | | | | | | | |
| BARRIER DESIGN: | | | INPUT HEIGHTS | | | | | | | Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA. | | | | |
| ATMOSPHERICS: | | | 20 deg C, 50% RH | | | | | | | | | | | |
| Receiver | | | | | | | | | | | | | | |
| Name | | No. | #DUs | Existing LAeq1h | No Barrier LAeq1h | Crit'n | Increase over existing | | Type Impact | With Barrier | | Noise Reduction Goal | Calculated minus Goal | |
| | | | | | Calculated | | Calculated | Crit'n | | Sub'l Inc | Calculated LAeq1h | | | Calculated |
| | | | | dB | dB | dB | dB | dB | | dB | dB | dB | dB | |
| NM1 (Alamito St) | | 13 | 1 | 0.0 | 70.7 | 66 | 70.7 | 10 | Snd Lvl | 70.7 | 0.0 | 8 | -8.0 | |
| NM2\SR1 (East Ocean St) | | 34 | 1 | 0.0 | 71.3 | 66 | 71.3 | 10 | Snd Lvl | 71.3 | 0.0 | 8 | -8.0 | |
| SR3 (East Ocean St) | | 44 | 1 | 0.0 | 67.5 | 66 | 67.5 | 10 | Snd Lvl | 67.5 | 0.0 | 8 | -8.0 | |
| NM3 (Atlantic Street) | | 46 | 1 | 0.0 | 67.4 | 66 | 67.4 | 10 | Snd Lvl | 67.4 | 0.0 | 8 | -8.0 | |
| SR2 (Medio St) | | 52 | 1 | 0.0 | 66.3 | 66 | 66.3 | 10 | Snd Lvl | 66.3 | 0.0 | 8 | -8.0 | |
| PR2 | | 56 | 1 | 0.0 | 73.1 | 66 | 73.1 | 10 | Snd Lvl | 73.1 | 0.0 | 8 | -8.0 | |
| Dwelling Units | | | # DUs | Noise Reduction | | | | | | | | | | |
| | | | | Min | Avg | Max | | | | | | | | |
| | | | | dB | dB | dB | | | | | | | | |
| All Selected | | | 6 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All Impacted | | | 6 | 0.0 | 0.0 | 0.0 | | | | | | | | |
| All that meet NR Goal | | | 0 | 0.0 | 0.0 | 0.0 | | | | | | | | |