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Noise Analysis for the Del Mar City Hall/Town Hall Project, Del Mar, California

Prepared for
City of Del Mar
1050 Camino del Mar
Del Mar, CA 92014
Contact: Ms. Kathy Garcia

Prepared by
RECON Environmental, Inc.
1927 Fifth Avenue
San Diego, CA 92101
P 619.308.9333

RECON Number 7786
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William A. Maddux,
Senior Noise and Air Quality Specialist

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Executive Summary

This report evaluates potential noise impacts associated with the proposed Del Mar City Hall/Town Hall Project. The project includes the construction of new City administration facilities (City Hall) to accommodate the existing civic functions within an approximately 9,250-square-foot City Hall facility, an approximate 3,200-square-foot Town Hall meeting room that can accommodate up to 150 persons, with an expansion ability to accommodate up to 250 persons using a breezeway, an approximately 15,000-square-foot outdoor public plaza, and parking for up to 160 vehicles. The project site is located on approximately 1.5 acres between 10th and 11th streets, west of Camino del Mar in Del Mar, California.

A temporary relocation site is proposed for the lower parking lot of the Shores Park, south of the intersection of Stratford Court and 9th Street. Portable structures would be placed on the parking lot immediately south of the Winston School, a private school. Improvements to the existing driveway are proposed to allow for ingress and egress. Limited shallow trenching may be required for the utilities connections, but no other substantial site grading would be required for the placement of these temporary structures. Upon completion of the project, all structures and temporary uses would be removed or relocated back to the project site.

The dominant source of noise, for both the project site and the temporary relocation site, is vehicle traffic on local roadways, specifically Camino del Mar, immediately to the east of the project site and the Shores Park. Land uses adjacent to the project site include single-family housing, a hotel, and commercial land uses. Surrounding the temporary relocation site are single-family (detached) and multi-family (attached) residential, a hotel, and commercial, as well as the Winston School immediately adjacent, and the upper pad of the Shores Park with a community meeting building and the playfields. No industrial, manufacturing, or other noisy land uses such as mineral extraction occur in the project area.

Construction

Construction activities would occur during daytime hours between 7:00 a.m. and 7:00 p.m. Monday through Friday, and Saturday between the hours of 9:00 a.m. and 7:00 p.m., and no work would be conducted on Sundays or City designated holidays. Construction activities would occur at the project site as well as the temporary relocation site during construction of the access driveway, placement of the facilities and utilities, and removal of the same facilities.

Project Site

Affected sensitive noise receivers as defined by the Municipal Code include single-family residences along 10th and 11th streets, west of the project site. The nearest residences are approximately 80 feet from the center of the project construction area and adjacent to the

western boundary of the project site. At this distance, noise levels from construction are estimated to reach up to 79 A-weighted decibels average sound level [dB(A) L_{eq}] with maximum noise levels of up to 82 dB(A) maximum noise levels (L_{max}). These noise levels would exceed the City noise level limit for construction. Therefore, a 10-foot-high barrier would be required along the western property line (Noise Abatement Measure N-1) to reduce construction noise levels to less than 75 dB(A) L_{eq} construction. Thus, while construction noise would constitute a temporary and potentially significant impact to nearby residents, with implementation of Noise Abatement Measure N-1, noise levels would be reduced to 75 dB(A) L_{eq} or less.

Temporary Relocation Site

During the approximately 30-month relocation period, the City administrative operations that currently exist on-site, including the City administrative functions and the City Council and other committee hearings, would be relocated to the Shores Park lower parking area in portable structures. The temporary relocation site would require limited construction involved in removing and reconstructing the existing driveway to provide adequate access to the site, and possible shallow trenching for utility connections. Affected sensitive noise receivers as defined by the Municipal Code in the vicinity of the temporary relocation site include single-family residences directly south and across Stratford Court west of the temporary relocation site. The nearest residential property line is approximately 20 feet south of the center of the construction area for the temporary relocation site. At this distance, noise levels from construction would reach up to 83 dB(A) L_{eq} with maximum noise levels of up to 87 dB(A) L_{max}. These noise levels would exceed the City noise level limit for construction. Therefore, a 10-foot-high barrier with a length of 20 feet would be required (Noise Abatement Measure N-2) along the southern property line to reduce construction noise levels to less than 75 dB(A) L_{eq} during the construction of access improvements at the temporary relocation site. Thus, while construction noise would constitute a temporary and potentially significant impact to nearby residents, with implementation of Noise Abatement Measure N-2, noise levels would be reduced to comply with local ordinances.

Operation

As the City of Del Mar does not use noise compatibility standards for siting public facility land uses, this noise analysis addresses impacts of the project on offsite uses. Noise sources for project operations, both the new City Hall/Town Hall facilities and the temporary operations at the temporary relocation site, would include traffic, on-site mechanical sources, people talking/congregating, and parking area activities (e.g., cars starting, doors closing).

Traffic Noise

Project Site

The project would generate an increase in traffic that would represent an increase of approximately 1 percent north of 11th Street and a 1.5 percent increase south of 10th Street (STC Traffic, Inc. 2015). Relative to the existing noise levels and traffic volumes, an increase in traffic of this level would result in a less than 1 community noise equivalent level (CNEL) increase in ambient noise levels and would not generally be perceptible to the average human ear.

In the 2035 cumulative condition, the traffic increase on Camino del Mar without the project would result in an approximate 1 CNEL increase over existing conditions. The project's contribution to that increase would be less than a tenth of a decibel. As with the increase under the existing plus project analysis, the increase of 1 decibel would not be considered a perceivable increase in the ambient noise environment.

A secondary noise effect would be related to the site design that would alter placement of the buildings on-site with respect to the shielding of noise for the properties located west of the project site. Based on noise modeling, the noise contours would be altered by the grading and leveling of the site; however, as the primary building site would be raised up along Camino del Mar, on the deck of the proposed parking garage, the new site design would offer similar noise shielding to residences located west of the project site.

Temporary Relocation Site

The relocation of City Hall would create a redistribution of traffic that currently accesses City Hall. Existing traffic volumes on Stratford Court are 786 average daily traffic (ADT). The existing City Hall generates 384 trips daily. This would increase the traffic volume on Stratford Court to 1,170 ADT, which would increase the noise levels from 59 CNEL to 61 CNEL at 50 feet from the centerline of Stratford Court. The increase in traffic would result in a less than 2 dB(A) increase in ambient noise levels. However, as an increase of 3 dB(A) or less is a barely perceivable change in noise levels, and the increase would be temporary, the impacts from the redistribution of traffic associated with the temporary relocation site would be less than significant.

Stationary Sources

Project Site

The primary on-site noise sources would include mechanical ventilation equipment, a standby generator, parking activities, and the amplified sound system. The mechanical equipment and generator would be located within the upper floor of the parking structure with the intake and exhaust ports located on the south side of the property near the elevator shaft. Based on noise modeling, noise levels from the mechanical equipment would not exceed the allowable limits at any residential properties.

The amplified sound system would be located east of the City Hall building and north of the Town Hall building in the public plaza. These buildings would provide shielding for residences to the south and west. The amplified sound system would consist of relatively small satellite speakers located throughout the plaza area to localize noise near the audience. Based on the use of a satellite speaker system and the shielding provided by the proposed structures, noise levels from the amplified sound system would not exceed allowable noise level limits at adjacent properties.

The primary source of noise at the western property line would be associated with the lower surface parking lot. Due to the limited openings and distance from the property line, the parking structure is a secondary noise source that would not exceed the property line limits without the contribution of noise from the lower surface parking lot. Based on predicted noise levels, parking noise would exceed the City noise ordinance during the nighttime hours (10:00 p.m. to 7:00 a.m.). As there is potential for nighttime activities within the parking lot, and restricting its use after 10:00 p.m. is not a desirable option, a noise barrier was modeled along the western property line. Based on the modeling, a continuous barrier with a height of 8 feet above finish grade of the surface parking lot with a length of approximately 250 feet (Noise Abatement Measure N-3) would be sufficient to block the "line of sight" and reduce noise level to the nighttime noise ordinance limit of 45 dB(A) L_{eq} or less at the adjacent residential properties.

Temporary Relocation Site

The primary operational noise sources associated with the temporary relocation site would be the wall-mounted heating, ventilation, and air conditioning (HVAC) units for the potable structures and the parking lot. A variety of HVAC units were reviewed as possible equipment that may be used for the portable structures and all reviewed HVAC units were similar in noise ratings, with a sound power of approximately 88 to 89 dB. As with the stationary source modeling conducted for the project site, all stationary sources were modeled as active at the same time to present a worst case analysis. That is, modeling included both HVAC units operating at maximum output for the full hour and all spaces in the parking lot are parked or exited within the same hour.

Based on the modeling, noise from the temporary relocation site parking lot would not exceed the daytime noise level limits at any receiver; however, noise levels would exceed the nighttime noise level limit at the properties immediately south of the relocation site and across Stratford Court from the parking area. It should be noted that while the HVAC do represent substantial contributors to the predicted noise levels, these sources are secondary to the parking lot noise.

To lower noise levels at the properties across Stratford Court, a barrier was modeled along the western boundary of the proposed parking lot generally in the same location as the existing fence. Based on the results, a barrier with a height of 6 feet above finish grade and 290 feet in length (Noise Abatement Measure N-4) would be of sufficient to block the "line of sight" and reduce noise levels to less than 45 dB(A) L_{eq} at residential properties located across Stratford Court.

To lower noise levels at the properties to the south of the temporary relocation site, a 6-foot-high barrier was modeled at the southern property line of the relocation site. Based on the results of the model, a barrier with a height of 6 feet above finish grade and a length of 160 feet (Noise Abatement Measure N-4), located along the southern boundary of the temporary relocation site, would reduce noise levels at the adjacent residences to less than the property line limit of 45 dB(A) L_{eq} at night.

1.0 Introduction

1.1 Purpose of the Report

This report analyzes the potential for noise impacts at neighboring land uses from the Del Mar City Hall/Town Hall Project, including the temporary relocation of City Hall and Town Hall facilities and operations at the lower parking area of Shores Park. The project would generate noise during construction and operation. Noise impacts due to the project are assessed with consideration to ordinances, policies and standards established by the City of Del Mar.

1.2 Project Description

The project site is located on approximately 1.5 acres between 10th and 11th Streets, west of Camino del Mar in Del Mar, California. The project would replace the City of Del Mar (City) administration offices, parking lots, City Council hearing room, and the Del Mar television (TV) studios currently located on the property with new offices, meeting spaces, hearing room, outdoor spaces, and parking for up to 160 vehicles, as well as future expansion areas for up to 20,000 square feet of development consistent with the Public Facilities Zoning. Figure 1 shows the regional location of the project. Figure 2 shows the project vicinity on an aerial photograph.

The project includes the construction of new City administration facilities (City Hall) to accommodate the existing civic functions within an approximately 9,250-square-foot City Hall facility, an approximate 3,200-square-foot Town Hall meeting room that can accommodate up to 150 persons, with an expansion ability to accommodate up to 250 persons using a breezeway, an approximately 15,000-square-foot outdoor public plaza, and parking for up to 160 vehicles (Figure 3).

Uses proposed within the initial phase of the City Hall development would be the same as currently exist, which include offices, public counters, meeting rooms, and restrooms. No increase in staffing is proposed, nor are other departments proposed to be relocated to the site as part of the project. The departments of Public Works, Fire Services, and Community Services will continue to be located in their respective facilities; all located at other City properties.

Project Location

FIGURE 1
Regional Location

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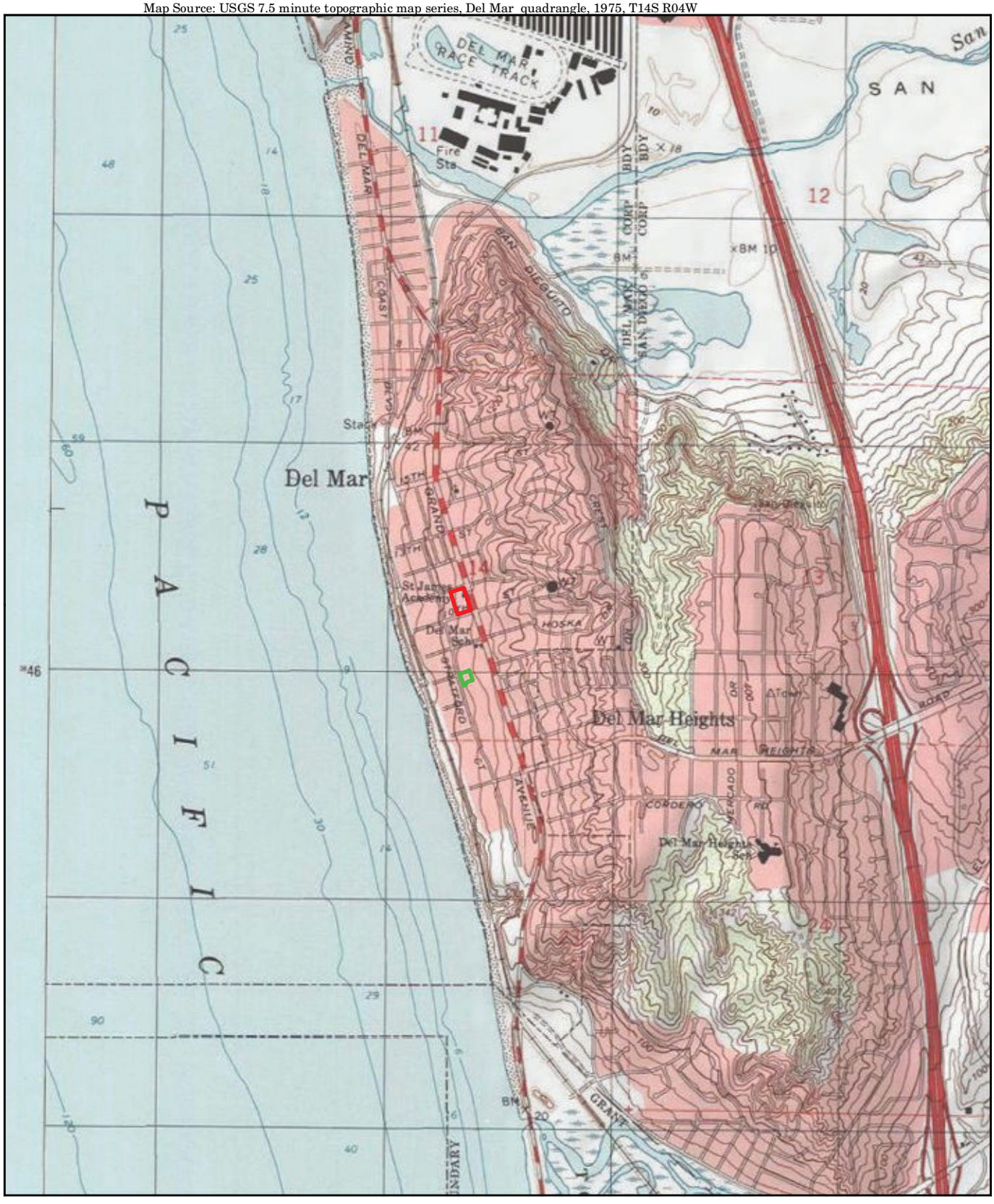
Map Source: USGS 7.5 minute topographic map series, Del Mar quadrangle, 1975, T14S R04W



Project Boundary

Temporary Relocation Site

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FIGURE 2

Project Location on USGS Map

Map Source: Miller Hull

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FIGURE 3
Proposed Project
Conceptual Site Plan

The Town Hall would accommodate the City Council chambers, community meeting space, and the Del Mar TV studio network offices. The uses for the Town Hall would be generally consistent with the existing uses; however, the increase in meeting space would allow for events for up to 250 people and likely more frequent use of the civic facilities by the community for public meetings and workshops.

An outdoor plaza is designed to be an open area with flexible space to support uses including but not limited to performances, art exhibits, community gatherings, and farmers' market space, as well as seating areas. Activities in this area may utilize outdoor amplified sound systems and lighting, oriented and focused toward the event and attendees. Landscaping of the outdoor plazas would be either placed within aboveground planters due to the concrete floor created above the parking garage or, where soils are available, landscaping would be placed in ground. All on-site landscaping would have drip or low-flow irrigation to ensure water conservation techniques can be implemented (i.e., focused watering, wet weather controls).

Also included in the project is a future expansion area for added facilities (up to an additional 20,000 square feet). This expansion area is not defined for specific use, other than to support public facilities as consistent with the City's Zoning Ordinance. It may include expansion of the Town Hall, City Hall, plaza, or additional uses as allowed in the Public Facilities Zone and there is no timeline for this expansion. The project provides for the development of facilities consistent with the public facilities zoning of the site. Any development of the future expansion area would need to be reviewed for compliance with the existing land use and zoning, design review, and environmental analysis. Any proposal which is not consistent with existing land use and zoning would require further analysis under the California Environmental Quality Act (CEQA) and consideration of land use or zoning amendments as applicable.

The proposed parking facilities would include a surface parking lot along the western property boundary accessed from 11th Street; and a two-story parking garage to be constructed immediately beneath the City Hall building and a portion of the outdoor plaza. Access to the parking garage would be from both 10th and 11th streets. The parking on-site would support up to 160 parking spaces, of which there would be Americans with Disabilities Act (ADA) accessible spaces and electric vehicle charging stations included. During normal business hours for the City (8:00 a.m. to 5:00 p.m.), parking on-site would primarily be available and used by City staff and customers. However, as currently exists, parking during the daytime may be used by members of the public in a generally unrestricted manner. For those hours outside of the normal City business hours, parking would be available for unrestricted public use; however, overnight parking would be prohibited.

Bike access along Camino del Mar would be maintained during construction, and following construction, located in the current right-of-way for the roadway as presently striped. On-site bike storage and comfort station, which includes air inflation facilities, would be provided as part of the project, and would be accessible to both employees and the public.

Pedestrian access throughout the project site would be ADA compliant, with transitional ramps and/or elevators as necessary.

Demolition of existing facilities and site preparation and construction are included as part of the project, and is anticipated to take approximately 18 to 24 months. Demolition activities would be conducted in a manner consistent with state law for the containment of materials, both airborne and physical, to ensure no hazardous materials are emitted or could result in harmful effects on people or the environment. Excavation of on-site soils is estimated at 30,000 cubic yards, and export of excess materials would be required. Based on initial geotechnical analysis, no blasting would be required for the project.

During the approximately 18- to 24-month construction period, the City administrative operations that currently exist on-site, including the Town Hall public functions and City Council and other committee hearings, would be relocated to the Shores Park parking area in portable structures. This site is referred to as the temporary relocation site in this analysis. The temporary relocation site would require limited construction involved in removing and reconstructing the existing driveway to provide adequate access to the site. No site preparation or grading would be required for the placement of these temporary structures. Upon completion of the project, all structures and temporary uses would be removed or relocated back to the project site.

1.3 Fundamentals of Noise

Sound levels are described in units called the decibel (dB). Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; a halving of the energy would result in a 3 dB decrease.

Additionally, in technical terms, sound levels are described as either a "sound power level" or a "sound pressure level," which while commonly confused are two distinct characteristics of sound. Both share the same unit of measure, the dB. However, sound power is the energy converted into sound by the source. The sound power level of the source is expressed as L_{pw}. The L_{pw} is used to estimate how far a noise will travel and to predict the sound levels at various distances from the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers such as an ear drum or microphone and is the sound pressure level. Noise measurement instruments only measure sound pressure and noise level limits used in public agency standards are generally sound pressure levels.

The human ear is not equally sensitive to all frequencies within the sound spectrum. To accommodate this phenomenon, the A-scale, which approximates the frequency response of the average young ear when listening to most ordinary everyday sounds, was devised. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Therefore, the "A-weighted" noise scale is used for measurements and standards involving the human

perception of noise. Noise levels using A-weighted measurements are designated with the notation dB(A).

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important. In addition, most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. The noise descriptor used for this study is the one-hour equivalent noise level (L_{eq}). The noise descriptor for a 24-hour equivalent sound level is known as the community noise equivalent level (CNEL). The CNEL calculation applies an additional 5 dB(A) penalty to noise occurring during evening hours, 7:00 p.m. and 10:00 p.m., and an additional 10 dB(A) is added to noise occurring during the night, 10:00 p.m. and 7:00 a.m. These increases for certain times are intended to account for the added sensitivity of humans to noise during the evening and night.

Sound from a small, localized source (approximating a "point" source) radiates uniformly outward as it travels away from the source in a spherical pattern, known as geometric spreading. The sound level decreases or drops off at a rate of 6 dB(A) for each doubling of the distance.

However, traffic noise is not a single, stationary point source of sound. The movement of vehicles makes the source of the sound appear to emanate from a line (line source) rather than a point when viewed over some time interval. The drop-off rate for a line source is 3 dB(A) for each doubling of distance.

The propagation of noise is also affected by the intervening ground, known as ground absorption. A hard site (such as parking lots or smooth bodies of water) receives no additional ground attenuation and the changes in noise levels with distance (drop-off rate) are simply the geometric spreading of the source. A soft site (such as soft dirt, grass, or scattered bushes and trees) receives an additional ground attenuation value of 1.5 dB(A) per doubling of distance. Thus, a point source over a soft site would attenuate at 7.5 dB(A) per doubling of distance.

Human perception of noise has no simple correlation with acoustical energy. A change in noise levels is generally perceived as follows: 3 dB(A) barely perceptible, 5 dB(A) readily perceptible, and 10 dB(A) perceived as a doubling or halving of noise (California Department of Transportation [Caltrans] 2013).

2.0 Existing Conditions

2.1 Noise Environment

The dominant source of noise for both the permanent and the temporary relocation site is vehicle traffic on local roadways, specifically Camino del Mar, immediately to the east. Land uses adjacent to the project site include single-family housing, a hotel, and a commercial land use. Surrounding the temporary relocation site are single-family (detached) and multi-family (attached) residential, a hotel, and commercial, as well as the

Winston School immediately adjacent, and the upper pad of the Shores Park with a community meeting building and the playfields. No industrial, manufacturing, or other noisy land uses such as mineral extraction occur in the project area.

The nearest airport to the project site is the Miramar Naval Air Station (NAS) Airport. Noise contours from the Miramar NAS indicates that the 60 CNEL contours is located approximately 1 mile south of the project site and would not affect the project.

2.1.1 Existing Noise Levels

To determine the existing noise conditions, noise measurements were taken on the project site and vicinity on July 14 and August 18, 2015, by RECON. The results of the short-term noise measurements are summarized in Table 1 and detailed measurement files are provided in Attachment 1. The noise measurement locations are shown on Figure 4. As shown in the table, noise levels ranged from approximately 53 to 62 dBA L_{eq}. Noise sources in the project vicinity included vehicle traffic, trains, small aircraft, pedestrians, and the ocean.

Table 1
Short-Term Noise Measurement Summary

Site*	Location	Primary Noise Source(s)	L_{eq} dB(A)
1	West of southwestern entrance to project site near TV Station Building	Traffic on Camino del Mar	59.9
2	North of TV station building, 5 feet east of western property line	Traffic on Camino del Mar	52.9
3	Northwest corner of project site	Traffic on Camino del Mar	54.6
4	50 feet east of Camino del Mar	Traffic on Camino del Mar	61.9
5	Southeast of Temporary Relocation Site	Traffic on Camino del Mar	54.70†
6	Stratford Court and Little Orphan Alley	Traffic on Stratford Court	56.6

*The Site ID number corresponds to locations shown on Figure 4.
†Noise level reported does not include trash truck operating during measurement.

Noise level measurement locations 1 through 3 were chosen to characterize ambient noise levels at the project site and in the immediate vicinity along 10th and 11th streets. Measurement location 4 was chosen to assist in the calibration of the traffic noise model. Measurement locations 5 and 6 were chosen to characterize ambient noise levels at the temporary relocation site and in the immediate vicinity along Stratford Court. During the noise measurement at location 4, a trash truck was operating in the vicinity and between 9:38 and 9:39 a.m. and 9:43 to 9:44 a.m., which increase the measured noise level to 72.4 dB(A) L_{eq}. To determine the typical daytime noise levels, the noise levels associated with the trash truck operation were removed from the measurement which resulted in a noise level of approximately 54.7 dB(A) L_{eq}.

Image Source: USDA FSA (flown June 2014)

Project Boundary

Temporary Relocation Site

Structure No Longer Present

Noise Measurement Locations

0 Feet 180

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FIGURE 4

Noise Measurement Locations

2.1.2 Existing Traffic Noise

Based on noise measurements and traffic counts, existing traffic noise levels were modeled at 50 feet from the centerline along roadways in the project vicinity, as well as the temporary relocation site. Traffic data and predicted noise levels are summarized in Table 2. Based on the existing traffic volumes, existing ambient noise levels due to 24-hour traffic patterns were calculated to be 64 CNEL at 50 feet from the centerline of Camino del Mar in the vicinity of the project site and 59 CNEL 50 feet from Stratford Court near the temporary relocation site. The noise levels are consistent with the measured noise levels at these locations.

Table 2
Existing Modeled Noise Levels on Camino del Mar

Roadway	Segment	Traffic Volume ADT	Noise Level CNEL* at 50 feet
Camino del Mar	4th Street to 12th Street	18,756	64
Stratford Court	4th Street to 9th Street	768	59

*The CNEL is estimated to be equivalent to the peak hour L_{eq}.
ADT = average daily traffic; CNEL = community noise equivalent level.

2.1.3 Sensitive Noise and Vibration Receptors

Sensitive receptors are generally considered to be humans engaged in activities such as talking, reading, and sleeping that may be subject to the stress of significant interference from noise. Land uses often associated with sensitive receptors include residential dwellings, mobile homes, hotels, motels, hospitals, nursing homes, education facilities, and libraries. Noise sensitive land uses within or adjacent to the project sites are predominantly residential, with some lodging; a school is also immediately adjacent, on the same parcel as the temporary relocation site.

3.0 Applicable Standards

3.1 Del Mar General Plan Noise Element

The City goals for transportation noise sources are published in the Community Plan Transportation Element, Noise Section (March 1976, incl. 1985 amendments). This section of the Community Plan identifies 65 CNEL as the maximum noise level compatible with residential land uses. The Community Plan has no transportation noise source requirements applicable to compatibility with commercial and retail uses.

3.2 Del Mar Municipal Code

3.2.1 Operation

Section 9.20.040 of the City's Municipal Code identifies noise limits based on zoning and states that:

A. Unless otherwise specified, it shall be unlawful for any person(s) to cause noise by any means to the extent that the one-hour average sound level exceeds the applicable limit given in the following table at any location in the City of Del Mar beyond the premises on which the noise is produced, as measured pursuant to the provisions of this Chapter. The noise subject to these limits is that part of the total noise at the specified location that is due solely to the action of said person(s).

B. The noise limits specified in subsection (A) above shall be adjusted as follows to account for the effects of time and duration on the impact of noise levels:

1. Noise that is produced for no more than a cumulative period of 30 minutes in any hour may exceed the noise limit by 3 decibels.
2. Noise that is produced for no more than a cumulative period of 15 minutes in any hour may exceed the noise limit by 6 decibels.
3. Noise that is produced for no more than a cumulative period of 10 minutes in any hour may exceed the noise limit by 8 decibels.
4. Noise that is produced for no more than a cumulative period of 5 minutes in any hour may exceed the noise limit by 11 decibels.
5. Noise that is produced for no more than a cumulative period of 2 minutes in any hour may exceed the noise limit by 15 decibels.

C. For purposes of this chapter, the peak decibel reading for a noise with a fluctuating noise level (such as live or recorded music) shall be considered as the noise level for the entire cumulative period of noise. Likewise, the time between repetitive intermittent noises (such as banging, pounding, or hammering) shall be included in the cumulative of the noise.

D. If the measured ambient level exceeds the applicable limit noted above, the allowable one-hour average sound level shall be the ambient noise level.

E. The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits of the two districts.

F. Fixed-location public utility distribution or transmission facilities located on or adjacent to a property line shall be subject to the noise level limits of this Chapter, measured at or beyond six (6) feet from the boundary of the easement upon which the equipment is located.

The applicable noise limits are summarized in Table 3.

While public facilities are not listed as a regulated zone in Table 3, the proposed uses associated with the project would be similar to the adjacent office uses in commercial zones which have a maximum noise level limit of 60 dB(A) L_{eq} during the daytime (7:00 a.m. to 10:00 p.m.) and 50 dB(A) L_{eq} during the nighttime (10:00 p.m. to 7:00 a.m.) beyond the property line. However, as stated in Section 9.20.040(E) of the Municipal Code, when two

adjoining properties are within different zones, and in turn have different standards for the noise limit, the sound level limit at the boundary between the two zoning districts is the arithmetic mean of the respective limits of the two districts. Thus, assuming the City Hall/Town Hall property is commercial utilizing the noise level limits designated for, and most of the adjacent properties are residential which is 50 dB(A) L_{eq} daytime and 40 dB(A) L_{eq} nighttime the average of the limits would be 55 dB(A) L_{eq} during the daytime and 45 dB(A) L_{eq} during the nighttime.

Similarly, the temporary relocation site at the Shores Park is zoned public facilities. Thus, the applicable noise level limits between the temporary relocation site and the adjacent residential uses are 55 dB(A) L_{eq} during the daytime and 45 dB(A) L_{eq} during the nighttime.

Table 3
Municipal Code Section 9.20.040 Noise Level Limits

Property Receiving Noise	Time of Day	One-Hour Average Sound Level (dBA) Limit
R1-5 – Medium Density Single-Family Residential R1-5B – Medium Density Single-Family Residential – Beach R1-10 – Low Density Residential R1-10B – Low Density Residential – Beach R-2 – High Density Mixed Residential R1-14 – Modified Low Density Residential R1-40 – Very Low Density Residential RM-East – Medium Density Single-Mixed Residential – East RM-West – Medium Density Mixed Residential – West RM-Central – Medium Density Mixed Residential – Central RM-South – Medium Density Mixed Residential – South OS Overlay – Open Space Overlay Zone	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	50 40
NC – North Commercial Zone RC – Residential-Commercial Zone CC – Central Commercial Zone PC – Professional Commercial Zone BC – Beach Commercial Zone VC – Visitor Commercial Zone	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	60 50
RR – Railroad Right-of-Way Zone	7:00 a.m. to 10:00 p.m. 10:00 p.m. to 7:00 a.m.	60 55
SOURCE: Del Mar Municipal Code Section 9.20.040.		

3.2.2 Construction

Section 9.20.050 of the City's Municipal Code identifies construction noise level limits and states that:

> Any person who operates powered construction or landscape equipment and/or who erects, constructs, demolishes, excavates for, alters or repairs any

building or structure within the City of Del Mar in such a manner as to cause noise to be received beyond the boundaries of the property on which the construction work is occurring shall comply with the following:

A. No construction work shall be performed on Sundays or City holidays.
B. No construction work shall be performed before 9:00 a.m. or after 7:00 p.m. on Saturday.
C. No construction work shall be performed before 7:00 a.m. or after 7:00 p.m. on Monday through Friday.
D. Construction activity shall not cause an hourly average sound level greater than 75 decibels on property zoned or used for residential purposes.
E. Exception: A person may perform construction work on the person's own property, provided such construction activity is not carried on for profit or livelihood, between the hours of 10:00 a.m. and 5:00 p.m. on Sundays and City holidays.

4.0 Analysis Methodology

Future noise levels associated with proposed project construction and operation were predicted at thirteen locations in the vicinity of the project. The majority of locations were chosen to represent surrounding residences or the property lines between adjacent uses. The receiver locations are listed in Table 4 and shown in Figure 5.

Table 4
Receptors

Receptor ID	Address	Land Use
1	Western Property Line	Public Facilities
2	234 10th Street	Residential
3	225 11th Street	Residential
4	220 10th Street	Residential
5	219 11th Street	Residential
6	1023 Stratford Court	Residential
7	1005 Stratford Court	Residential
8	944 Camino Del Mar	Commercial
9	233 10th Street	Residential
10	227 10th Street	Residential
11	223 10th Street	Residential
12	215 10th Street	Residential
13	234 11th Street	Residential
14	717 Stratford Court	Residential
15	715 Stratford Court	Residential
16	156 7th Street	Residential
17	790 Stratford Court	Residential
18	818 Stratford Court	Residential

Image Source: USDA FSA (flown June 2014)

0 Feet 180

Project Boundary

Temporary Relocation Site

Structure No Longer Present

Modeled Noise Receivers

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FIGURE 5

Modeled Noise Receivers

4.1 Construction

For purposes of noise assessment, construction equipment can be considered to operate in two modes, stationary and mobile. Stationary equipment operates in one location for one or more days at a time, either as a fixed-power operation, such as pumps, generators, and compressors, or as a variable noise operation, such as pile drivers, rock drills, and pavement breakers. Mobile equipment moves around the construction site with power applied in cyclic fashion, such as bulldozers, graders, and loaders (Federal Transit Administration [FTA] 2006). Noise impacts from stationary equipment are assessed from the center of the equipment, while noise impacts for mobile construction equipment are assessed from the center of the equipment activity or construction site.

Variation in power of individual pieces of equipment imposes additional complexity in predicting the noise source level from construction equipment. The L_{eq} of the operation for that piece of equipment can be determined by describing the noise at a reference distance from the equipment operating at full power and adjusting the level based on the observed duty cycle and the amount of time the engine is at full power during an activity (FTA 2006). Typical duty cycles and noise levels generated by representative pieces of equipment are listed in Table 5.

In addition, each stage of construction has a specific equipment mix, depending on the work to be accomplished during that phase. Thus, each stage has its own noise characteristics; some would have higher continuous noise levels than others, e.g., grading or paving. The L_{eq} of each phase is determined by combining the L_{eq} contributions from each piece of equipment used in that phase (FTA 2006). In typical construction projects, grading activities typically generate the highest continuous noise levels (L_{eq}) as grading involves the largest equipment, while pile driving and blasting typically generate the highest maximum noise levels (L_{max}).

4.2 Operation

Noise sources for project operations, both the new City Hall/Town Hall facilities, and the temporary operations at the relocation site, would include traffic, on-site mechanical sources, people talking/congregating, and parking area activities (e.g., cars starting, doors closing). As there are no City noise level compatibility restrictions for the project, this analysis focuses on noise level increases or greater exposure of adjacent receivers to noise at properties surrounding the existing City Hall/Town Hall site.

4.2.1 Traffic

Existing and future traffic volumes on Camino del Mar were obtained from the Traffic Impact Analysis (STC Traffic, Inc. 2015). Camino del Mar is currently a four-lane roadway, approximately 75 feet in width through the project area. The current posted speed is 25 miles per hour.

Table 5 Typical Construction Equipment Noise Levels			
Equipment	**Impact Device?**	**L_{MAX} at 50 feet [dB(A)]**	**Acoustical Use Factor (%)**
Auger Drill Rig	No	85	20%
Backhoe	No	80	40%
Chain Saw	No	85	20%
Compactor (ground)	No	80	20%
Compressor (air)	No	80	40%
Concrete Mixer Truck	No	85	40%
Concrete Pump	No	82	20%
Concrete Saw	No	90	20%
Crane (mobile or stationary)	No	85	20%
Dozer	No	85	40%
Dump Truck	No	84	40%
Excavator	No	85	40%
Front End Loader	No	80	40%
Generator (25 KVA or less)	No	70	50%
Generator (more than 25 KVA)	No	82	50%
Grader	No	85	40%
Jackhammer	Yes	85	20%
Mounted Impact Hammer (hoe ram)	Yes	90	20%
Paver	No	85	50%
Pneumatic Tools	No	85	50%
Pumps	No	77	50%
Rock Drill	No	85	20%
Roller	No	80	20%
Scraper	No	85	40%
Tractor	No	84	40%
Vacuum Excavator (vac-truck)	No	85	40%
Vibratory Concrete Mixer	No	80	20%
SOURCE: FTA 2006. KVA = kilovolt amperes			

The existing ADT volume on this segment of Camino del Mar is 18,756. The existing plus project ADT volume would be 18,929 north of 11th Street and 19,037 south of 10th Street. Peak hour volumes were estimated to be 10 percent of the ADT. Based on field traffic counts, the current traffic mix is estimated to be 94.5 percent automobiles, 1 percent motorcycles, 0.5 percent buses, 3 percent medium trucks, and 1 percent heavy trucks.

The future 2035 ADT volume on this segment of Camino del Mar is projected to be 22,800 without the proposed project. With the proposed project in 2035, the ADT volumes on Camino del Mar would be 22,973 north of 11th Street and 23,081 south of 10th Street. As the relocation site is a temporary use and its use would cease once the proposed City Hall is completed, there would not be any cumulative traffic noise impacts in 2035.

Table 6 summarizes the traffic parameters used in this analysis.

Table 6 Traffic Noise Modeling Parameters							
		Traffic Mix (Percent)					
Roadway	Future ADT	Autos	Motor-cycles	Buses	Medium Trucks	Heavy Trucks	Speed (mph)
Camino del Mar	North of 11th Street – 22,973 South of 10th Street – 23,081	94.5	0.5	1.0	3.0	1.0	25

4.2.2 Stationary Sources

The noise sources on-site would be the ventilation for the mechanical equipment used to heat and cool the office and meeting space, as well as ventilation for the parking structure, the emergency generator, and parking areas. Noise levels due to on-site sources were modeled using SoundPLAN Essential, version 3.0 (SoundPLAN) (NAVCON Engineering 2014). The SoundPLAN program models noise propagation following the International Organization for Standardization method *ISO 9613-2 – Acoustics, Attenuation of Sound during Propagation Outdoors*. The model calculates noise levels at selected receiver locations using input parameter estimates such as total noise generated by each noise source, distances between sources, barriers, and receivers; and shielding provided by intervening terrain, barriers, and structures.

4.2.2.1 Modeling Input

The space heating and cooling system would consist of a large system housed within the southern end of the buildings near 10th Street. A ventilation shaft and port would be located near the proposed elevator with the port located at the top of the structure and oriented upward. Similarly, a ventilation shaft of the parking structure would be located in the same general area with the same orientation. No manufacturer, brand, or model of units has been selected for use in the project at this stage of design. Typically, a capacity of 1 ton per 500 square feet would be required. With this assumption, the initial 12,450 square feet of proposed space would require the equivalent of a 25-ton unit. However, unlike a roof-mounted system, this proposed system would be located within a maintenance room of the substructure with only air supply and exhaust ventilation visible or audible outside the structure. For modeling purposes, a similar noise level from the heating and cooling system was modeled for the parking ventilation exhaust.

Based on a review of various manufacturer specifications for example units, a representative noise level for the air intake and exhaust ports would be sound power levels of 88 dB(A) and 73 dB(A) L_{pw}. This is approximately equal to a sound pressure level of 81 dB(A) L_{eq} and 66 dB(A) L_{eq} at 3 feet for exhaust and intake, respectively. For the daytime hours, all units were modeled operating at full capacity. For the nighttime hours, due to cooler temperatures and a smaller area occupied than during the daytime, it was assumed that the units would operate at 50 percent capacity.

For the proposed generator, it has been estimated that a 100-kilowatt generator would be necessary to maintain critical City functions in case of emergency. While no specific model generator has been chosen, for modeling purposes, a Generac Model SG100 industrial

spark-ignited generator set was used to simulate the proposed generator. The final location of the generator has not been determined. Currently, the generator is proposed to be located within the same mechanical room as the ventilation system, however, to present a worst-case scenario for impact analysis, the generator was modeled as being located at the south edge of the proposed Town Hall structure adjacent to 10th Street at surface level. If the generator were to be located at surface level it would include an acoustical enclosure. The unenclosed generator is estimated to generate 83.8 dB(A) L_{eq} at 23 feet. Depending on the type of enclosure (Standard to Level 2), a 5 to 13 dB(A) reduction is achievable. Based on the options available, a Level 1 rated enclosure capable of achieving a 7.5 dB(A) reduction was modeled for the enclosure.

The parking area was modeled based on a typical vehicle movement generating a sound power level of 85.4 dB(A) per movement (Bayerisches Landesamt für Umwelt 2007). A full movement includes the arrival and departure in the same hour as well as travel through the parking area. Based on exposure and proximity, the lower parking lot would have the greatest potential to impact adjacent properties. As a worst-case scenario, the parking lot and structure were modeled with 100 percent activity. This activity level is intended to simulate an active Town Hall meeting and is assessed against the evening hour time limits.

An amplified sound system is proposed for Town Hall meetings and outdoor events in the plaza. The amplified sound system would consist of a satellite speaker system. The purpose of a satellite speaker system is to allow a speaker to be placed in close proximity of the receivers thus requiring less volume to reach everyone. The area proposed for the amplified sound system would be partially shielded from the western property line by the City Hall building and to the south by the Town Hall building. With the use of a satellite speaker system, the shielding by the City Hall and Town Hall, and proximity of the open plaza area to Camino del Mar, noise levels from the amplified address system would not be anticipated to exceed the nighttime noise level limit of 45 dB(A) L_{eq} at any residential property line. Therefore, the amplified sound system is not further analyzed.

5.0 Future Acoustical Environment and Impacts

5.1 Construction Noise

5.1.1 Project Site

The noise levels from project construction equipment were modeled and are summarized below in Table 7.

Table 7 Project Site Projected Construction Noise Levels					
Equipment (Type)	Quantity (Count)	Acoustical Use Factor (%)	Individual L_{max} at 50 feet (dB[A])	Cumulative L_{eq} at 50 feet (dB[A])	Distance to 75 dB(A) Contour (feet)
Excavation/Grading					
Dozer/Loader	1	40	80	84	170
Excavator	1	40	85		
Dump Truck	1	40	84		
Building Construction					
Crane	1	40	80	82	115
Loader/Forklift	1	40	82		
Generator	1	50	70		
Paving					
Cement/Asphalt trucks	1	40	84	83	140
Rollers	2	40	84		
Finishwork					
Compressors	1	40	80	83	130
Generators	1	50	82		
Manlift	1	20	85		
SOURCE: FTA 2006. L_{max} = maximum noise levels; L_{eq} = average sound level.					

As shown in Table 7, the loudest construction activity would be excavation. Noise levels during excavation would attenuate below 75 dB(A) L_{eq} at a distance of approximately 170 feet from the center of construction activities. Using the loudest equipment noise level of 84 dB(A) L_{eq} as a reference, noise levels were calculated for receivers 1 through 13. Noise level calculations at receivers 14 through 18 are discussed under the "Temporary Relocation Site" discussion below.

Table 8 provides a list of receivers with their approximate resultant noise level. Modeled receiver locations are shown in Figure 5.

Affected sensitive noise receivers as defined by the City Municipal Code include single-family residences along 10th and 11th streets, northwest, west, and southwest of the project site. These locations are represented by receiver locations 2 through 13. As shown in Table 8, At this distance, noise levels from construction would reach up to 80 dB(A) L_{eq} with maximum noise levels of up to 82 dB(A) L_{max}. These noise levels would exceed the City noise level limit for construction of 75 dB(A) L_{eq}. Therefore, noise abatement measures would be required to reduce noise levels to 75 dB(A) L_{eq} or less. A barrier that blocks the "line of sight" between a noise source and a receiver will achieve a minimum 5 dB(A) reduction in noise levels. Based on the conceptual site plan and elevations of the existing site, the adjacent receptors, anticipated construction equipment, and future finished elevations of the site, a 10-foot-high barrier would be required along the western property line to reduce construction noise levels to less than 75 dB(A) L_{eq}.

Table 8 Predicted Construction Noise Levels			
Receptor ID	Address	Nosie Level	Does noise level exceed standard?
1	Western Property Line	80	Yes
2	234 10th Street	80	Yes
3	225 11th Street	80	Yes
4	220 10th Street	76	Yes
5	219 11th Street	75	No
6	1023 Stratford Court	73	No
7	1005 Stratford Court	72	No
8	944 Camino Del Mar	71	No
9	233 10th Street	71	No
10	227 10th Street	70	No
11	223 10th Street	70	No
12	215 10th Street	69	No
13	234 11th Street	71	No
14	717 Stratford Court	83	Yes
15	715 Stratford Court	69	No
16	156 7th Street	72	No
17	790 Stratford Court	73	No
18	818 Stratford Court	63	No
[1] Receiver ID matches locations shown in Figure 5.			

Construction activities would occur during daytime hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and Saturday between the hours of 9:00 a.m. and 7:00 p.m., and no work would be conducted on Sundays or City designated holidays. While construction noise would constitute a temporary and potentially significant impact to nearby residents, with implementation of Noise Abatement Measure N-1, noise levels would be reduced to comply with local ordinances.

Noise Abatement Measure N-1. The following noise abatement measure will be required during project construction to minimize the impact of temporary construction-related noise on nearby sensitive receptors:

- A noise barrier shall be erected along the entire length of the western property line of the project site during all phases of construction that would require equipment to be used outdoors. The top of the noise barrier shall be 10 feet above the existing grade. The noise barrier must be constructed of a material with a minimum weight of 2 pounds per square foot with no gaps or perforations. Noise barriers may be constructed of, but are not limited to, 5/8-inch plywood, 5/8-inch oriented strand board, or hay bales. Alternatively, a portion of the temporary barrier may be shortened if erected atop the permanent barrier identified in N-3, if the minimum height of 10 feet above grade of the construction site is maintained.

5.1.2 Relocation Site

The relocation site would require limited construction involving removal and reconstruction of the existing driveway to provide adequate access to the site, and placement/removal of the portables, with shallow trenching for utilities. The primary noise generating activities would be associated with the demolition of the existing driveway, loading of the materials into trucks, and the cement truck associated with paving. These activities are only expected to take two to three days and given the small working area, it is expected that only one piece of heavy construction equipment would be active at any one time. Based on this scenario, noise levels from construction equipment for the temporary relocation site are estimated to reach 75 dB(A) L_{eq} at distances of less than 50 feet. This reference noise level was used to calculate noise levels at receivers 14 through 18 shown in Table 8.

Affected sensitive noise receivers as defined by the City Municipal Code, in the vicinity of the temporary relocation site include single-family residences directly south of the project site and across Stratford Court west of the project site. The nearest residential property line is south of the relocation site. Construction activities at the relocation site includes construction of the driveway improvements, installation of the temporary portable structures, and shallow trenching for utility line connections for the portable structures. Construction associated with the placement of the portables would involve limited heavy equipment. Utility trenching would occur at the location of the portable structures and extend to the utility connection points near the relocation site's western boundary with Stratford Court. The driveway improvements would occur at the southwestern corner of the relocations site. Of all these activities, the demolition and construction of the driveway has the greatest potential to result in noise impacts at surrounding residential properties due to the type of activities and proximity to residential property lines.

As shown in Table 8, the nearest receiver to the driveway construction activities would be the residence located at 717 Stratford Court (Receiver 14), which noise levels from construction would reach up to 83 dB(A) L_{eq} with maximum noise levels of up to 87 dB(A) L_{max}. These noise levels would exceed the City noise level limit for construction of 75 dB(A) L_{eq}. Therefore, noise abatement measures would be required to reduce noise levels to 75 dB(A) L_{eq} or less. Based on the elevations of the relocation site and adjacent properties, and anticipated construction equipment, a 10-foot-high barrier with a length of 20 feet would be required along the southern property line to reduce construction noise levels to less than 75 dB(A) L_{eq} during the construction of access improvements at the relocation site.

The Winston School is located on a leasehold within the City's Shores Park property and, the City's construction standards would not apply because there is no separate property line for the school. However, for purpose of disclosure, the following information is provided.

The proposed driveway improvements would be located approximately 200 feet from the nearest (southernmost) school building. At this distance, noise levels from construction would attenuate to approximately 63 dB(A) L_{eq} or less. Based on the type of buildings, the buildings is estimated to provide approximately 30 dB(A) attenuation, reducing the interior noise levels to less than 35 dB(A) during construction, which would require two to three

days to complete. Therefore, due to the short duration and resultant noise levels, noise impacts from construction at the temporary relocation site would have a less than significant impact on the Winston School.

As with construction at the project site, construction activities would occur during daytime hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, and Saturday between the hours of 9:00 a.m. and 7:00 p.m., and no work would be conducted on Sundays or City designated holidays. While construction noise would constitute a temporary and potentially significant impact to nearby residents, with implementation of Noise Abatement Measure N-2, noise levels would be reduced to comply with local ordinances.

Noise Abatement Measure N-2. The following noise abatement measure will be required during project construction to minimize the impact of temporary construction-related noise on nearby sensitive receptors:

- To ensure construction noise levels do not exceed the construction noise levels limits, the City shall monitor noise levels during construction, and if noise levels exceed 75 dB(A) L_{eq} at the property line on 717 Stratford Court (Receiver 14), a noise barrier shall be erected beginning at the edge roadway and extending east 20 feet along the southern property line of the relocation site. The noise barrier shall be 10 feet above the existing grade and be constructed of a material with a minimum weight of 2 pounds per square foot with no gaps or perforations. Noise barriers may be constructed of, but are not limited to, 5/8-inch plywood, 5/8-inch oriented strand board, or hay bales. Alternatively, a portion of the temporary barrier may be shortened if erected atop the permanent barrier identified in MM-NOS-4, if the minimum height of 10 feet above grade of the construction site is maintained.

5.2 Operation Noise

5.2.1 Traffic

5.2.1.1 Project Site

The project would generate an increase in traffic that would represent an increase of approximately 1 percent north of 11th Street and a 1.5 percent increase south of 10th Street. Relative to the existing noise levels and traffic volumes, an increase in traffic of this level would result in a less than 1 CNEL increase in ambient noise levels and would not generally be perceptible to the average human ear.

Under the 2035 cumulative condition, the traffic increase on Camino del Mar without the project would result in an approximate 1 CNEL increase over existing conditions. The proposed project's contribution to that increase would be less than a tenth of a decibel. As with the increase under the existing plus project analysis, the increase of 1 decibel would not be considered a perceivable increase in the ambient noise environment.

A secondary noise effect would be related to the site design that would alter placement of the buildings on-site with respect to the shielding of noise for the properties located west of the project site. This could have different effects depending on the final line of sight between an existing receiver and Camino del Mar as well as the presence or absence of intervening structures. Therefore, to disclose the change the project would have on traffic noise shielding, two conditions were modeled based on both the existing condition and the completed project. Projected changes in traffic volumes from the Traffic Impact Analysis (STC Traffic, Inc. 2015) are also reflected in the modeling. The existing and future conditions are shown on Figures 6 and 7. As shown on Figures 6 and 7, the noise contours would be altered by the grading and leveling of the site, however, as the primary building site would be raised up along Camino del Mar, on the deck of the proposed parking garage, the new site design would offer similar noise shielding to residences located west of the project site.

5.2.1.2 Relocation Site

The relocation of City Hall would create a redistribution of traffic that currently accesses City Hall. Existing traffic volumes on Stratford Court are 786 ADT. The existing City Hall generates 384 trips daily. This would increase the traffic volume on Stratford Court to 1,170 ADT, which would increase the noise levels from 59 CNEL to 61 CNEL at 50 feet from the centerline of Stratford Court. The increase in traffic would result in a less than 2dB(A) increase in ambient noise levels. However, as an increase of 3 dB(A) or less is a barely perceivable change in noise levels, and the increase would be temporary, the impacts from the redistribution of traffic associated with the temporary relocation site would be less than significant.

5.2.2 Stationary Sources

5.2.2.1 Project Site

Stationary on-site noise sources associated with the project include mechanical equipment associated with monthly testing of an emergency generator; the heating, cooling, and ventilation equipment; and parking areas.

Image Source: USDA FSA (flown June 2014)

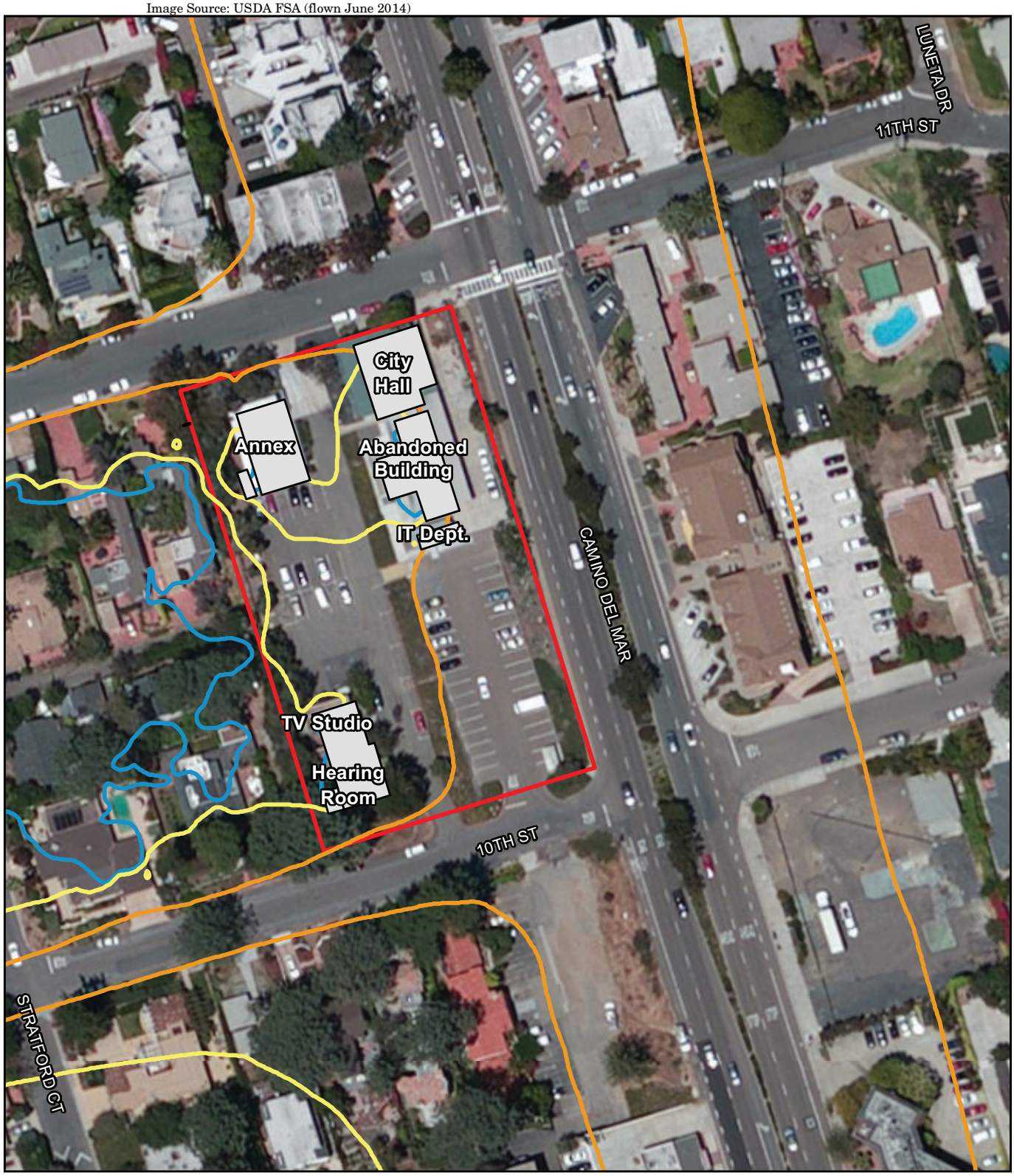

FIGURE 6

City Hall Site Existing Traffic Noise Level Contours

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Image Source: USDA FSA (flown June 2014)

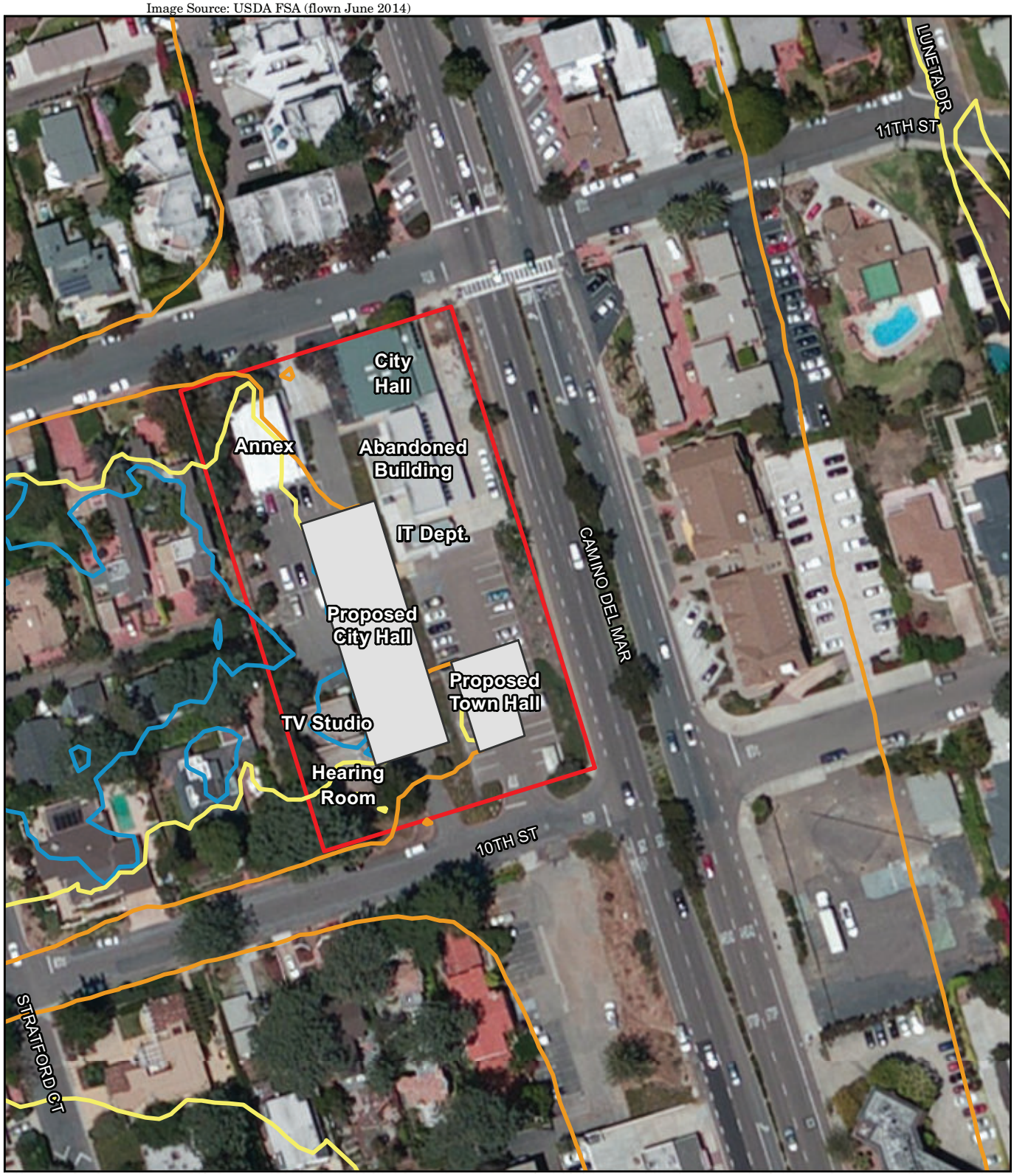

FIGURE 7

City Hall Site Future Traffic Noise Level Contours

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Image Source: USDA FSA (flown June 2014)

FIGURE 8

City Hall Site Stationary Source Noise Level Contours

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Table 9 Project Site Modeled Stationary Noise Source Levels						
Receiver	Zoning	Daytime/ Nighttime Noise Level Limit	Modeled Noise Level	Exceed Noise Level Limit (Daytime/ Nighttime)	Abated Noise Level	Exceed Noise Level Limit (Daytime/ Nighttime)
1	Residential	55/45	48	No/Yes	44	No/No
2	Residential	55/45	54	No/Yes	44	No/No
3	Residential	55/45	55	No/Yes	45	No/No
4	Residential	55/45	47	No/Yes	43	No/No
5	Residential	55/45	46	No/Yes	40	No/No
6	Residential	55/45	43	No/No	37	No/No
7	Residential	55/45	38	No/No	36	No/No
8	Commercial	60/50	45	No/No	45	No/No
9	Residential	55/45	43	No/No	43	No/No
10	Residential	55/45	42	No/No	41	No/No
11	Residential	55/45	40	No/No	39	No/No
12	Residential	55/45	36	No/No	35	No/No
13	Residential	55/45	42	No/No	42	No/No

Based on the noise level contours shown on Figure 8 and reported in Table 9, noise levels at the western property line would not exceed the allowable daytime limits but would exceed the nighttime property line limit due to activities in the lower surface parking lot. Based on the results of the noise modeling, noise generated from inside the parking garage, on both floors combined, would not be a substantial contributor to this exceedance. Thus, while some parking noise from the garage may be heard at local properties, these noise levels would not exceed the applicable thresholds and no attenuation of interior garage noise levels would be required. Please also note that based on the noise levels at receivers 8 and 9, the ventilation for the mechanical equipment and testing the emergency generator would not exceed the allowable noise level limits at adjacent properties.

As stated above, the primary source of noise at the western property line would be associated with the proposed lower surface parking lot. Of these operational noise sources, the parking activities (e.g., doors and trunks opening and closing, cars starting, accelerating, and stopping, tires squealing, etc.) are potentially the loudest with noise levels ranging from 84-98 L_{pw}. While City facilities would generally be closed after 10:00 p.m., due to the potential for public hearings or other meetings extending beyond 10:00 p.m., mitigation was considered to reduce nighttime noise levels to comply with the City property line limits. A couple of options are available to reduce nighttime noise levels from the parking lot. The first would be to limit the use of the parking lot after 10:00 p.m. which is not desirable or feasible.

The second would be to erect a barrier to shield adjacent residents from the parking lot noise (N-3). A noise barrier was modeled along the western property line, and based on the modeling as presented in Table 9 and Figure 9, a continuous barrier with a height of 8 feet

above finish grade for the parking lot, with a length of approximately 250 feet, would be sufficient to block the "line of sight" for and reduce noise levels to 45 dB(A) L_{eq} or less at the adjacent residential properties.

Noise Abatement Measure N-3. The following noise control measure is required to be incorporated into the project to reduce the impact of operation-related noise impacts on nearby sensitive receptors:

- A noise barrier, as shown on Figure 9, will be erected along the western entire length of the lower (western) parking lot. The top of the noise barrier shall be a minimum of 8 feet above the existing grade of the parking lot and be constructed of a material with a minimum weight of 2 pounds per square foot with no gaps or perforations. Noise barriers may be constructed of, but are not limited to, masonry block, concrete panels, 18-guage steel sheets, 5/8-inch plywood, 5/8-inch oriented strand board, or hay bales. If wood is used as the primary barrier component, the fence boards must overlap or be of "tongue and groove" construction with a joining compound between the boards to ensure there would be gaps or holes in the fence; and annual inspection and maintenance must be conducted for the life of the project to ensure the barrier continues to perform to the minimum requirements.

5.2.2.2 Relocation Site

The noise sources associated with the relocation site would be the wall-mounted heating, ventilation, and air conditioning (HVAC) units for the portable structures and the parking lot. A variety of HVAC units were reviewed for the portable structures and all HVAC units were similar in noise ratings, with a sound power of approximately 88 to 89 decibels. As with the stationary source modeling conducted for the project site, all stationary sources were modeled as active at the same time to present a worst-case analysis. That is, modeling included both HVAC units operating at maximum output for the full hour and that the parking lot was fully active with all spaces being parked in or exited in the same hour.

As stated previously, the parking activities (e.g., doors and trunks opening and closing, cars starting, accelerating, and stopping, tires squealing, etc.) are potentially the loudest with noise levels ranging from 84-98 Lpw. While the existing parking lot is currently being used as an overflow parking area for the Winston School and Shores Park and is not a new noise source, the use of the temporary relocation site would substantially increase parking activities within the parking lot. This increase in usage would only occur on occasions when there is a public meeting and the parking lot is full, which is would occur at night no more than once a month. Therefore, the estimated noise levels associated with parking are considered conservative and likely overestimate the typical parking noise impact.

Image Source: USDA FSA (flown June 2014)

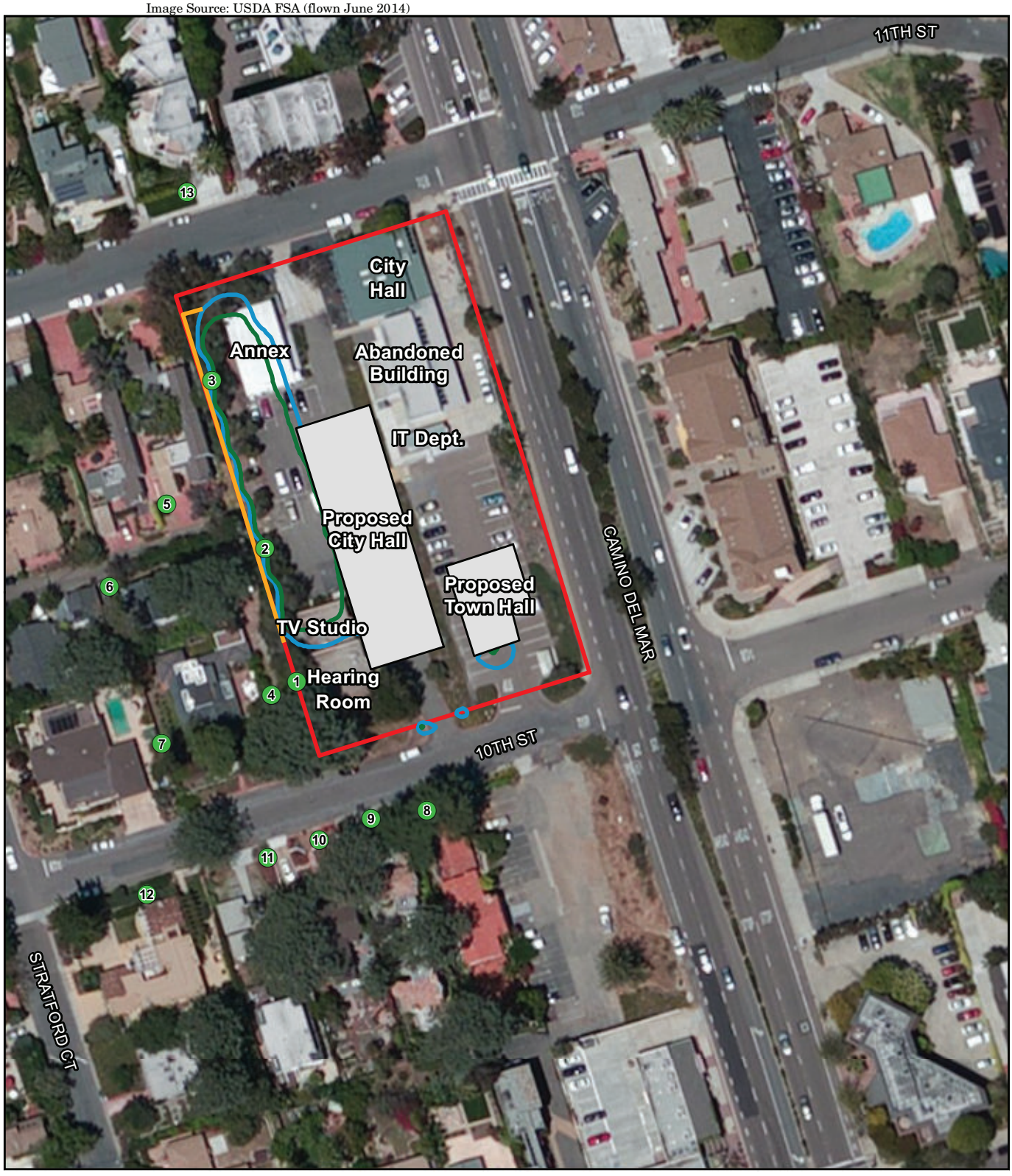

FIGURE 9

City Hall Site Stationary Source Noise Level Contours with Noise Abatement

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Noise contours were developed and are shown on Figure 10. Noise levels at specific receiver locations are presented in Table 10. Based on the noise levels and contours, noise from the temporary relocation site parking lot would not exceed the daytime noise level limits of 50 dB(A) L_{eq} at any receiver; however, noise levels would exceed the nighttime noise level limit of 45 dB(A) L_{eq} at the properties immediately south of the relocation site and those along Stratford Court, across from the parking area. While the majority of City functions do not occur after 10:00 p.m., there could be regularly scheduled City hearings at the site, which may extend past 10:00 p.m. and could result in parking activity after 10:00 p.m. It should be noted that while the HVAC do represent substantial contributors to the predicted noise levels, these sources are secondary to the parking lot noise.

As with the lower parking lot at the project site, a couple of options are available to reduce noise levels to comply with the City property line limits at night. The first would be to limit the use of the parking lot after 10:00 p.m. The second would be to erect barriers around the parking area. As previously stated, the limitation of public hearings to conclude prior to 10:00 p.m. is not desirable or feasible. Thus, barriers were modeled to determine the height requirements necessary to reduce noise levels to comply with the City property line limits.

To lower noise levels at the properties across Stratford Court, a barrier was modeled along the western boundary of the parking lot generally in the same location as the existing fence. Based on the modeling presented in Table 10, and as shown on Figure 10, a barrier with a height of 6 feet above finish grade and 290 feet in length would be sufficient to block the "line of sight" noise and reduce noise levels to less than 45 dB(A) L_{eq} at residential properties located across Stratford Court.

To lower noise levels at the properties to the south of the relocation site, another 6-foot-high barrier was modeled at the southern property line of the relocation site. As shown on Figure 10 and Table 9, a barrier with a height of 6 feet above finish grade and a length of 160 feet, located along the southern boundary of the relocation site, would reduce noise levels at the adjacent residences to less than the property line limit of 45 dB(A) L_{eq} at night.

Table 10
Temporary Relocation Site
Modeled Stationary Noise Source Levels

Receiver	Zoning	Daytime/ Nighttime Noise Level Limit	Modeled Noise Level	Exceed Noise Level Limit	Abated Noise Level	Exceed Noise Level Limit
14	Residential	55/45	51	No/Yes	45	No/No
15	Residential	55/45	47	No/No	43	No/No
16	Residential	55/45	46	No/Yes	43	No/No
17	Residential	55/45	52	No/Yes	45	No/No
18	Residential	55/45	51	No/Yes	44	No/No

Image Source: USDA FSA (flown June 2014)

FIGURE 10
Temporary Relocation Site
Stationary Source Noise Level Contours

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Noise Abatement Measure N-4. The following noise control measure shall be required to be incorporated into the project at the relocation site to reduce the impact of operation-related noise impacts on nearby sensitive receptors:

- Noise barriers, as shown on Figure 11, shall be erected along the western entire length of the parking lot and for a length of 160 feet along the southern property line, beginning at the edge of the sidewalk and extending easterly. The top of the noise barriers shall be a minimum of 6 feet above the existing grade and be constructed of a material with a minimum weight of 2 pounds per square foot with no gaps or perforations. Noise barriers may be constructed of, but are not limited to, masonry block, concrete panels, 18-guage steel sheets, 5/8-inch plywood, 5/8-inch oriented strand board, or hay bales. If wood is used as the primary barrier component, the fence boards must overlap or be of "tongue and groove" construction with a joining compound between the boards to ensure there would be gaps or holes in the fence; and annual inspection and maintenance must be conducted for the life of the project to ensure the fencing continues to perform to the minimum requirements. Upon completion of the project, and removal of all structures and temporary uses from the site, the noise barrier may be removed, or if it is to remain, no further maintenance would be required for mitigation purposes as outlined above.

6.0 Conclusions

6.1 Construction

Construction activities would occur during daytime hours of 7:00 a.m. and 7:00 p.m. Monday through Friday, and Saturday between the hours of 9:00 a.m. and 7:00 p.m., and no work would be conducted on Sundays or City designated holidays. Construction activities would occur at the project site as well as the relocation site.

6.1.1 Project Site

Affected sensitive noise receivers as defined by the Municipal Code include single-family residences along 10th and 11th streets to the west. The nearest residences are approximately 80 feet from the center of the project construction area and adjacent to the western boundary of the project site. Based on the noise levels in Table 8 and the distance, noise levels from construction are estimated to reach up to 79 dB(A) L_{eq} with maximum noise levels of up to 82 dB(A) L_{max}. These noise levels would exceed the City noise level limit for construction. Therefore, a 10-foot-high barrier would be required along the western property line (Noise Abatement Measure N-1) to reduce construction noise levels to less than 75 dB(A) L_{eq}. Thus, while construction noise would constitute a temporary and potentially significant impact to adjacent residents, with implementation of Noise Abatement Measure N-1, noise levels would be reduced to 75 dB(A) L_{eq} or less.

Image Source: USDA FSA (flown June 2014)

FIGURE 11

Temporary Relocation Site Stationary Source Noise Level Contours with Noise Abatement

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6.1.2 Relocation Site

During the approximately 30-month relocation period, the City administrative operations that currently exist on-site, including the City administrative functions and the City Council and other committee hearings, would be relocated to the Shores Park lower parking area in portable structures. The relocation site would require limited construction involved in removing and reconstructing the existing driveway to provide adequate access to the site, and possible shallow trenching for utility connections. Affected sensitive noise receivers as defined by the Municipal Code in the vicinity of the relocation site include single-family residences directly to the south and across Stratford Court to the west. The nearest residential property line is approximately 20 feet south of the center of the construction area for the temporary relocation site. At this distance, noise levels from construction would reach up to 83 dB(A) L_{eq} with maximum noise levels of up to 87 dB(A) L_{max}. These noise levels would exceed the City noise level limit for construction. Therefore, a 10-foot-high barrier with a length of 20 feet would be required (Noise Abatement Measure N-2) along the southern property line to reduce construction noise levels to less than 75 dB(A) L_{eq} during the construction of access improvements at the relocation site. Thus, while construction noise would constitute a temporary and potentially significant impact to adjacent residents, with implementation of Noise Abatement Measure N-2, noise levels would be reduced to comply with local ordinances.

6.2 Operation

Noise sources for the operation of the project, for both the new City Hall/Town Hall facilities, and use of the temporary relocation site, would include traffic, on-site mechanical sources, people talking/congregating, and parking area activities (e.g., cars starting, doors closing).

6.2.1 Traffic Noise

6.2.1.1 Project Site

The project would generate an increase in traffic by approximately 1 percent north of 11th Street and a 1.5 percent increase south of 10th Street (STC Traffic, Inc. 2015). Relative to the existing noise levels and traffic volumes, an increase in traffic of this level would result in a less than 1 CNEL increase in ambient noise levels and would not generally be perceptible to the average human ear.

In the 2035 cumulative condition, the traffic increase on Camino del Mar without the project would result in an approximate 1 CNEL increase over existing conditions. The project's contribution to that increase would be less than a tenth of a decibel. As with the increase under the existing plus project analysis, the increase of 1 decibel would not be considered a perceivable increase in the ambient noise environment.

A secondary noise effect would be related the site design that would alter placement of the buildings on-site with respect to the shielding of noise for the properties located west of the project site. Based on noise modeling, the noise contours would be altered by the grading and leveling of the site, however, as the primary building site would be raised up along Camino del Mar, on the deck of the proposed parking garage, the new site design would offer similar noise shielding to residences located west of the project site.

6.2.1.2 Relocations Site

The relocation of City Hall would create a redistribution of traffic that currently accesses City Hall. Existing traffic volumes on Stratford Court are 786 ADT. The existing City Hall generates 384 trips daily. This would increase the traffic volume on Stratford Court to 1,170 ADT, which would increase the noise levels from 59 CNEL to 61 CNEL at 50 feet from the centerline of Stratford Court. The increase in traffic would result in a less than 2 dB(A) increase in ambient noise levels. However, as an increase of 3 dB(A) or less is a barely perceivable change in noise levels, and the increase would be temporary, the impacts from the redistribution of traffic associated with the temporary relocation site would be less than significant.

6.2.2 Stationary Sources

6.2.2.1 Project Site

The on-site noise sources include mechanical ventilation equipment, a standby generator, parking activities, and the amplified sound system. The mechanical equipment and generator would be located within the upper floor of the parking structure with the intake and exhaust ports located on the south side of the property near the elevator shaft. As shown on Figure 8, noise levels from the mechanical equipment would not exceed the allowable limits at any residential properties.

The amplified sound system would be located east of the City Hall building and north of the Town Hall building in the public plaza. These buildings would provide shielding for residences to the south and west. The amplified sound system would use relatively small satellite speakers located throughout the plaza area to localize noise near the audience. Based on the use of a satellite speaker system and the shielding provided by the proposed structures, noise levels from the amplified sound system alone would not exceed allowable noise level limits at adjacent properties.

The primary source of noise at the western property line would be associated with the lower surface parking lot. Of these operational noise sources, the parking activities (e.g., doors and trunks opening and closing, cars starting, accelerating, and stopping, tires squealing, etc.) are potentially the loudest with noise levels ranging from 84-98 L_{pw}. Due to the limited openings and distance from the property line, the parking structure is a secondary noise source that would not exceed the property line limits without the contribution of noise from the lower parking lot.

Based on predicted noise levels shown on Figure 8, parking noise would exceed the City noise ordinance during the nighttime hours (10:00 p.m. to 7:00 a.m.). As there is potential for nighttime activities within the surface parking lot, and restricting its use after 10:00 p.m. is not an option, a noise barrier was modeled along the western property line. Based on the modeling as shown on Figure 9, a continuous barrier with a height of 8 feet above finish grade of the parking lot with a length of approximately 250 feet (Noise Abatement Measure N-3), would be sufficient to block the "line of sight" and reduce noise level to the nighttime noise ordinance limit of 45 dB(A) L_{eq} or less at the adjacent residential properties.

6.2.2.2 Relocation Site

The noise sources associated with the relocation site would be the wall-mounted HVAC units for the potable structures and the parking lot. A variety of HVAC units were reviewed as possible equipment that may be used for the portable structures and all reviewed HVAC units were similar in noise ratings, with a sound power of approximately 88 to 89 decibels. As with the stationary source modeling conducted for the project site, all stationary sources were modeled as active at the same time to present a worst-case analysis. That is, modeling included both HVAC units operating at maximum output for the full hour and a parking lot with all spaces being parked in or exited in the same hour.

As stated previously, the parking activities (e.g., doors and trunks opening and closing, cars starting, accelerating, and stopping, tires squealing, etc.) are potentially the loudest with noise levels ranging from 84-98 L_{pw}. While the existing parking lot is currently being used as an overflow parking area for the Winston School and Shores Park and is not a new noise source, the use of the temporary relocation site would substantially increase parking activities within the parking lot. This increase in usage would only occur on occasions when there is a public meeting and the parking lot is full, which would occur at night no more than once a month. Therefore, the estimated noise levels associated with parking are considered conservative and likely overestimate the typical parking noise impact.

Based on the noise levels shown on Figure 10, noise from the temporary relocation site parking lot would not exceed the daytime noise level limits at any receiver; however, noise levels would exceed the nighttime noise level limit at the properties immediately south of the relocation site and across Stratford Court from the parking area. It should be noted that while the HVAC do represent substantial contributors to the predicted noise levels, these sources are secondary to the parking lot noise.

To lower noise levels at the properties across Stratford Court, a barrier was modeled along the western boundary of the parking lot generally in the same location as the existing fence. Based on the noise levels shown on Figure 11, a barrier with a height of 6 feet above finish grade and 290 feet in length (Noise Abatement Measure N-3) would be sufficient to block the "line of sight" and reduce noise levels to less than 45 dB(A) L_{eq} at residential properties located across Stratford Court.

To lower noise levels at the properties to the south of the relocation site, a 6-foot-high barrier was modeled at the southern property line of the relocation site. Based on the

results of the model, a barrier with a height of 6 feet above finish grade and a length of 160 feet (Noise Abatement Measure N-4), located along the southern boundary of the relocation site, would reduce noise levels at the adjacent residences to less than the property line limit of 45 dB(A) L_{eq} at night.

7.0 References Cited

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2007 (Parkplatzlarmstudie 6) Parking Area Noise, Recommendation for the Calculation of Sound Emissions of Parking Areas, Motorcar Centers and Bus Stations as well as Multi-Storey Car Parks and Underground Car Parks. 6. Revised Edition.

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2013 Technical Noise Supplement to the Traffic Noise Analysis Protocol. September 2013. Available at http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013B.pdf.

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2006 Transit Noise and Vibration Impact Assessment, FTA-VA-90-1003-06. May. Available at http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf.

NAVCON Engineering

2014 SoundPLAN Essentials, version 3.0.

STC Traffic, Inc.

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ATTACHMENT 1

Noise Measurement Files

Summary

Filename	LxT_Data.044			
Serial Number	3829			
Model	SoundExpert™ LxT			
Firmware Version	2.206			
User				
Location	**MS 1**			
Job Description				
Note				
Measurement Description				
Start	2015/07/14 12:02:05			
Stop	2015/07/14 12:18:06			
Duration	0:16:00.8			
Run Time	0:16:00.8			
Pause	0:00:00.0			
Pre Calibration	2015/07/14 12:00:18			
Post Calibration	None			
Calibration Deviation	---			

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Freq. Weighting	A Weighting			
OBA Max Spectrum	At Lmax			
Overload	121.8 dB			
	A		**C**	**Z**
Under Range Peak	**78.0**		75.0	80.0 dB
Under Range Limit	**26.0**		25.2	32.0 dB
Noise Floor	16.2		16.1	21.9 dB

Results

LAeq	59.2 dB			
LAE	89.0 dB			
EA	89.030 µPa²h			
LApeak (max)	2015/07/14 12:06:46		97.0 dB	
LASmax	2015/07/14 12:06:54		80.7 dB	
LASmin	2015/07/14 12:17:37		44.9 dB	
SEA	-99.9 dB			

LAS > 85.0 dB (Exceedence Counts / Duration)	0	0.0 s
LAS > 115.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 135.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 137.0 dB (Exceedence Counts / Duration)	0	0.0 s
LApeak > 140.0 dB (Exceedence Counts / Duration)	0	0.0 s

Summary

Filename	LxT_Data.045			
Serial Number	3829			
Model	SoundExpert™ LxT			
Firmware Version	2.206			
User				
Location	**MS 2**			
Job Description				
Note				
Measurement Description				
Start	2015/07/14 12:23:07			
Stop	2015/07/14 12:39:08			
Duration	0:16:00.6			
Run Time	0:16:00.6			
Pause	0:00:00.0			
Pre Calibration	2015/07/14 12:22:19			
Post Calibration	None			
Calibration Deviation	---			

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Freq. Weighting	A Weighting			
OBA Max Spectrum	At Lmax			
Overload	121.9 dB			
	A		**C**	**Z**
Under Range Peak	**78.0**		75.0	80.0 dB
Under Range Limit	**26.0**		25.2	32.0 dB
Noise Floor	16.3		16.1	22.0 dB

Results

LAeq	52.9 dB			
LAE	82.7 dB			
EA	20.614 µPa²h			
LApeak (max)	2015/07/14 12:36:14		91.1 dB	
LASmax	2015/07/14 12:24:12		68.9 dB	
LASmin	2015/07/14 12:35:57		43.2 dB	

Summary

Filename	LxT_Data.046
Serial Number	3829
Model	SoundExpert™ LxT
Firmware Version	2.206
User	
Location	**MS 3**
Job Description	
Note	
Measurement Description	
Start	2015/07/14 12:44:05
Stop	2015/07/14 12:59:08
Duration	0:15:03.0
Run Time	0:15:03.0
Pause	0:00:00.0
Pre Calibration	2015/07/14 12:42:27
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	122.0 dB

	A	**C**	**Z**
Under Range Peak	**78.1**	75.1	80.1 dB
Under Range Limit	**26.0**	25.2	32.0 dB
Noise Floor	16.3	16.1	22.0 dB

Results

LAeq	54.6 dB		
LAE	84.2 dB		
EA	29.068 µPa²h		
LApeak (max)	2015/07/14 12:45:57	96.7 dB	
LASmax	2015/07/14 12:58:36	64.5 dB	
LASmin	2015/07/14 12:47:38	45.5 dB	

Summary

Filename	LxT_Data.047
Serial Number	3829
Model	SoundExpert™ LxT
Firmware Version	2.206
User	
Location	**MS 4**
Job Description	
Note	
Measurement Description	
Start	2015/07/14 13:17:14
Stop	2015/07/14 13:32:44
Duration	0:15:30.3
Run Time	0:15:30.3
Pause	0:00:00.0
Pre Calibration	2015/07/14 13:14:28
Post Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	A Weighting
Detector	Slow
Preamp	PRMLxT1L
Microphone Correction	Off
Integration Method	Linear
OBA Range	Normal
OBA Bandwidth	1/1 and 1/3
OBA Freq. Weighting	A Weighting
OBA Max Spectrum	At Lmax
Overload	121.9 dB

	A	**C**	**Z**
Under Range Peak	**78.1**	75.1	80.1 dB
Under Range Limit	**26.0**	25.2	32.0 dB
Noise Floor	16.3	16.1	22.0 dB

Results

LAeq	61.9 dB		
LAE	91.6 dB		
EA	161.230 µPa²h		
LApeak (max)	2015/07/14 13:17:20	97.4 dB	
LASmax	2015/07/14 13:17:36	75.9 dB	
LASmin	2015/07/14 13:29:07	50.1 dB	

Summary

Filename	LxT_Data.012			
Serial Number	3828			
Model	SoundExpert™ LxT			
Firmware Version	2.301			
User				
Location	**MS 5**			
Job Description				
Note				
Measurement Description				
Start	2015/08/18 9:34:06			
Stop	2015/08/18 9:49:10			
Duration	0:15:03.5			
Run Time	0:15:03.5			
Pause	0:00:00.0			
Pre Calibration	2015/08/18 9:29:30			
Post Calibration	None			
Calibration Deviation	---			
Overall Settings				
RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Freq. Weighting	A Weighting			
OBA Max Spectrum	At Lmax			
Overload	121.8 dB			
	A		**C**	**Z**
Under Range Peak	**78.1**		75.1	80.1 dB
Under Range Limit	**26.0**		25.2	32.0 dB
Noise Floor	16.3		16.1	22.0 dB
Results				
LAeq	72.4 dB			
LAE	102.0 dB			
EA	1.751 mPa²h			
LApeak (max)	2015/08/18 9:38:49		102.1 dB	
LASmax	2015/08/18 9:38:49		91.7 dB	
LASmin	2015/08/18 9:35:37		37.4 dB	

Summary

Filename	LxT_Data.061			
Serial Number	3827			
Model	SoundExpert™ LxT			
Firmware Version	2.206			
User				
Location	**MS6**			
Job Description				
Note				
Measurement Description				
Start	2015/08/18 9:34:04			
Stop	2015/08/18 9:49:04			
Duration	0:15:00.7			
Run Time	0:15:00.7			
Pause	0:00:00.0			
Pre Calibration	2015/08/18 9:32:11			
Post Calibration	None			
Calibration Deviation	---			

Overall Settings

RMS Weight	A Weighting			
Peak Weight	A Weighting			
Detector	Slow			
Preamp	PRMLxT1L			
Microphone Correction	Off			
Integration Method	Linear			
OBA Range	Normal			
OBA Bandwidth	1/1 and 1/3			
OBA Freq. Weighting	A Weighting			
OBA Max Spectrum	At Lmax			
Overload	121.9 dB			
	A		**C**	**Z**
Under Range Peak	**78.2**		75.2	80.2 dB
Under Range Limit	**26.1**		25.3	32.1 dB
Noise Floor	16.3		16.1	22.0 dB

Results

LAeq	56.6 dB			
LAE	86.2 dB			
EA	46.004 µPa²h			
LApeak (max)	2015/08/18 9:38:07		99.1 dB	
LASmax	2015/08/18 9:38:07		78.4 dB	
LASmin	2015/08/18 9:44:51		38.8 dB	