College Park East, College Park West and Leisure World Noise Study

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September 2015

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1.0 INTRODUCTION

In response to noise concerns raised by its residents, the City of Seal Beach (City or Seal Beach) initiated the preparation of an acoustical analysis for the purpose of: (1) documenting existing (August 2015) noise levels associated with and/or occurring in proximity to the San Diego (I-405), San Gabriel (I-605), and Garden Grove (SR-22) Freeways within the City's corporate boundaries; and (2) comparing existing (August 2015) noise levels to those previously predicted by the California Department of Transportation (Caltrans) and/or the Orange County Transportation Authority (OCTA), as predicted in the following documents prior to the completion of the proposed freeway improvements:

- California Department of Transportation (District 12) and Orange County Transportation Authority, "Final Environmental Impact Report/Statement – San Diego Freeway Improvement Project, Orange and Los Angeles Counties, California SCH #2009091001," March 2015;
- California Department of Transportation, "SR-22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, Noise Abatement Decision Report," February 1, 2010;
- California Department of Transportation (District 12) and Orange County Transportation Authority (Parsons), "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, 12-ORA-405-PM 22.3/24.0, 12-ORA-605-PM 3.0/ R1.6, 12-ORA-22-PM R0.3/R0.9, EA 071631, County of Orange," October 28, 2009; and
- California Department of Transportation (District 12) and Orange County Transportation Authority, "Final Environmental Impact Statement and Environmental Impact Report - Orange County Transportation Authority, State Route 22/West Orange County Connection, SCH No. 98064001," March 2003.

As indicated in Table 1 (Pre- and Post-SR-22/West County Connection Noise Levels), as presented in Table 3.9-1 (Existing Noise Levels at Garden Grove, Westminster, Santa Ana, Orange and Seal Beach Sites) and Table 4.9-11 (Existing, Predicted and Abated Future Noise Levels [Enhanced] Reduced Build Alternative) in Caltrans' "Final Environmental Impact Statement and Environmental Impact Report - Orange County Transportation Authority, State Route 22/West Orange County Connection, SCH No. 98064001" (March 2003), the following pre-2003 "existing noise levels" and "predicted future noise levels" (both with and without abatement) were identified in Seal Beach. The incorporation and efficacy of Caltrans' previously proposed noise abatement measures, including their status and compliance, has not been specifically addressed herein.

Although presented in the context of air quality and not noise, as illustrated in Figure 2-1 (Sensitive Receptor Locations) in Caltrans' "Air Quality Report - San Diego Freeway (I-405) Improvement Project SR-73 to I-605, Orange and Los Angeles Counties" (Caltrans, May 2011), included in the "Draft Environmental Impact Report/Environmental Impact Statement – San Diego Freeway Improvement Project, Orange and Los Angeles Counties, California, SCH #2009091001" (May 2012) and in Figure 3.2.6-3 therein, Caltrans' acknowledges that numerous "sensitive receptors" are located in Seal Beach directly adjacent to or in close proximity to the SR-22, I-405, and I-605 Freeways, including the Seal Beach Tennis Center, Blue Bell Park, Almond Park, and the College Park East (Almond Avenue), Leisure World (Beverly Manor Road), and College Park West (Harvard Lane, Park Drive, and College Park).

Presented herein are the results of noise measurements conducted at eight (8) separate locations during August 2015, including existing "sensitive receptor" locations within the College Park East (3651 Wisteria Lane, Almond Park, and Bluebell Park), College Park West (Edison Park and 333 Harvard Lane), and Leisure World (1201 Scioto Road, 13048 Del Monte Drive/1801 St. John Road, Building 40), and 1941 St. John Road, Building 34) neighborhoods. The field study included four 24-hour and eight 3-hour noise level measurements. This work was performed during August 4-26, 2015. The eight 3-hour measurements were timed to capture the morning (AM) and evening (PM) "peak-hour" noise periods. These peak-hour noise periods were established based on the results of the first 24-hour measurement obtained along Wisteria Lane (College Park West) immediately north of the I-405/SR-22 Freeway interchange.

Also presented herein are introductory discussions on the concepts and measurement of sound and applicable federal, State, and local noise regulations associated with noise generation and propagation. Additionally, this report explains the methodology which was applied by Caltrans in assessing existing and predicting future noise levels associated with Caltrans' I-405, I-605, and SR-22 Freeway improvement projects and how that methodology was applied to the assessment of project-related noise impacts in the City.

The data obtained in the field was compared with the relevant site-specific projections included in Table 6-2 (Traffic Noise Prediction and Barrier Analysis) in Caltrans' "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment" (October 28, 2009), as presented in Table 2 (Traffic Noise Prediction and Barrier Analysis). In no case were the City measured noise levels louder than those which was predicted by Caltrans and, in many cases, actual noise levels (as measured by the City) were lower those predicted therein.

While this report compares obtained noise levels to those projected by Caltrans, as well as to regulatory levels, it is not within the scope of this study to: (1) draw definitive conclusions as to: the potential "significance" of any measured noise levels under the provisions of the California Environmental Quality Act (CEQA) and its implementing guidelines; (2) assess the adequacy of the noise studies previously conducted by Caltrans and/or the OCTA; (3) identify actionable violations of existing public policies with regards to that noise; (4) assess the efficacy of existing noise attenuation measures (e.g., soundwalls) now in existence; and/or (5) to present additional mitigation measures and other strategies that could be employed by Caltrans, the City, or other parties to further reduce existing noise levels at and proximal to the locations examined herein.

2.0 FUNDAMENTALS OF TRAFFIC NOISE

2.1 Noise Definitions

"Sound" is a pressure wave transmitted through the air, described in terms of loudness or amplitude (measured in decibels [dB]), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration (measured in seconds or minutes). The standard unit of measurement of the loudness of sound is the decibel. Most people can detect changes in sound levels of approximately 3 dB under normal, quiet conditions. Changes of between 1 and 3 dB are generally detectable under quiet, controlled conditions and changes of less than 1 dB are usually indiscernible by the general public. In contrast, a change of 5 dB or greater is readily discernable to most people in an exterior environment. A change of 10 dB is usually perceived as a doubling or halving of noise.

Table 1

PRE- AND POST-SR-22/WEST COUNTY CONNECTION NOISE LEVELS
FINAL ENVIRONMENTAL IMPACT STATEMENT AND ENVIRONMENTAL IMPACT REPORT
ORANGE COUNTY TRANSPORTATION AUTHORITY, STATE ROUTE 22/WEST ORANGE COUNTY CONNECTION
SCH NO. 98064001
CALIFORNIA DEPARTMENT OF TRANSPORTATION AND ORANGE COUNTY TRANSPORTATION AUTHORITY, MARCH 2003[1]

Caltrans Site ID No.	**Site Description** (Distance expressed in meters [m] and feet [ft])	**Measured Noise Level** (dBA)	**Modeled Noise Level** (Highest noise hour) (dBA)	**Predicted Noise Level w/out Abatement** (Leq[h], dBA)	**Abatement**	**Predicted Noise Level with Abatement** (Leq[h], dBA)
I-A	337 Harvard, College Park West. 20-minute measurement taken at 7:25 AM. Surrounding area: mainly single-family homes	68.1	68 Leq(h), dBA	69	New noise barrier (NB-C1). Up to 4.9 m high (16 ft. high)	63
I-G	224 College Park Drive. 20-minute measurement taken at 9:45 AM. Surrounding area: mainly single-family homes	63.1	--	64	New noise barrier (NB-C1). Up to 4.9 m high (16 ft. high)	55
I-K	409 Purdue Circle, College Park West. 20-minute measurement taken at 8:35 AM. Surrounding area: mainly single-family homes	59.6	--	60	New noise barrier (NB-C1). Up to 4.9 m high (16 ft. high)	51
-	Bluebell Park, Almond Avenue. Modeled. Community park in single-family residential area. Primary use is community and recreational	--	67 Leq(h), dBA	69	None. Existing 4.9 m (16-18 ft.). This noise barrier is highest available (16 ft.)	69
B	3521 Columbine Street. 24-hour measurement taken at Almond Avenue side of house, directly across Almond Avenue from SR-22/I-405 noise barrier, 15 m (50 ft) from house. Surrounding area: single-family homes.	72 Leq(h) 75 CNEL	67 Leq(h), dBA	69	None. Existing 4.9 m (16-18 ft.). This noise barrier is highest available (16 ft.)	69
-	Almond Park, Almond Avenue. Modeled. Community park located in single-family residential area. Primary use is community and recreational	--	68 Leq(h), dBA	70	None. Existing 4.9 m (16-18 ft.). This noise barrier is highest available (16 ft.)	70

Table 1 (Continued)

PRE- AND POST-SR-22/WEST COUNTY CONNECTION NOISE LEVELS
FINAL ENVIRONMENTAL IMPACT STATEMENT AND ENVIRONMENTAL IMPACT REPORT
ORANGE COUNTY TRANSPORTATION AUTHORITY, STATE ROUTE 22/WEST ORANGE COUNTY CONNECTION
SCH NO. 98064001
CALIFORNIA DEPARTMENT OF TRANSPORTATION AND ORANGE COUNTY TRANSPORTATION AUTHORITY, MARCH 2003[1]

Caltrans Site ID No.	**Site Description** (Distance expressed in meters [m] and feet [ft])	**Measured Noise Level** (dBA)	**Modeled Noise Level** (Highest noise hour) (dBA)	**Predicted Noise Level w/out Abatement** (Leq[h], dBA)	**Abatement**	**Predicted Noise Level with Abatement** (Leq[h], dBA)
5	3550 Sunflower Circle. 15-minute measurement taken at 11:30 AM on Almond Drive side of house across street from SR-33/I-405 noise barrier. Surround area: mainly single-family homes.	63 Leq(h)	67 Leq(h), dBA	75	None. Noise barrier (NB-2) will not be constructed because existing sound wall (replaced by NB-2) will not be removed as originally planned. Therefore, NB-2 located at this location will not be constructed.	68
5-A	3530 Pansy Circle. Modeled. Second-row house. Single-family homes	--	67 Leq(h), dBA	75	None. Noise barrier (NB-2) will not be constructed because existing sound wall (replaced by NB-2) will not be removed as originally planned. Therefore, NB-2 located at this location will not be constructed.	68
5-B	3560 Wisteria Street. Modeled. Single-family home at the end of cul-de-sac. Existing noise barrier on westbound SR-22 to northbound I-405 connector.	--	66 Leq(h), dBA	76	None. Noise barrier (NB-2) will not be constructed because existing sound wall (replaced by NB-2) will not be removed as originally planned. Therefore, NB-2 located at this location will not be constructed.	66

Notes:
1. Caltrans and OCTA, "Final Environmental Impact Statement and Environmental Impact Report - Orange County Transportation Authority, State Route 22/West Orange County Connection, SCH No. 98064001," March 2003, Table 4.9-2 (Existing and Predicted Future Noise Levels (Enhanced) Reduced Build Alternative, p. 4.9-3 and Table 4.9-11 (Existing, Predicted and Abated Future Noise Levels (Enhanced) Reduced Build Alternative (for Proposed Height of Noise Barrier, See Appendix J), pp. 4.9-13.

Source: California Department of Transportation and Orange County Transportation Authority

Table 2

TRAFFIC NOISE PREDICTION AND BARRIER ANALYSIS
FINAL NOISE IMPACT RE-ASSESSMENT REPORT, STATE ROUTE 22/WEST ORANGE COUNTY CONNECTION
PHASE II (WEST COUNTY CONNECTORS) PROJECT
I-405/I-605 HOV CONNECTOR PROJECT SEGMENT
CALIFORNIA DEPARTMENT OF TRANSPORTATION AND ORANGE COUNTY TRANSPORTATION AUTHORITY
OCTOBER 28, 2009[X]

Rec. No.	Land Use[2]	Existing Noise Levels[1,3] (Leq[h], dBA)	Future Peak Hour Noise Levels (Leq[h], dBA)[1,5]													Barrier No./Location
			Project "Build" w/out Barrier	Activity Category and NAC	Impact Type (S,A/E or None)[4]	Noise Prediction with Barrier and Barrier Insertion Loss (I.L.)										
						6-foot		10-foot		12-foot		14-foot		16-foot		
						Leq(h)	I.L.	Leq(h)	I.L.	Leq(h)	I.L.	Leq(h)	I.L.	Leq(h)	I.L.	
R5	SRF	63[E]	67[W]	B(67)	A/E	--	--	--	--	--	--	--	--	66	1	Existing SW (EX-1)/Shoulder/ RW
R43	SFR	68[M]	72	B(67)	A/E	70	2	69	3	68	4	67[R]	5	67	5	SW479B (NC-C1)/Shoulder)
R43A	SFR	64[E]	68	B(67)	A/E	66	2	65	3	65	3	64	4	64	4	
R43B	SFR	64[E]	67	B(67)	A/E	64	3	64	3	64	3	63	4	63	4	
R62	REC	59[E]	64	B(67)	None	62	2	61	3	61	3	60	4	60	4	SW479A (NB-C1)/Shoulder
R63	REC	58[E]	63	B(67)	None	61	2	61	2	61	2	61	2	61	2	
R66	MFR	59[E]	63[W]	B(67)	None	--	--	--	--	--	--	--	--	--	--	Existing SW (EX-5)/RW
R66	MFR	60[E]	64[W]	B(67)	None	--	--	--	--	--	--	--	--	--	--	
R76	MFR	65[E]	69[W]	B(67)	A/E	--	--	--	--	--	--	--	--	67	2	Existing SW (EX-7)/RW
R77	MRF	65[E]	69[W]	B(67)	A/E	--	--	--	--	--	--	--	--	68	1	
R82	MFR	65[E]	69[W]	B(67)	A/E	--	--	--	--	--	--	--	--	68	1	
R83	MRF	66[E]	70[W]	B(67)	A/E	--	--	--	--	69	1	69	1	68	2	
R84	MFR	66[E]	70[W]	B(67)	A/E	70	0	70	0	68	2	68	2	67	3	SW421 (EX-7/Shoulder

Notes:
1. Leq(h) are A-weighted, peak hour noise levels in decibels.
2. Land Use: SFR – single-family residential; MRF – multi-family residential; REC – recreational land use.
3. M – Measured noise level; E – Estimated based on noise measurements at nearby geographically and acoustically similar sites.
4. S – Substantial increase (12 dBA or more; A/E – Approach or exceed NAC.
5. Traffic noise from the freeway only; other local noise sources are not included.
R. Recommended height to meet feasibility requirements of Caltrans' Noise Abatement Protocol. W. Includes the benefits of an existing soundwall.
X. Caltrans and OCTA, Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment," October 28, 2009, Table 6-2 (Traffic Noise Prediction and Barrier Analysis), pp. 6-6, 6-8, and 6-9.

Source: California Department of Transportation and Orange County Transportation Authority

Figure 1 (Everyday Noise Sources, their Relative Strength, and Human Response), as extracted from the "City of Seal Beach General Plan" *(*Noise Element) provides a graphic illustration of some "everyday" noise sources and their relative strength.

The human ear is not equally sensitive to all sound frequencies. Sound waves below 16 Hz are not heard at all but are "felt" more as a vibration. Similarly, while people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz. Since the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale is usually used to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discriminating against frequencies in a manner approximating the sensitivity of the human ear.

"Noise" is defined as unwanted sound and is known to have several adverse effects on people, including hearing loss, speech and sleep interference, physiological responses, and annoyance. Based on these effects, the federal, State, and many local governments have established criteria to protect public health and safety and to prevent disruption of certain human activities.

Noise may be generated from a "point source" (e.g., a piece of construction equipment) or from a "line source" (e.g. a road containing moving vehicles). Because the area of the sound wave increases as the sound gets further and further from the source, less energy strikes any given point over the surface area of the wave. This phenomenon is known as "spreading loss." Due to spreading losses, noise attenuates (decreases) with distance. The typical atmospheric spreading loss rate for point source noise is 6 dBA per doubling of the distance as predicted by the equation: *Attenuated dBA = 20 (log) measured distance/reference distance*.

A line source will also attenuate with distance; however, the rate of attenuation is a function of both distance and (due to reflection and absorption) the type of terrain over which the noise passes. Over "hard" sites (e.g., developed areas with paving), noise attenuates at a rate of 3 dBA per doubling of the distance, as predicted by the equation: *Attenuated dBA = 10 (log) measured distance/reference distance*.

Over "soft" sites (e.g., undeveloped areas, open space, and vegetated areas), noise attenuates at a rate of 4.5 dBA per doubling of the distance, as predicted by the equation: *Attenuated dBA = 15 (log) measured distance/reference distance*.

These represent the extremes and most areas will actually contain a combination of both hard and soft elements with the noise attenuation placed somewhere in between these two attenuation factors. The only way to actually determine the absolute amount of attenuation that an area provides is through field measurements under operating conditions with simultaneous noise level measurements conducted at varying distances from a constant noise source.

Intervening objects blocking the line-of-sight attenuate the noise source if the receptor is located within the "shadow" of the blockage (e.g., located directly behind a sound wall). If a receptor is located behind the wall but nevertheless has a view of the noise source, the wall will do little to attenuate the noise. Additionally, a receptor located on the same side of the wall as the noise source may experience an increase in the perceived noise level as the wall can reflect noise back to the receptor, thus compounding the noise.

2.2 Noise Measurement Scales

Several rating "scales" or noise "metrics" exist to analyze adverse effects of noise, including traffic-generated noise, on a community. These scales include the "equivalent noise level" (Leq), the "community noise equivalent level" (CNEL), and the "day-night noise level" (Ldn). Leq is a measurement of the sound energy level averaged over a specified time period (usually 1 hour). Each of these metrics are described below.

- Leq represents the amount of variable sound energy received by a receptor over a time interval in a single numerical value. For example, a 1-hour Leq (designated as Leq[h]) noise level measurement represents the average amount of acoustic energy that occurred in that hour. Other values of concern include the Lmin and Lmax. These are the minimum and maximum root-mean-square values recorded over a brief period, typically one second.
- Unlike the Leq metric, the CNEL noise metric is based on 24 hours of measurement. CNEL also differs from Leq in that it applies a time-weighted factor designed to emphasize noise events that occur during the evening and nighttime hours (when quiet time and sleep disturbance is of particular concern). Noise occurring during the daytime period (7:00 AM to 7:00 PM) receives no penalty, noise produced during the evening time period (7:00 PM to 10:00 PM) is penalized by 5 dBA, and nighttime (10:00 PM to 7:00 AM) noise is penalized by 10 dBA.
- The Ldn noise metric is similar to the CNEL metric except that the period from 7:00 PM to 10:00 PM receives no penalty. Both the CNEL and Ldn metrics yield approximately the same 24-hour value (within one dBA) with the CNEL being the more restrictive (i.e., higher) of the two.

The "percentile sound level" represents another descriptor of noise and is the statistical A-weighted noise level which is exceeded a given percentage of the time during a specified measurement period. Percentile sound levels are generally used to define the ambient environment. For example, the L50 is the level exceeded 50 percent of the time and can be used to approximate the average sound level. The L90 is exceeded 90 percent of the time and can be used to describe the quietness of an area or to quantify the contribution to the time-varying noise environment from continuously operated noise sources. Percentile values are frequently used to demonstrate compliance with local regulation for continual or stationary noise sources. For example, the City's noise ordinance states that a given value is not to be exceeded for a period of 15 minutes in any hour. This 15-minute period represents 25 percent of the hour or an L25 value. The City's noise ordinances applies only to noise sources that are locally regulation and do not apply to vehicles when operating on public roadways.

3.0 REGULATORY BACKGROUND

3.1 Federal Guidelines and Standards

The Federal Highway Administration (FHWA) has developed noise standards which are typically used for federally-funded roadway projects or projects that require either federal review. These noise standards are based on Leq and L10 values. The FHWA estimates that the L10 is typically about 3 dBA greater than the Leq value.

The FHWA values are the maximum desirable values by land-use type and area based on a "trade-off" of what is desirable and what is reasonably feasible. These values recognize that, in

many cases, lower noise exposures would result in greater community benefits. FHWA design noise levels are included in Table 3 (Federal Highway Administration Design Noise Levels).

Table 3
FEDERAL HIGHWAY ADMINISTRATION DESIGN NOISE LEVELS

Activity Category	Design Noise Levels[1]		Description of Activity Category
	Leq (dBA)	**L10** (dBA)	
A	57 (exterior)	60 (exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67 (exterior)	70 (exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (exterior)	75 (exterior)	Developed lands, properties, or activities not included in Categories A or B, above.
D	---	---	Undeveloped lands.
E	52 (interior)	55 (interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Notes:
1. Either Leq or L10 (but not both) design noise levels may be used on a project.

Source: Federal Highway Administration

In addition to FHWA standards, the United States Environmental Protection Agency (USEPA) has identified the relationship between noise levels and human response. The USEPA has determined that over a 24-hour period, a Leq of 70 dB will result in some hearing loss; however, interference with activities and annoyance will not occur if exterior levels are maintained at an Leq of 55 dB and interior levels at or below 45 dB. While these levels are relevant for planning and design and useful for informational purposes, they do not constitute land-use planning criteria because they do not consider economic cost, technical feasibility, or the needs of individual communities.

In accordance with 24 CFR, Part 51, Subpart B (Noise Abatement and Control), as promulgated by the United States Department of Housing and Urban Development (HUD) (August 1984), the USEPA has set 55 dBA Ldn as the basic goal for residential noise intrusion. HUD was established in response to the Urban Development Act of 1965 (Public Law 90-448) and was tasked by the Housing and Urban Development Act of 1965 Public Law 89-117) “to determine feasible methods of reducing the economic loss and hardships suffered by homeowners as a result of the depreciation in the value of their properties following the construction of airports in the vicinity of their homes.” HUD first issued formal requirements related specifically to noise in 1971 (HUD Circular 1390.2). These requirements contained standards for exterior noise levels along with policies for approving HUD-supported or assisted housing projects in high-noise areas. In general, these requirements established the following three zones:

- 65 dBA Ldn or less. An “acceptable zone” where all projects could be approved;
- Exceeding 65 dBA Ldn but not exceeding 75 dBA Ldn. A “normally unacceptable zone” where mitigation measures would be required and each project would have to be individually evaluated for approval or denial. These measures must provide 5 dBA of attenuation above the attenuation provided by standard construction required in a 65 to 70 dBA Ldn area and 10 dBA of attenuation in a 70 to 75 dBA Ldn area; and

- Exceeding 75 dBA Ldn. An “unacceptable zone” in which projects would not, as a general rule, be approved.

HUD’s regulations do not include interior noise standards. Rather, a goal of 45 dBA Ldn is set forth and attenuation requirements are geared towards achieving that goal. HUD assumes that, using standard construction, any building will provide sufficient attenuation so that if the exterior level is 65 dBA Ldn or less, the interior level will be 45 dBA Ldn or less. Thus, structural attenuation is assumed at 20 dBA. HUD regulations were promulgated solely for residential development requiring government funding and are not related to the operation of other sensitive land uses, such as schools or churches.

Other federal agencies, in consideration of their own program requirements and goals, as well as difficulty of actually achieving a goal of 55 dBA Ldn, have settled on the 65 dBA Ldn level as their agency’s applicable noise standard. At 65 dBA Ldn, activity interference is kept to a minimum and annoyance levels remain low.

The federal government regulates occupational noise exposure common in the workplace through the Occupational Health and Safety Administration (OSHA) operating under the USEPA. Noise exposure of this type is dependent on work conditions and is addressed through a facility’s “health and safety plan.” Occupational noise is not relevant to the primary focus of this study and, therefore, not further addressed in this document.

3.2 State Guidelines and Standards

The California Department of Health Services' (DHS) Office of Noise Control has studied the correlation of noise levels and their effects on various land uses. As a result, the DHS has established four categories for judging the severity of noise intrusion on specified land uses.

Presented in Figure 2 (Noise and Land-Use Compatibility) is a land-use compatibility chart for community noise as prepared by the Office of Noise Control and as included in the “City of Seal Beach General Plan” (Noise Element). The chart identifies “normally acceptable,” “conditionally acceptable,” “normally unacceptable,” and “clearly unacceptable” noise levels for various land uses. A “conditionally acceptable” designation implies new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements for each land use is made and needed noise insulation features are incorporated in its design and development. By comparison, a “normally acceptable” designation indicates that standard construction can occur with no special noise reduction requirements. It is noted that some overlap exists between the various categories.

As shown in Figure 2 (Noise and Land-Use Compatibility), single-family residences are “normally acceptable” in exterior noise environments up to 60 dBA CNEL and “conditionally acceptable” in areas up to 70 dBA CNEL. Multi-family residential uses are “normally acceptable” in exterior environments up to 65 dBA CNEL and “conditionally acceptable” in areas with noise levels of up to 70 dBA CNEL. Schools, libraries, churches, offices, and commercial, and professional uses are “normally acceptable” in exterior noise environments up to 70 dBA CNEL.

3.3 Caltrans’ Noise Standards

Section 3 (Type 1: New Construction or Reconstruction Projects) in Caltrans’ “Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects”

(August 14, 2006) (Protocol) outlines Caltrans' A-weighted noise level (dBA Leq) "Noise Abatement Criteria" (NAC). For residential development and sensitive land uses that exist along a proposed project, Caltrans follows the FHWA standards. A NAC of 67 dBA Leq for the peak-noise hour is the maximum allowable exterior noise level for "Activity Category B" (i.e., "Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals"). In order for proposed noise abatement measures to be considered feasible, a minimum of 5 dBA noise reduction must be achieved at the impacted receivers.

As specified by Caltrans' Protocol: "In identifying noise impacts, primary consideration is given to exterior areas. In situations where there are no exterior activities, or where the exterior activities are far from the roadway or physically shielded in a manner that prevents an impact on exterior activities, the Activity Category E interior criterion is used as the basis for determining noise impacts." A NAC of 52 dBA Leq for the peak-hour hour is the maximum allowable interior noise level for "Activity Category E" (i.e., "Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums).

In addition to the NAC, Caltrans requires that noise barriers should provide the following:

- A minimum height of 1.8 meters (6.0 feet), as measured from the top of the barrier to the top of the foundation.
- A maximum height of 4.3 meters (14.0 feet), as measured from the pavement surface at the face of the safety shape barrier when located 4.5 meters (14.7 feet) or less from the edge of the traveled way, and should not exceed 5.0 meters (16.4 feet) in height above the ground line when located more than 4.5 meters (14.7 feet) from the traveled way.
- Intercept the line-of-sight from the exhaust stack of a truck to the noise receptor. The truck stack height is assumed to be 3.5 meters (11.5 feet) above the pavement. The receptor is assumed to be 1.5 meters (5.0 feet) above the ground and is located 1.5 meters (5.0 feet) from the living unit nearest the roadway.
- Designed to shield the second story of two-story residences unless it provides attenuation for a substantial number of residences at a reasonable increase in cost.

3.4 City of Seal Beach Noise Policies

The "City of Seal Beach General Plan" (Noise Element) constitutes a comprehensive program for including noise control in the planning process and a tool for local planners to use in achieving and maintaining compatible land uses with environmental noise levels. Figure 2 (Noise and Land-Use Compatibility) presents the City's land-use compatibility matrix.

The "City of Seal Beach Municipal Code" (Municipal Code) sets performance standards for those items which fall under the City's regulation. In support of the Noise Element, Chapter 7.15 of the Municipal Code specifies environmental performance standards for noise. With the exceptions noted therein, the City code adopts the "County of Orange Municipal Code" by reference.

Section 7.15.015 of the City code sets forth exterior noise standards. These noise level limits are not to exceed the values included in Table 4 (City of Seal Beach Exterior Noise Standards) for 30 minutes in any hour (L50). The level may be increased by 5 dBA for 15 minutes (L25), 10 dBA for 5 minutes (L08), and 15 dBA for 1 minute in any hour (L02). Noise levels are not to exceed the noise standard plus 20 dBA for any period of time (Lmax). The City also sets interior

noise standards for residential uses as included in Table 5 (City of Seal Beach Interior Noise Standards). These levels are not to be exceeded for a cumulative period of more than 5 minutes in any hour; however, the levels may be exceeded by the standard plus 5 dBA for a cumulative period of not more than 1 minute in any hour and is not to be exceeded by 10 dBA for any time period.

Table 4
CITY OF SEAL BEACH
EXTERIOR NOISE STANDARDS

Affected Land Uses (Receiving Noise)	**7:00 AM – 10:00 PM** (dBA)	**10:00 PM– 7:00 AM** (dBA)
Residential	55	50
Commercial	65	65
Industrial	70	70

Source: City of Seal Beach

Table 5
CITY OF SEAL BEACH
INTERIOR NOISE STANDARDS

Affected Land Use	**7:00 AM – 10:00 PM** (dBA)	**10:00 PM – 7:00 AM** (dBA)
Residential	55	45

Source: City of Seal Beach

Section 7.15.025 included exemptions to the regulations. Section 7.15.025(G) exempts activities for which local noise regulations are preempted by federal or State law. This exemption includes the noise generated by vehicles while operating on public roads.

4.0 STUDY METHODS AND PROCEDURES

This study documents existing (August 2015) noise levels along the I-405, I-605, and SR-22 Freeways within the City. The locations selected by the City for assessment are deemed representative of those locations previously selected by Caltrans for noise monitoring and/or modeling, as noted in the selected references. Three locations were selected in College Park East (CPE), two locations were selected in College Park West (CPW), and three locations were selected in Leisure World (LW).

The first noise measurements were obtained over a continuous 24-hour period at the east end of CPE, specifically in the rear yard of the Wyatt residence (3651 Wisteria Lane). Sharing a common property line, the existing single-family home backs onto the I-405 Freeway, located to the south of that residence. Based on security reasons, as well as existing nighttime landscape irrigation schedules, subsequent measurements obtained at Almond, Bluebell, and Edison Parks and the noise readings obtained on Harvard Lane at the north end of CPW were timed to capture the peak morning (AM) and evening (PM) freeway noise periods, as determined by the 24-hour reading first conducted at Wisteria Lane. The Wisteria Lane data demonstrated that these peak morning and evening noise periods occurred from approximately 5:00 to 8:00 AM and from 6:00 to 9:00 PM, respectively.

4.1 Field Measurements

Noise monitoring was conducted between August 4, 2015 and August 26, 2015. All readings were obtained using a Quest Technologies Model 2900 Type 2 Integrating/Logging Sound Level Meter (S/N CD5030027). The unit meets the American National Standards Institute (ANSI) Standard S1.4-1983 for Type 2, International Electrotechnical Commission (IEC) Standard 651 - 1979 for Type 2, and IEC Standard 651 - 1979 for Type 2 sound-level meters.

The unit was initially field calibrated to a 114.0 dB standard prior to each set of readings and rechecked at the completion of the readings. No meter drift was noted. A Quest Technologies QC-10 calibrator (S/N QE4100253) was used in the calibration procedure. The accuracy of the calibrator is maintained through a program established through the manufacturer and is traceable to the National Bureau of Standards. The unit meets the requirements of ANSI Standard S1.4-1984 and IEC Standard 942: 1988 for Class 1 equipment. The meter and calibrator were last "bench" calibrated and certified on March 20, 2015. Certifications are good for one year from the date performed. The certificates of calibration are included in Appendix A (Certificates of Calibration) herein.

The study included 12 noise monitoring periods performed at eight locations, each with a duration ranging between 3 and 24 hours. To best represent the acuity of the human ear, the meter was set to "A-weighting" and "slow response mode."

The "peak noise hour" used in federal and Caltrans noise analyses represents the "loudest continuous 60-minute period" of the day. This peak noise hour (e.g., 5:20 to 6:20 AM) need not coincide with the "clock hour" (e.g., 6:00 to 7:00 AM). As such, in this study, to determine peak-noise hour values, each clock hour was divided into 10 separate Leq readings of 10 minutes (e.g., 5:00 to 5:10 AM, 5:10 to 5:20 AM, etc.). These 10-minute readings also include the Lmin, Lmax, L10, and L90 values.

The Lmin and Lmax represent the minimum and maximum root-mean-square noise levels obtained over a period of one second. The L10 and L90 represent the values that are exceeded 10 percent (or one minute) and 90 percent (or nine minutes) of each 10-minute Leq. As noted, the L10 may be used in federal studies. These values are recorded here for informational purposes and to determine trends or anomalies in the data (e.g., proximate yard maintenance equipment). Additionally, the meter records an Leq, L02, L08, L25, L50, Lmin, and Lmax values for the entire period of the measurement (i.e., 3 or 24 hours). These values are recorded for informational purposes and to determine trends or anomalies.

4.2 Traffic Noise

Noise generated by passing vehicles is primarily a result of engine vibration, the exhaust note, and the interaction of the tires with the road. As discussed in Section 2.0 (Fundamental of Traffic Noise), noise is based on a logarithmic scale. A doubling of the noise energy results in a change of 3 dBA. If the number of vehicles doubles, the noise should theoretically rise by 3 dBA. This makes no difference if the traffic volume went from 1,000 to 2,000 vehicles per hour (vph) or from 10,000 to 20,000 vph, except that in each case the base noise level would be elevated accordingly. For example, if 1,000 vph produces a Leq of 60 dBA, as measured at a speed of 65 miles per hour (mph) and a distance of 50 feet from the edge of the roadway, 2,000 vph would result in a level of 63 dBA. The 10,000 vph at 65 mph would produce 70 dBA; raising this value to 20,000 vph would raise this 70 dBA by 3 dBA to a resultant level of 73 dBA.

Caltrans has estimated that in 2013, traffic volumes at the I-405/SR-22 East junction included 377,000 annual average daily trips (AADT). Assuming that 10 percent of this value is produced during the peak hour (37,700 vph), halving this value (i.e., 18,850 vph) would be required in order to reduce the noise by 3 dBA.

As the data shows, noise continually changes by ±1 dBA or more over the course of the day (and even over any given 10-minute period) when only minor changes in the traffic volume would not be expected manifest such a change in the noise levels. These changes are primarily created by the differences in travel speed (attributable to the degree of congestion) and the percentage of trucks travelling along the freeway over any short-term or extended time period.

A change in vehicle speed of just 5 mph can result in a change in noise of over 1 dBA. Relative to traffic volumes, this same 1 dBA change would require that the traffic volume change by 25 percent. As such, it becomes clear that changes in speed become more influential on the ultimate noise than changes in traffic volume over the course of the day.

For example, data obtained at Wisteria Lane shows a rapid drop off/return in noise of about 3 to 6 dBA from previous and subsequent levels between about 7:30 and 10:10 AM. While this was first attributed to the traffic pattern of the day, subsequent study of the other 24-hour measurements showed this to be an anomaly, most probably caused by a traffic accident causing slowing during this period and its attendant drop in noise. If the same travel speeds were maintained, a change of 3 dBA would have required that the traffic volume double/halve from one 10-minute Leq measurement period to the next.

The other primary differentiation in noise over the day is from the ratio of automobiles to trucks. With respect to the noise produced by these vehicles, at 100 kilometers per hour (km/hr) (62 mph), each medium-sized truck (e.g., double rear axle, 4,500 to 12,000 kilograms) is equivalent to approximately 10 automobiles, while each heavy truck (three or more axles, >12,000 kilograms) is equivalent to about 25 automobiles. These “equivalencies” change with speed, with lower speeds showing larger differences. For example at 50 km/hr (31 mph) the medium truck would be equivalent to about 16 automobiles, whereas the heavy truck would equate to about 65 automobiles.

Additionally, while automobiles produce their noise at ground level, medium trucks’ noise centers at 0.70 meters (2.3 feet), and heavy trucks’ noise is at 2.44 meters (8.0 feet) The higher the noise source, the higher the barrier necessary to attenuate it. Caltrans’ methodology requires any potential wall to break the line of sight between a receptor, located at an elevation of 5 feet, and the exhaust stack of a heavy truck, located at an elevation of 11.5 feet.

Trucks tend to use the road earlier in the morning prior to the major portion of the “peak traffic hour” and the data show that traffic noise levels actually begin to ramp up between about 4:30 and 5:00 AM, well before the number of vehicles on the road peaks. The peak-noise hour in the morning then begins about 5:00 to 5:30 AM.

During the evening (PM), the noise level increases after the peak traffic hour when the lanes open up and vehicles can again attain higher speeds. The data indicate that the evening peak noise hour begins between about 6:30 to 7:30 PM.

4.3 Leq Noise Metric

Section 2.2 (Noise Measurement Scales) herein includes a discussion of the Leq noise metric. As noted, the Leq is based on a logarithmic scale. That is, a louder event of short duration can add measurably to the overall noise level. For example, data obtained in Edison Park includes the noise of several commercial jets on approach to Long Beach Airport (LGB) spaced over the measurement period. The noise produced during those 10-minute periods when jets passed over, just to the west of Edison Park, shows an increase of about 3 dBA over those similar times when no jets were observed to pass. During the evening, when no jets passed over, the noise in Edison Park was on the order of 55 to 56 dBA Leq. When a airplane would pass over, these levels would raise to 58 to 59 dBA Leq.

As with traffic, a doubling of the acoustic energy is required to produce an increase of 3 dBA. As such, the passing of a single airplane during the 10-minute period would produce as much noise energy (i.e., 55 to 56 dBA Leq) as all other noises combined (including the freeway) during that 10-minute period. Airplane noise was evident, to some extent, in all monitored locations located in and near the daytime approach path (i.e., 7:00 AM to 10:00 PM) to LGB and were most profound in Edison Park.

The effects of ambient noise on the Leq becomes even more profound when one considers short-term proximate noise, such as yard maintenance equipment. As noted along Scioto Road, traffic producing a Leq of about 55 dBA for the period between 12:50 and 1:00 PM. This was shortly after meter placement at 12:30 PM. Leq readings from 1:00 to 2:00 PM ranged from 62 to 70 dBA for an increase of 7 to 15 dBA, returning to 57 dBA after 2:00 PM. While not observed, noise during this period was probably heavily influenced by yard maintenance activities (e.g., lawn moving, edging, and leaf blowing). The lawn in the area in which the meter was located had just been edged, and gardeners were observed operating in proximity prior to the technician leaving the site at 12:35 PM.

4.4 Caltrans' Methodology

One of the stated intents of this study was to compare the "previously existing" and projected Caltrans noise levels with those currently experienced along and proximal to the freeway interchanges in the City. While Section 3.3 (Caltrans' Noise Standards) herein outlines Caltrans' standards, it provides little insight as to how Caltrans ultimately determined the noise levels included in their studies.

Existing noise levels identified by Caltrans may be based on either actual measurement or, as is often the case, estimated based on noise measurements at nearby geographically and acoustically similar sites. Future noise levels, both with and without freeway improvement projects, are based on results of the FHWA Traffic Noise Model (TNM). As discussed above, traffic speeds are often more influential on the associated noise levels than the variation in traffic volumes. As the freeway becomes overcrowded, travel speeds begin to slow and the traffic noise no longer increases (and even decreases during the peak traffic hour).

Based on this assumption, Caltrans models the future traffic volumes as if the freeway is operating at Level of Service (LOS) "C" (free flowing) with an average speed of 65 mph (55 mph on the ramps). The "LOS C" traffic volume includes 1,950 vehicles per lane per hour on the I-405, I-605, and SR-22 Freeways and 1,500 vehicles per lane per hour on the Seal Beach Boulevard off ramp and other transition ramps. In this case, the "LOS C" volumes were

modeled at speeds of 65 mph on the freeways (60 mph for heavy trucks) and 55 mph on the ramps (50 mph for heavy trucks).

The number of vehicles and their attained speeds may not have any actual bearing on the model and the projected noise levels. When traffic levels are higher than the 1,950 and 1,500 vehicle per lane per hour-values used in the model, this extends the "rush hour" but the peak noise hour, before and/or after the brunt of the peak-traffic hour, would simply occur a bit earlier or later to accommodate the increase in the overall traffic volume. The Caltrans standard is, therefore, based on the highest 1-hour Leq during the 24-hour period regardless of how many other hours come close to or meet this standard.

Other parameters modeled by Caltrans include the logistics (e.g., elevation, height, distance, lane width, curvature of the roadway) of the traffic lanes and walls relative to the receptors. Caltrans has demonstrated that this methodology provides a reasonable estimate of conditions that produce a representative peak-hour noise level.

Caltrans includes the ratio of automobiles, medium, and heavy trucks. In this case, the ratios appear to have been compiled in accordance with the proper documentation, as identified in Caltrans' "Annual Average Daily Truck Traffic on the California Highway Transportation System." While the ratio may be representative of truck travel on the freeway on a 24-hour basis, it does not allocate the trucks to the day, evening, or nighttime period.

4.5 CNEL and Ldn

City and federal standards for the siting of new housing are based on the 24-hour noise level with penalties added to that noise created during the night and, in the case of the CNEL, evening and nighttime periods. The Caltrans standard is based on a 1-hour standard of 67 dBA Leq, regardless of when or how many times per day the hour occurs.

In addition to comparing the noise values recorded in this study to the values projected by Caltrans prior to the freeway improvements, the four 24-hour measurements provide a direct means to determine the existing CNEL and Ldn. In the case of the Ldn, this is accomplished by calculating the clock hour Leq noise for each hour of the day (e.g., 8:00 to 9:00 AM) and night (e.g., 1:00 to 2:00 AM) and adding a 10 dBA penalty to that noise produced between 10:00 PM and 7:00 AM. In the calculation of the CNEL a 5 dBA penalty is added to that noise produced each clock hour between 7:00 and 10:00 PM.

In the case of the four locations that only included the 6 hours of peak noise, the CNEL and Ldn cannot be directly calculated from the data; however, the four 24-hour measurements can be averaged to form a composite level. The average noise level for the same 6 hours that were monitored (i.e., 5:00 to 8:00 AM and 6:00 to 9:00 PM) can also be calculated from the 24-hour measurements. The ratio of the CNEL relative to these 6 hours can then be determined and applied to the four sites that included 6 hours of measurement data. In these cases, a simple average rather than logarithmic average is used. This is so that the contribution from each of the four 24-hour readings is equally weighted. If a logarithmic average were to be used, the contribution from the noisier sites would overshadow the contribution from the less noisy sites.

Additionally, in the case of Wisteria Lane (CPE-1), the hours between 7:30 and 10:10 AM had a value of 5.5 dBA added to each metered value to compensate for reduced speed most probably due to a freeway-related traffic accident. In the case of Scioto Road where yard work was

evidenced, the period was removed from the data and the average of the values preceding and following the yard work were substituted. All other values obtained in the study were left as is.

Based on these assumptions, the Ldn and CNEL are calculated to be 3.8 and 4.2 dBA greater than the logarithmic average of the 6 hours between the hours of 5:00 to 8:00 AM and 6:00 to 9:00 PM. As such, the Ldn and CNEL for those sites that only included 6 hours of data may be inferred from the logarithmic average of the 6 hours plus 3.8 and 4.2 dBA, respectively.

These values are presented for informational purposes and have no basis for comparison with Caltrans' studies or their methodology. If residents were exposed to a continuous traffic noise level of 65 dBA Leq, 24 hours a day, the CNEL and Ldn would be calculated at 72 and 71 dBA, respectively. Because the peak-hour Leq remains below the Caltrans standard of 67 dBA Leq and does not "approach" the standard (i.e., 66 dBA Leq), it would not be deemed "significant" under Caltrans' methodology.

4.6 Field Results

The weather throughout the study period was warm and clear with daytime temperatures in the 80s, with nighttime temperatures in the 70s (measured in degrees Fahrenheit). No wind conditions were noted and only occasional light breezes over the study period were observed.

The equipment used in the performance of the field measurements is described in Section 4.1 (Field Monitoring) above. In each case, the meter was field calibrated prior to conducting the reading. The timing for this calibration is included in the data sheets included in Appendix B (Data Sheets). The calibration was checked after each reading and no meter drift was noted. This subsequent check of the calibration is not recorded by the meter in the data sheets.

Three locations were selecting in CPE (3651 Wisteria Lane, Almond Park, and Bluebell Park), two locations were selected in CPW (Edison Park and 333 Harvard Lane), and three locations were selected in LW (1201 Scioto Road, 13048 Del Monte Drive/1801 St. John Road, Building 40, and 1941 St. John Road, Building 40). In each case, the location is shown relative to the Caltrans' locations selected for comparison.

In accordance with federal, State, and local methodologies, all reported numbers were rounded to the integer. The Caltrans' results for the "existing" and "projected" traffic peak-noise hour, as well as the results of the current field study, were then tabulated. A line graphic has been provided showing the measured or calculated noise over the course of 24 hours and providing the calculated CNEL and Ldn. Figure 3 (Leq Over Time for the Eight Monitored Locations in College Park East, College Park West, and Leisure World) presents a compilation of the assembled data. All accompanying data is included in the accompanying appendices.

With the exception of the Leq for Caltrans compliance and used in the calculations of the CNEL and Ldn, the L02, L08, L10, L25, L50, L90, Lmin, and Lmax values have been included in Appendix B (Data Sheets) for informational purposes only. Included in Appendix C (Excel Files) are separate Excel files addressing: (1) meter data and the calibration of peak hour, CNEL, and Ldn; (2) derivation of the CNEL and Ldn from the peak hour; and (3) plots of noise over time for the various monitoring locatins.

Each of the three neighborhoods and eight noise measurement locations is summarized below.

4.6.1 College Park East

- **CPE-1 (3651 Wisteria Lane)**. As illustrated in Figure 4A (CPE-1: 3651 Wisteria Lane, Collage Park East), this reading was obtained in the rear yard at 3651 Wisteria Lane. The meter was placed at a distance of 10 feet north of the rear yard (approximately 6-foot tall concrete block) wall, representing the approximate distance between the single-family residence and the rear yard wall, and toward the edge of the swimming pool, 11 feet west of the dwelling. The pool equipment did not run during the measurement period. The 24-hour measurement began at 11:00 AM on August 4, 2015 (Tuesday) and ended at 11:00 AM on August 5, 2015 (Wednesday).

Caltrans Site Designation[1]	**Caltrans Predicted Existing**[1] (dBA Leq)	**Caltrans Predicted with Project** (Including abatement)[1] (dBA Leq)	**City Site Designation**	**City Measured** (dBA Leq)	**Difference Between Caltrans' Predicted and City Measured** (dBA Leq)
R5B/ST40	66	66	CPE-1	63	-3

Notes:
1.. Caltrans and OCTA, "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, 12-ORA-405-PM 22.3/24.0, 12-ORA-605-PM 3.0/R1.6, 12-ORA-22-PM R0.3/R0.9, EA 071631, County of Orange," October 28, 2009.

Caltrans' measurement (Caltrans' Site Designation R5B/ST40) was obtained on June 23, 2010 (Wednesday) in the rear yard of the adjoining property located directly to the east (3560 Wisteria Lane). That 20-minute reading was obtained from 8:40 to 9:00 AM and showed a Leq of 59.5 dBA.

With regards to CPE-1, the Leq, varying over time, is presented in Figure 4B (CPE-1: 3651 Wisteria Lane, College Park East - 24-Hour Leq Noise Level). Corresponding noise metrics are identified below:

- ◊ Peak-noise hour: 63 dBA Leq
- ◊ Measured uncorrected Ldn: 65 dBA
- ◊ Measured uncorrected CNEL: 66 dBA
- ◊ Measured corrected Ldn*: 66 dBA
- ◊ Measured corrected CNEL*: 66 dBA

* *Adds 5.5 dBA between 7:30 AM and 10:10 AM to compensate for reduced speed, most probably due to an traffic accident*.

- **CPE-2 (Almond Park)**. As illustrated in Figure 5A (CPE-2: Almond Park, College Park East), this reading was obtained in Almond Park. The meter was placed at a distance of 50 feet north of the I-405 Freeway's 16-foot high sound wall and 182 feet east of the Almond Avenue curb line (located to the west of the meter).

Both morning (AM) and evening (PM) measurements were conducted on August 6, 2015 (Thursday). The morning reading began at 5:00 AM and ended at 8:10 AM (3 hours and 10 minutes) and the evening reading ran from 6:00 to 9:00 PM (3 hours). Park use was light and no extraneous noises were noted during the measurement periods.

During the morning measurement it was noted that the noise in the park was louder at distances greater than the meter placement at 50 feet from the sound wall. At 50 feet,

the meter is located in the sound "shadow" and receives some level of attenuation from the existing wall. Noise appeared to increase at distances up to about 70 feet before beginning to drop off as a result of the extended distance.

Just prior to the evening measurement, a series of 1-minute Leq values were obtained at 10-foot intervals from the sound wall. Because the traffic noise can vary by minute depending on various parameters, this test is not definitive.

Distance from Sound Wall (feet)	**Start Time** (PM)	**Leq** (dBA)
10	5:39	62.3
20	5:41	62.2
30	5:44	62.2
40	5:45	62.6
50	5:47	64.1
60	5:48	65.1
70	5:50	62.8
80	5:52	61.2
90	5:54	63.3
100	5:56	62.8

Caltrans' measurement was obtained in Almond Park on June 23, 2010 (Wednesday). That measurement was obtained at a distance of 33 feet north of the sound wall and about 50 feet to the east of the current measurement. That reading was obtained from 8:00 to 8:20 AM and showed a Leq of 66.7 dBA. Depending upon precise meter placement within Almond Park, the readings obtained in the current study could increase by about 2 dBA.

Caltrans Site Designation[1]	**Caltrans Existing**[1] (dBA Leq)	**Caltrans Predicted with Project** (Including abatement)[1] (dBA Leq)	**City Site Designation**	**City Measured** (dBA Leq)	**Difference Between Caltrans' Predicted and City Measured** (dBA Leq)
Almond Park ST41	68	70	CPE-2	67	-3
Almond Park ST41	68	70	CPE-2	69[2]	-1

Notes:
1. Caltrans and OCTA, Final Environmental Impact Statement and Environmental Impact Report - Orange County Transportation Authority, State Route 22/West Orange County Connection, SCH No. 98064001," March 2003, Table 4.9-2 (Existing and Predicted Future Noise Levels (Enhanced) Reduced Build Alternative), p. 4.9-3.
2. Based on a 2 dBA increase to account for any increased distance.

With regards to CPE-2, the Leq, varying over time, is presented in Figure 5B (CPE-2: Almond Park, College Park East - 6-Hour Leq Noise Level). Corresponding metrics are identified below:

◊ Peak-noise hour: 67 dBA Leq
◊ Projected Ldn: 70 dBA
◊ Projected CNEL: 70 dBA

- **CPE-3 (Bluebell Park)**. As illustrated in Figure 6A (CPE-3: Bluebell Park, College Park East), this reading was obtained in Bluebell Park. The meter was placed at a distance of 62 feet north of the I-405 Freeway's 16-foot high sound wall and 50 feet east of the Almond Avenue curb line (located to the west of the meter). The distance from the sound wall represents the distance to the wall for those existing residential dwellings that lie adjacent to Almond Avenue. Based on the data obtained in Almond Park, this distance places the meter outside of the wall's immediate "sound shadow."

  Noise measurements conducted at Bluebell Park serve as a reasonable worst-case analysis because there are no adjacent residences that block noise and there is gap in the sound wall where Almond Avenue becomes Aster Street as it curves around the Seal Beach Tennis Center (3900 Lampson Avenue). The metered location had an unobscured view of the I-405 Freeway and passing vehicles traveling thereupon.

  Both morning (AM) and evening (PM) measurements were conducted on August 11-12, 2015. The evening measurement was first obtained from 6:00 to 9:00 PM on August 11, 2015 (Tuesday) and the morning measurement ran from 5:00 to 8:00 AM on August 12, 2015 (Wednesday). Park use was light and, with the exception of aircraft noise, no extraneous noises were noted during the measurement periods.

  Because of the concerns of the local residents that the noise level varies along Almond Avenue, as outlined below, just prior to the evening measurement, a series of 1-minute Leq values were obtained on the sidewalk in front of the residential units located between Bluebell Street and Columbine Street. The meter was located approximately 60-65 feet from the sound wall, roughly in alignment with the exterior wall of the proximal residential unit. The data indicate that noise along these residents varies little and falls well within that which would be expected by normal traffic noise fluctuation.

Address	**Start Time** (PM)	**Leq** (dBA)
3520 Bluebell Street	5:10	69.2
3520 Camellia Street	5:13	67.5
3520 Carnation Circle	5:17	67.4
3520 Clover Circle	5:20	68.7
3520 Columbine Street	5:23	68.2
3520 Bluebell Street	5:28	67.8

  Because traffic along Almond Avenue contributes to the local noise, the vehicles passing along Almond Avenue, between the meter and the sound wall, were counted during each measurement and those counts are included in the following table.

  Caltrans' measurement was obtained in the area of the Seal Beach Tennis Center on June 23, 2010, (Wednesday) and these results were projected to encompass Bluebell Park. The following two readings were obtained by Caltrans: (1) the first reading was obtained from 9:04 to 9:20 AM and showed a Leq of 65.2 dBA; and (2) the second reading was obtained from 9:20 to 9:40 AM and showed a Leq of 64.5 dBA.

Time	Westbound			Eastbound		
	Automobiles	Medium Trucks	Heavy Trucks	Automobiles	Medium Trucks	Heavy Trucks
6:00 – 7:00 PM	61	0	0	80	0	0
7:00 – 8:00 PM	46	0	0	60	0	0
8:00 – 9:00 PM	35	0	0	66	0	0
5:00 – 6:00 AM	24	0	0	3	0	
6:00 – 7:00 AM	58	0	0	12	0	1
7:00 – 8:00 AM	73	0	1	24	4	0

Caltrans Site Designation[1]	Caltrans Existing[1] (dBA Leq)	Caltrans Predicted with Project (Including abatement)[1] (dBA Leq)	City Site Designation	City Measured (dBA Leq)	Difference Between Caltrans' Predicted and City Measured (dBA Leq)
Bluebell Park ST42	67	69	CPE-3	69	0

Notes:
1. Caltrans and OCTA, Final Environmental Impact Statement and Environmental Impact Report - Orange County Transportation Authority, State Route 22/West Orange County Connection, SCH No. 98064001," March 2003, Table 4.9-2 (Existing and Predicted Future Noise Levels (Enhanced) Reduced Build Alternative), p. 4.9-3.

With regards to CPE-3, the Leq, varying over time, is presented in Figure 6B (CPE-3: Bluebell Park, College Park East - 6-Hour Leq Noise Level). Corresponding metrics are identified below:

◊ Peak-noise hour: 69 dBA Leq
◊ Projected Ldn: 71 dBA
◊ Projected CNEL: 72 dBA

4.6.2 College Park West

- **CPW-1 (Edison Park)**. As illustrated in Figure 7A (CPW-1: Edison Park, College Park West), this reading was obtained at the south end of CPW in Edison Park. The meter was placed at a distance of 50 feet north of the centerline of travel for the near, eastbound College Park Drive lane and 115 east of the Edison Park fence line. The metered location had an unobstructed view of the I-405 Freeway and passing vehicles to the southwest.

  Both morning (AM) and evening (PM) measurements were conducted on August 12-13, 2015. The evening measurement was first obtained from 6:00 to 9:00 PM on August 12, 2015 (Wednesday) and the morning measurement ran from 5:00 to 8:00 AM on August 13, 2015 (Thursday). Park use was light and contributed no extraneous noises during the measurement periods. Aircraft on approach to LGB were, however, notable during the readings and, at night, were as loud as all other noise sources combined.

  Because traffic along College Park Drive contributes to the local noise, the vehicles passing along College Park Drive were counted during each measurement and those counts are included in the following table.

Time	Westbound			Eastbound		
	Automobiles	Medium Trucks	Heavy Trucks	Automobiles	Medium Trucks	Heavy Trucks
6:00 – 7:00 PM	75	0	0	86	0	0
7:00 – 8:00 PM	48	0	0	88	0	0
8:00 – 9:00 PM	30	0	0	53	0	0
5:00 – 6:00 AM	31	0	0	3	0	
6:00 – 7:00 AM	64	0	0	13	1	1
7:00 – 8:00 AM	87	1	0	32	0	0

During the field observations, LGB used an approach from the southeast between the hours of 7:00 AM and 10:00 PM, changing this route to the northeast during the night. It is surmised that this tactic has been employed for the purpose of meeting the airport's federal Ldn noise requirements and is, therefore, not atypical of the airport's routine operations.

During the evening, when no jets passed overhead, the 10-minute interval noise in Edison Park was on the order of 55 to 56 dBA Leq; however, when an airplane passed overhead, these levels rose to 58 to 59 dBA Leq. As with traffic, a doubling of the acoustic energy is required to produce an increase of 3 dBA. As such, the passing of a single aircraft during the 10-minute period would produce as much noise (i.e., 55 to 56 dBA Leq) as all other noises combined (including the freeway) during that 10-minute period. This is evident as a series of "spikes" in the plot of noise over time.

Notwithstanding the presence of aircraft overflights, it remains possible to gauge freeway traffic noise. The first jet to land in the northwest approach pattern occurred at 7:03 AM and the data up until that time was primarily from vehicles traveling along the freeway. In this location, the jets were responsible for the Lmax values in excess of 70 dBA, ranging up to an observed Lmax of 75 dBA. The Lmax associated with road traffic did not exceed 69 dBA.

Caltrans' documentation included the following two noise estimates in Edison Park.

Caltrans Site Designation[1]	**Caltrans Existing**[1] (dBA Leq)	**Caltrans Predicted with Project** (Including abatement)[1] (dBA Leq)	**City Site Designation**	**City Measured** (dBA Leq)	**Difference Between Caltrans' Predicted and City Measured** (dBA Leq)
R62	59	60	CPW-1	59	-1
R63	58	61	CPW-1	59	-2

Notes:
1. Caltrans and OCTA, "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, 12-ORA-405-PM 22.3/24.0, 12-ORA-605-PM 3.0/R1.6, 12-ORA-22-PM R0.3/R0.9, EA 071631, County of Orange," October 28, 2009, Table 6-2 (Traffic Noise Prediction and Barrier Analysis), p. 6-8.

With regards to CPW-1, the Leq, varying over time, is presented in Figure 7B (CPW-1: Edison Park, College Park West - 6-Hour Leq Noise Level). Corresponding metrics are identified below:

◊ Peak-noise hour: 59 dBA Leq
◊ Projected Ldn: 61 dBA
◊ Projected CNEL: 62 dBA

- **CPW-2 (333 Harvard Lane)**. As illustrated in Figure 8A (CPW-2: 333 Harvard Lane, College Park West), this reading was obtained at the north end of CPW on the lawn in front of the single-family residential unit located at 333 Harvard Lane. The prior proximate Caltrans' measurement was obtained behind the home across the cul-de-sac to the north (337 Harvard Lane) and Caltrans provided projections for the home next door, located to the south (329 Harvard Lane) as well as further down the block.

  The meter was placed at a distance of 84 feet south of the curb line across the cul-de-sac to the north and 52 feet west of the 6-foot block wall located across Harvard Lane to the east. Additionally, the meter was placed 16 feet west of the near curb line, 26 feet east of the residential structure, and 21 feet north of the structure's attached garage. This placed the meter generally in line with the exterior wall of the proximal residential structure and the I-605/I-405 Freeway "fly-over" to the north.

  Both morning (AM) and evening (PM) measurements were conducted on August 25-26, 2015. The evening measurement was first obtained from 6:00 to 9:00 PM on August 25, 2015 (Tuesday) and the morning measurement ran from 5:00 to 8:00 AM on August 26, 2015 (Wednesday). The metered location had an unobstructed view of vehicles in the near lane of the "fly-over" transition from the southbound I-405 Freeway to the northbound I-605 Freeway.

  Only two cars were observed on Harvard Lane in both the AM and PM periods, so local traffic did not add to the noise. Aircraft noise associated with the LGB was, however, notable.

  Caltrans' nearest measurement was obtained behind the home at 337 Harvard, across the cul-de-sac. That measurement showed a Leq of 68 dBA. The projection for the home at 329 Harvard Lane, immediately to the south, was estimated by Caltrans at 64 dBA while the home at 317 Harvard Lane (R43B) was estimated at 63 dBA Leq. Note that the monitored levels are well below all of these values.

Caltrans Site Designation[1]	**Caltrans Existing**[1] (dBA Leq)	**Caltrans with Project (Including any Abatement)**[1] (dBA Leq)	**City Site Designation**	**City Measured** (dBA Leq)	**Difference** (dBA Leq)
R43/1-A	68	67	CPW-2	60	-7
R43A	64	64	CPW-2	60	-4
R43B	63	63	CPW-2	60	-3

Notes:
1. Caltrans and OCTA, "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment," October 28, 2009, Table 6-2 (Traffic Noise Prediction and Barrier Analysis), p. 6-8.

With regards to CPW-2, the Leq, varying over time, is presented in Figure 8B (CPW-2: 333 Harvard Lane, College Park West - 6-Hour Leq Noise Level). Corresponding metrics are identified below:

◊ Peak-noise hour: 60 dBA Leq
◊ Projected Ldn: 63 dBA
◊ Projected CNEL: 63 dBA

4.6.3 Leisure World

- **LW-1 (1201 Scioto Road, Building 226)**. As illustrated in Figure 9A (LW-1: 1201 Scioto Road, Building 226, Leisure World), this reading was obtained in the common area proximate to 1201 Scioto Road, Building 226, located in the northwestern portion of Leisure World. To represent this distance to the wall for the proximate residential units, the meter was placed 28 feet south of the existing 9-foot high block wall located along the SR-22 and I-405 Freeway right-of-way and 50 feet east of the proximal structure.

  The 24-hour measurement began at 12:30 PM on August 18, 2015 (Tuesday) and ended at 12:30 PM on August 19, 2015 (Wednesday). The gardeners had just finished edging the lawn in the common area and were engaged in proximate yard work. In addition to traffic noise, residential unit air conditioners could be heard as well as aircraft overflight operations associated with LGB.

  Caltrans data for the existing setting was based on estimates rather than actual field measurements.

Caltrans Site Designation[1]	**Caltrans Existing**[1] (dBA Leq)	**Caltrans with Project (Including any Abatement)**[1] (dBA Leq)	**City Site Designation**	**City Measured** (dBA Leq)	**Difference** (dBA Leq)
R66	59	63	LW-1	60	-3
R67	60	64	LW-1	60	-4

Notes:
1. Caltrans and OCTA, "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, 12-ORA-405-PM 22.3/24.0, 12-ORA-605-PM 3.0/R1.6, 12-ORA-22-PM R0.3/R0.9, EA 071631, County of Orange," October 28, 2009, Table 6-2 (Traffic Noise Prediction and Barrier Analysis), p. 6-9.

  With regards to LW-1, the Leq, varying over time, is presented in Figure 9B (LW-1: 1201 Scioto Road, Building 226, Leisure World - 24-Hour Leq Noise Level). Corresponding metrics are identified below:

  ◊ Peak-noise hour: 60 dBA Leq
  ◊ Measured uncorrected Ldn: 62 dBA
  ◊ Measured uncorrected CNEL: 63 dBA
  ◊ Measured corrected Ldn*: 62 dBA
  ◊ Measured Corrected CNEL*: 62 dBA

  * *Due to proximate yard work, a period was removed from the data and the average of the values preceding/following the yard work were substituted.*

- **LW-2 (13048 Del Monte Drive/1801 St. John Road, Building 40)**. As illustrated in Figure 10A (LW-2: 13048 Del Monte Drive/1801 St. John Road, Building 40, Leisure World), this reading was obtained in the common area proximal to 13048 Del Monte Drive and 1801 St. John Road, located in the northeastern portion of Leisure World. The

meter was placed near the confluence of the I-405/I-605/SR-22 Freeways and, theoretically, approximately near the loudest point of that freeway junction. Too simulate the setback of the proximate structures, the meter was placed 26 feet south of the 8-foot high block wall located along the freeway right-of-way and 40 feet west 1801 St. John Road, Building 40.

The 24-hour measurement began at 1:30 PM on August 19, 2015 (Wednesday) and ended at 1:30 PM on August 20, 2015 (Thursday). While traffic on the freeway was the dominant source of noise, the 8-foot high block wall is not tall enough to obscure the view of the tops of the passing trucks traveling along Beverly Manor Road. Aircraft overflight operations associated with LGB also added to the noise.

Caltrans' data for the existing setting was based on estimates rather than actual field measurements.

With regards to LW-2, the Leq, varying over time, is presented in Figure 10B (LW-2: 13048 Del Monte Drive/1801 St. John Road, Building 40 - 24-Hour Leq Noise Level). Corresponding metrics are identified below:

Caltrans Site Designation[1]	**Caltrans Existing**[1] (dBA Leq)	**Caltrans Predicted with Project** (Including abatement)[1] (dBA Leq)	**City Site Designation**	**City Measured** (dBA Leq)	**Difference Between Caltrans' Predicted and City Measured** (dBA Leq)
R77	65	68	LW-2	67	-1
R78	64	67	LW-2	67	0

Notes:
1. Caltrans and OCTA, "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, 12-ORA-405-PM 22.3/24.0, 12-ORA-605-PM 3.0/R1.6, 12-ORA-22-PM R0.3/R0.9, EA 071631, County of Orange," October 28, 2009., Table 6-2 (Traffic Noise Prediction and Barrier Analysis), p. 6-9.

◊ Peak-noise hour: 67 dBA Leq
◊ Measured Ldn: 70 dBA
◊ Measured CNEL: 70 dBA

- **LW-3 (1941 St. John Road, Building 34)**. As illustrated in Figure 11A (LW-3: 13048 Del Monte Drive/1801 St. John Road, Building 40, Leisure World), this reading was obtained in the common area at 1941 St. John Road, Building 34. This is the easternmost common area proximate to the freeway in Leisure World and the Caltrans' sound wall drops off just to the north of this structure. Similar to the adjacent building, the meter was placed 14 feet south of the approximately 8.5-foot block wall and feet west of the building.

The 24-hour measurement began at 2:30 PM on August 20, 2015 (Thursday) and ended at 2:30 PM on August 21, 2015 (Friday). Traffic on the freeway was the dominant source of noise but the block wall is not tall enough to obscure the view of the tops of the passing trucks traveling along Beverly Manor Road. Aircraft overflight operations associated with LGB also added to the noise.

Caltrans' data for the existing setting was based on estimates rather than actual field measurements.

Caltrans Site Designation[1]	**Caltrans Existing**[1] (dBA Leq)	**Caltrans with Project (Including any Abatement)**[1] (dBA Leq)	**City Site Designation**	**City Measured** (dBA Leq)	**Difference** (dBA Leq)
R82	65	68	LW-3	66	-2
R83	66	68	LW-3	66	-2
R84	66	67	LW-3	66	-1

Notes:
1. Caltrans and OCTA, "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, 12-ORA-405-PM 22.3/24.0, 12-ORA-605-PM 3.0/R1.6, 12-ORA-22-PM R0.3/R0.9, EA 071631, County of Orange," October 28, 2009, Table 6-2 (Traffic Noise Prediction and Barrier Analysis), p. 6-9.

With regards to LW-2, the Leq, varying over time, is presented in Figure 11B (LW-3: 1941 St. John Road, Building 34 - 24-Hour Leq Noise Level). Corresponding metrics are identified below:

◊ Peak-noise hour: 66 dBA Leq
◊ Measured Ldn: 68 dBA
◊ Measured CNEL: 69 dBA

5.0 REFERENCES

- California Department of Transportation (District 12) and Orange County Transportation Authority, Final Environmental Impact Statement and Environmental Impact Report - Orange County Transportation Authority, State Route 22/West Orange County Connection, SCH No. 98064001, March 2003.

- California Department of Transportation (District 12) and Orange County Transportation Authority, Final Environmental Impact Report/Statement – San Diego Freeway Improvement Project, Orange and Los Angeles Counties, California SCH #2009091001, March 2015.

- California Department of Transportation (District 12) and Orange County Transportation Authority (Parsons), "Final Noise Impact Re-Assessment Report, State Route 22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, 12-ORA-405-PM 22.3/24.0, 12-ORA-605-PM 3.0/ R1.6, 12-ORA-22-PM R0.3/R0.9, EA 071631, County of Orange," October 28, 2009.

- California Department of Transportation (District 12), Noise Abatement Decision Report San Diego Freeway (I-405) Improvement Project SR-73 to I-605, 2011.

- California Department of Transportation, SR-22/West Orange County Connection, Phase II (West County Connectors) Project, I-405/I-605 HOV Connector Project Segment, Noise Abatement Decision Report, February 1, 2010.

- California Department of Transportation, Technical Analysis Notes, 1991.

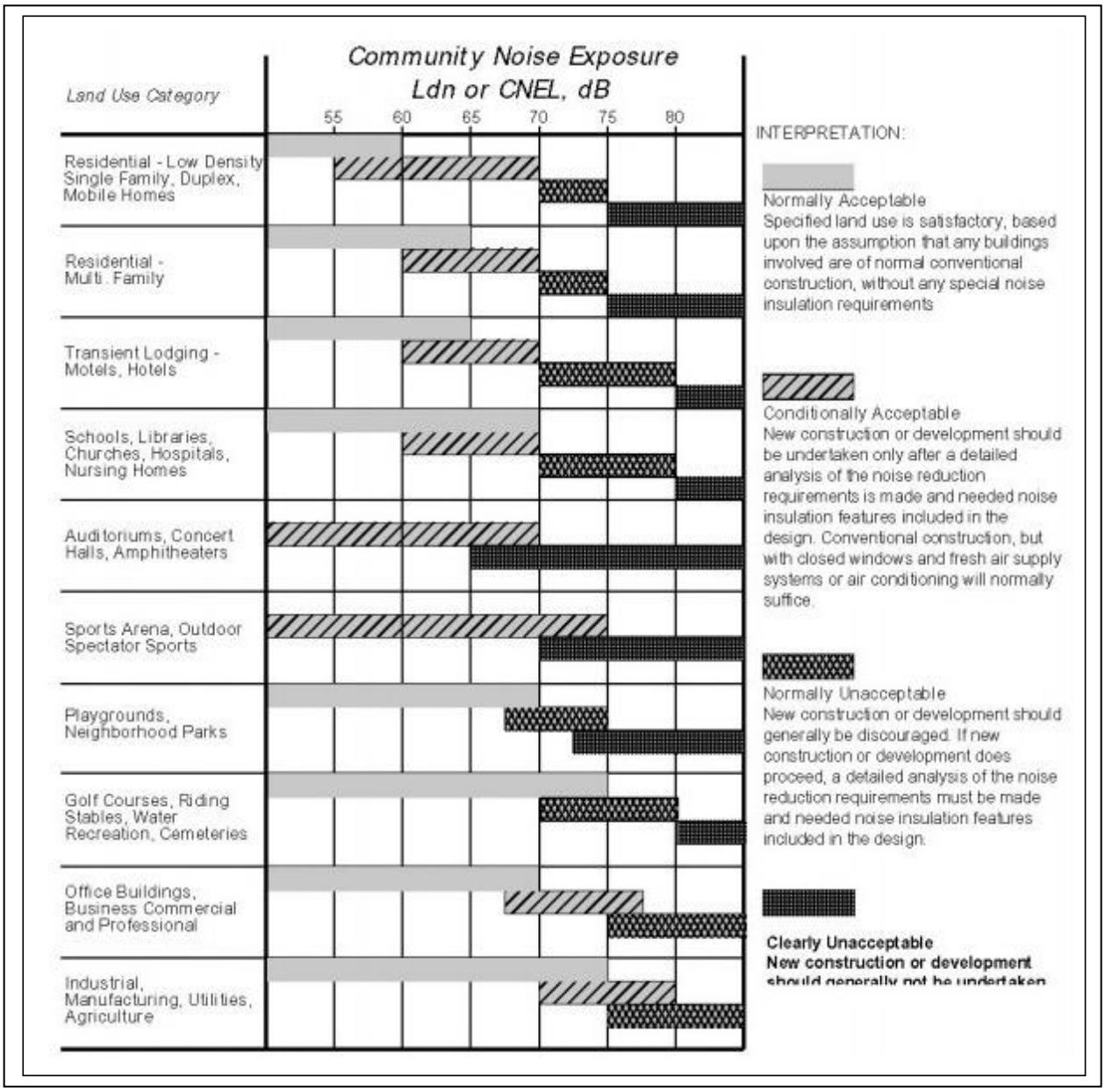
- California Department of Transportation, Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects, August 14, 2006.
- City of Seal Beach, City of Seal Beach General Plan, Noise Element, 2003.
- City of Seal Beach, City of Seal Beach Municipal Code, Chapter 7.15 (Noise), 2004, Revised
- Federal Transit Administration, Transit Noise and Vibration Impact Assessment, 1995.
- United States Department of Housing and Urban Development, A Guide to HUD Environmental Criteria and Standards Contained in 24 CFR Part 51, 1984.
- United States Department of Housing and Urban Development, The Noise Guidebook, 1985.

Figure 1
EVERYDAY NOISE SOURCES, THEIR RELATIVE STRENGTH, AND HUMAN RESPONSE

dB(A)	Overall Level - Sound Pressure Level Reference: 0.0002 Microbars	Community (Outdoor)	Home or Industry	Loudness - Human Judgment of Different Sound Levels
130		- Military jet aircraft take-off with after-burner from aircraft carrier @ 50 ft (130)	- Oxygen torch (121)	120 dB(A) 32 times as loud
120 110	Uncomfortably loud	- Turbo-fan aircraft @ take-off power @ 200 ft (110)	- Riveting machine (110) - Rock and roll band (108-114)	110 dB(A) 16 times as loud
100		- Jet flyover @ 1000 ft (103) - Boeing 707, DC-8 @ 6080 ft before landing (106) - Bell J-2A helicopter @ 100 ft (100)		100 dB(A) 8 times as loud
90	Very loud	- Power mower (96) - Boeing 737, DC-9 @ 6080 ft before landing (97) - Motorcycle @ 25 ft (90)	- Newspaper press (97)	90 dB(A) 4 times as loud
		- Car wash @ 20 ft (89) - Prop airplane flyover @ 1000 ft (88) - Diesel truck, 40 mph @ 50 ft (84) - Diesel train, 45 mph @ 100 ft (83)	- Food blender (88) - Milling machine (85) - Garbage disposal(80)	80 dB(A) 2 times as loud
70	Moderately loud	- High urban ambient sound (80) - Passenger car, 65 mph @ 25 ft (77) - Freeway @ 50 ft from pavement edge, 10:00 a.m. (76 ±6)	- Living room music (76) - TV audio, vacuum cleaner	70 dB(A)
60		- Air conditioning unit @ 100 ft (60)	- Cash register @ 10 ft (65-70) - Electric typewriter @ 10 ft (64) - Dishwasher (rinse) @ 10 ft (60) - Conversation (60)	60 dB(A) half as loud
	Quiet	- Large transformers @ 100 ft (50)		50 dB(A) one-quarter as loud
40		- Bird calls (44) - Lower limit urban ambient sound (40)		40 dB(A) one-eighth as loud
20	Just audible	- Desert at night (dB(A) scale interrupted)		
10	Threshold of hearing			

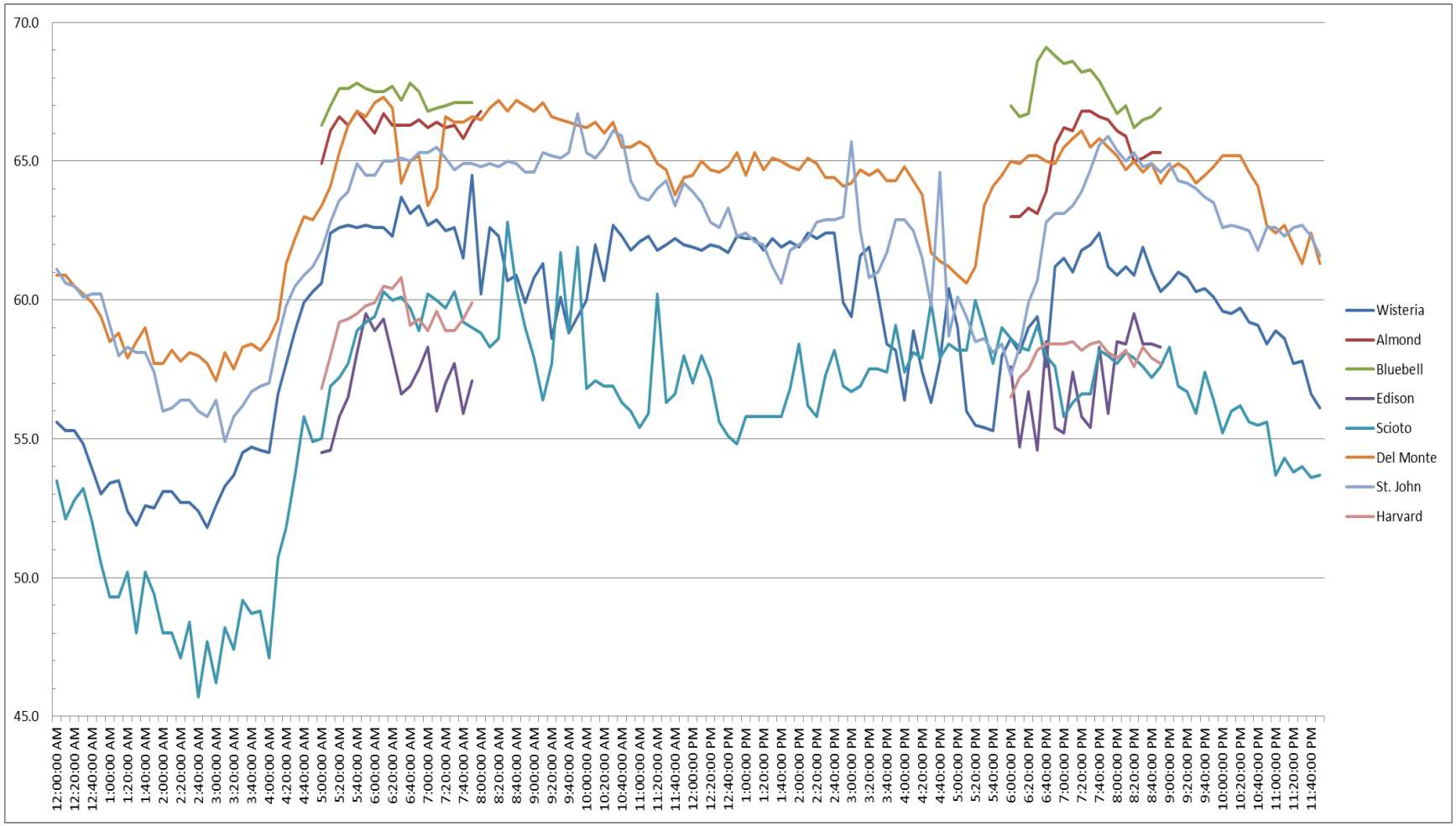
Source: City of Seal Beach General Plan

Figure 2
NOISE AND LAND-USE COMPATIBILITY



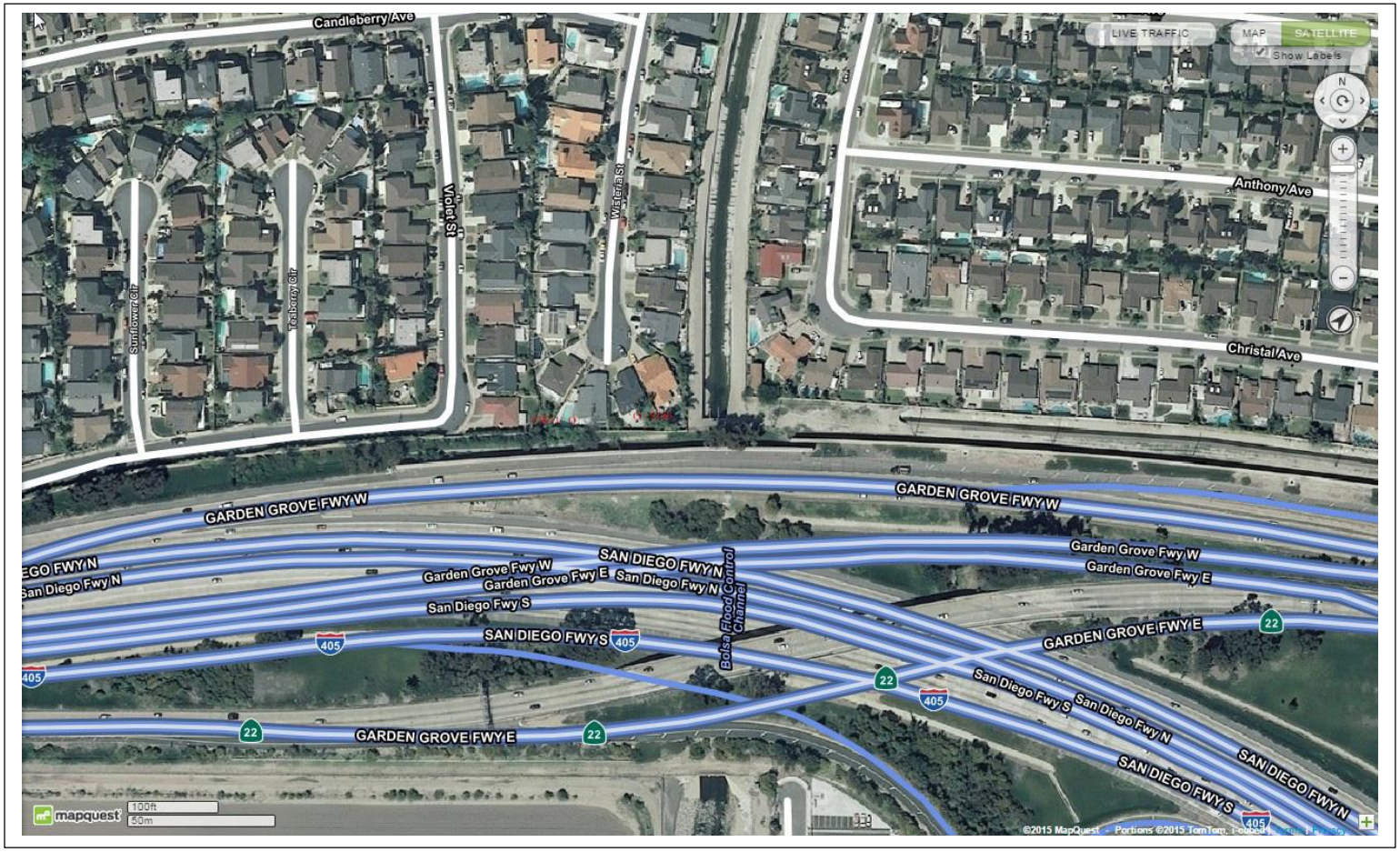
Source: City of Seal Beach General Plan

Figure 3
LEQ OVER TIME FOR THE EIGHT MONITORED LOCATIONS IN COLLEGE PARK EAST, COLLEGE PARK WEST, AND LEISURE WORLD



Source: Environmental Impact Sciences

Figure 4-A
CPE-1: 3651 WISTERIA LANE
COLLEGE PARK EAST

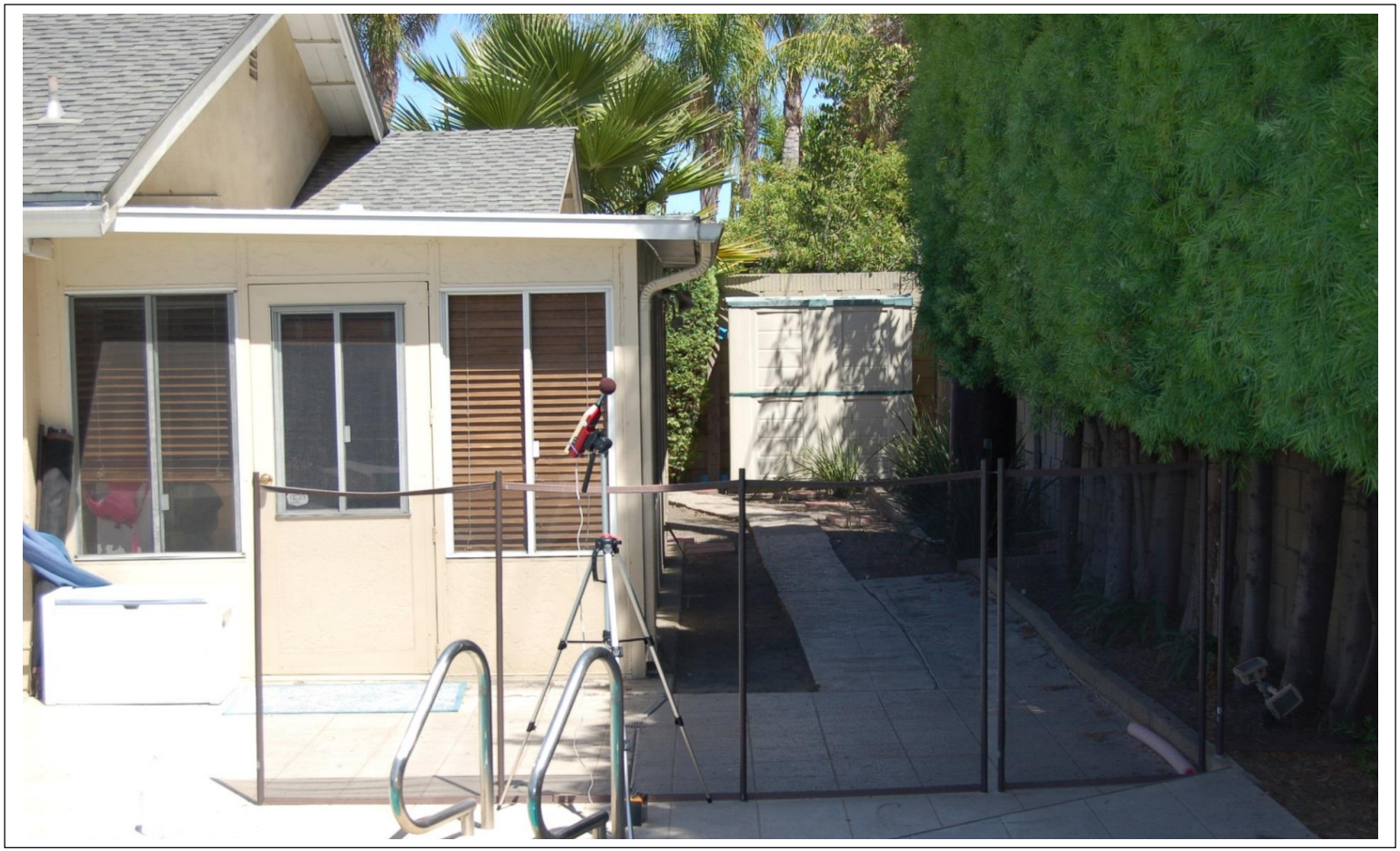


Source: Environmental Impact Sciences

Figure 4-A (Continued)
CPE-1: 3651 WISTERIA LANE
COLLEGE PARK EAST

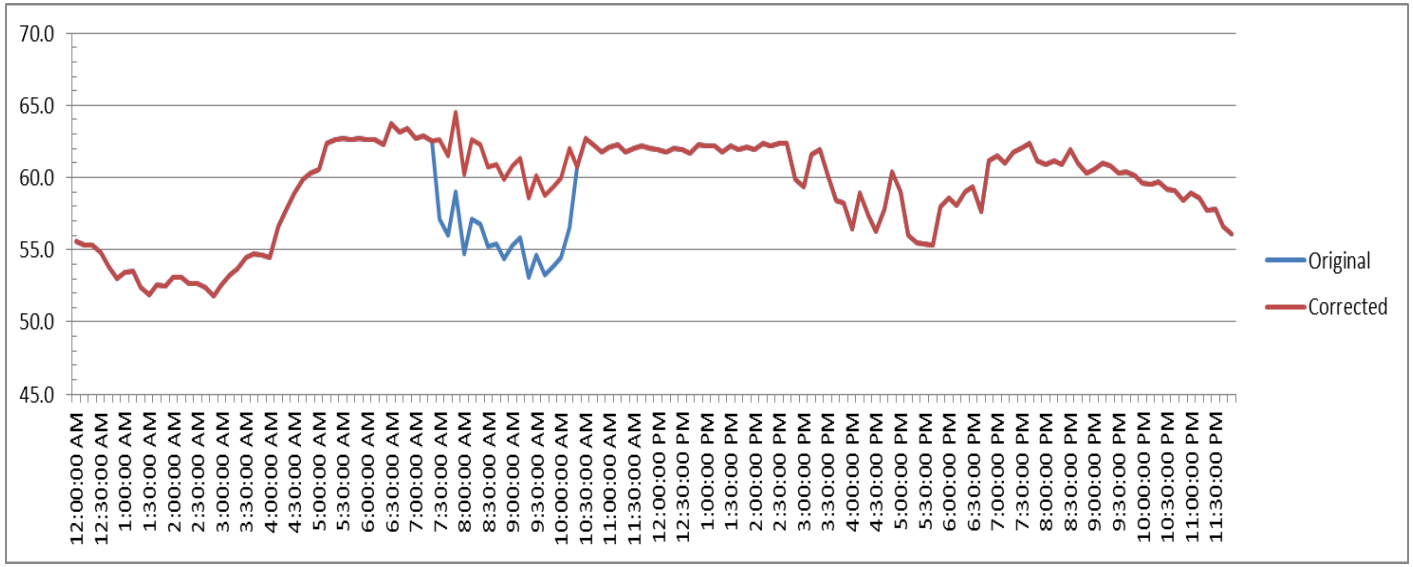
Source: Environmental Impact Sciences

Figure 4-A (Continued)
CPE-1: 3651 WISTERIA LANE
COLLEGE PARK EAST



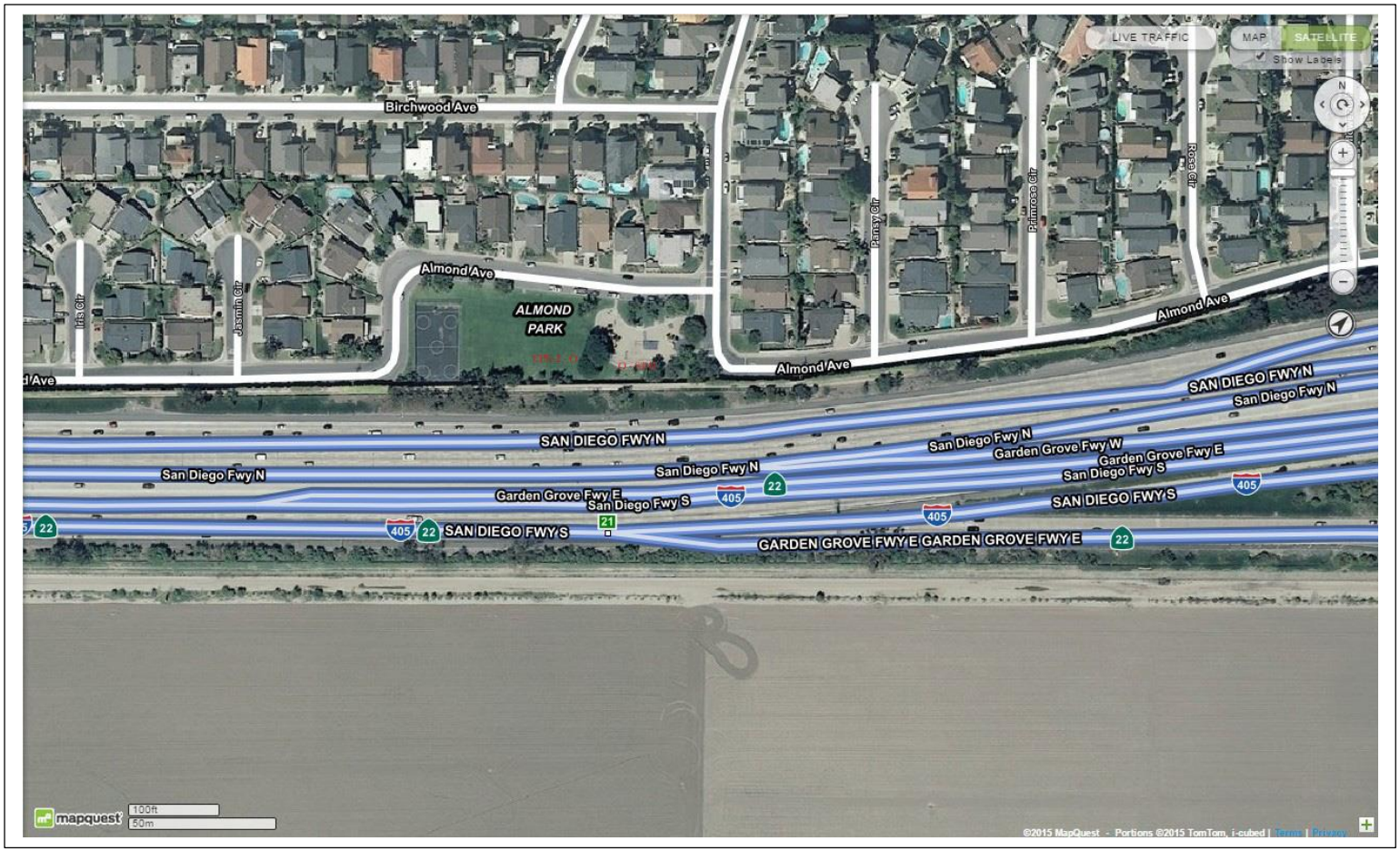
Source: Environmental Impact Sciences

Figure 4-B
CPE-1: 3651 WISTERIA LANE
COLLEGE PARK EAST
24-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Figure 5-A
CPE-2: ALMOND PARK
COLLEGE PARK EAST

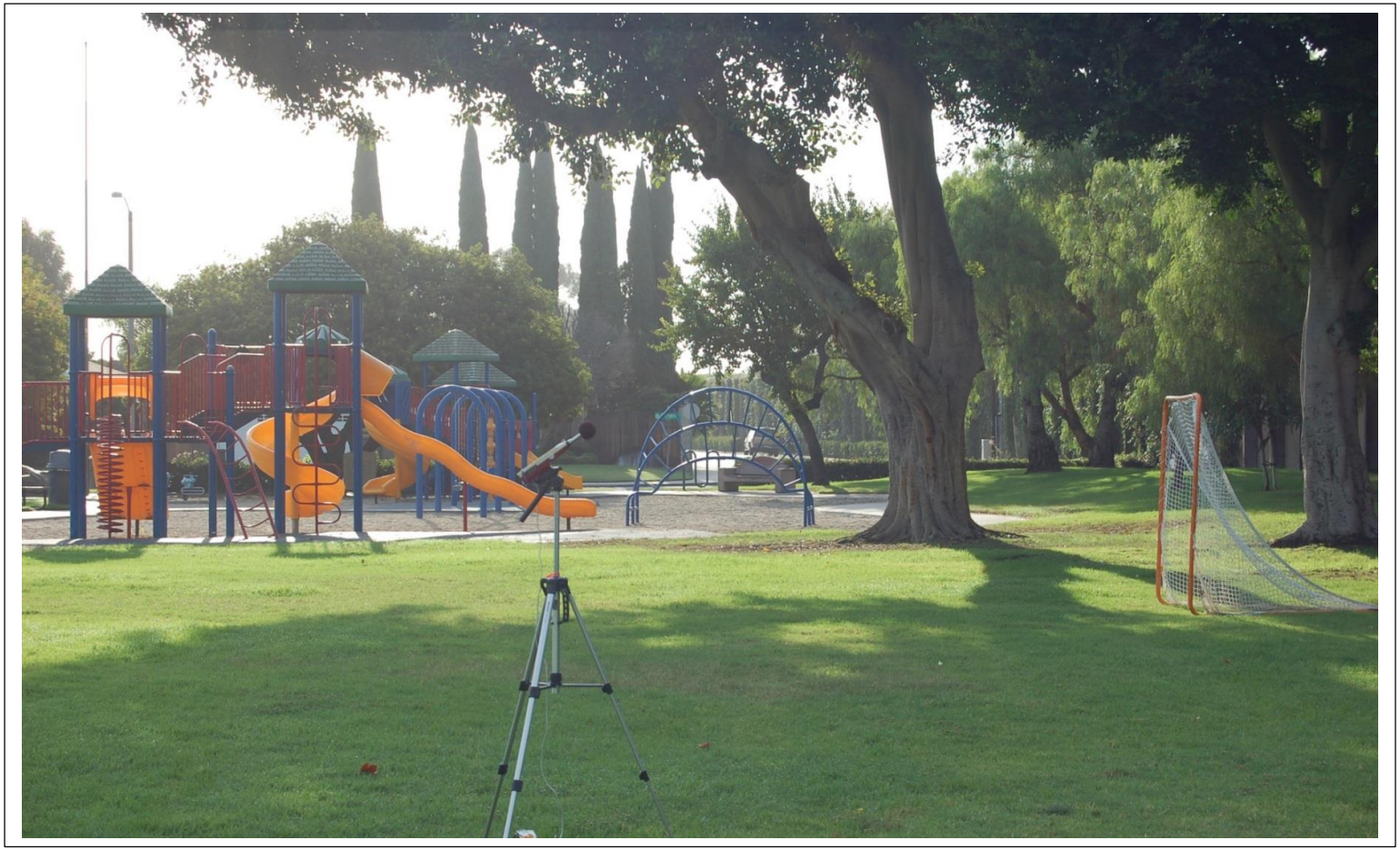


Source: Environmental Impact Sciences

Figure 5-A (Continued)
CPE-2: ALMOND PARK
COLLEGE PARK EAST

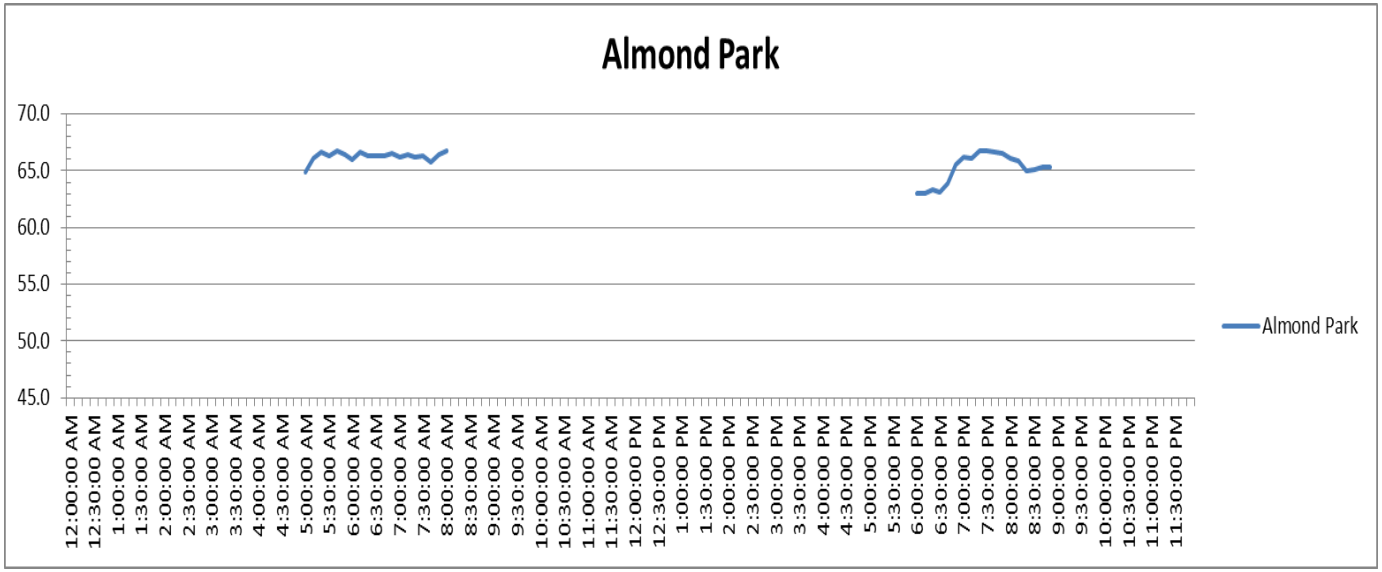
Source: Environmental Impact Sciences

Figure 5-A (Continued)
CPE-2: ALMOND PARK
COLLEGE PARK EAST



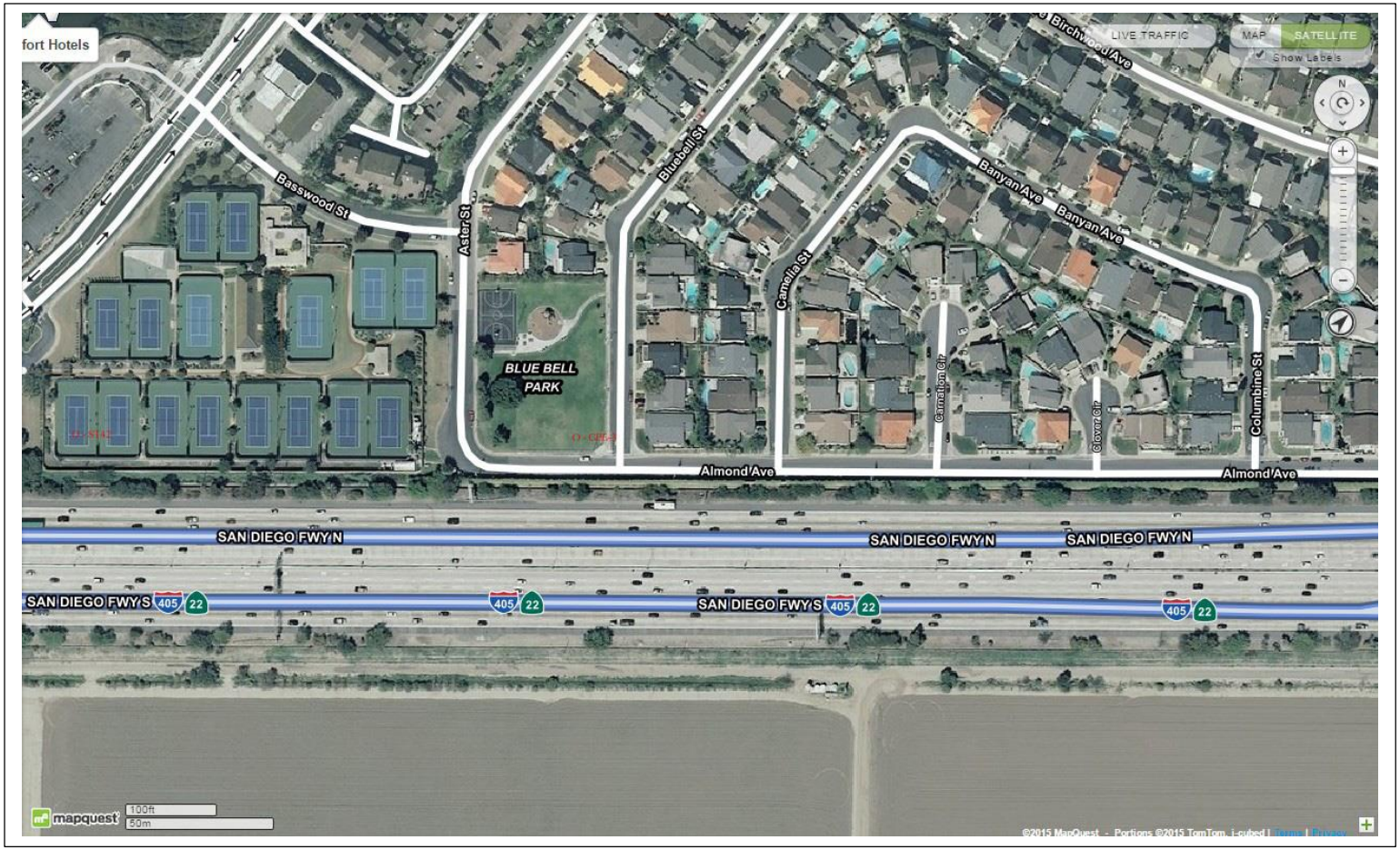
Source: Environmental Impact Sciences

Figure 5-B
CPE-2: ALMOND PARK
COLLEGE PARK EAST
6-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Figure 6-A
CPE-3: BLUEBELL PARK
COLLGE PARK EAST



Source: Environmental Impact Sciences

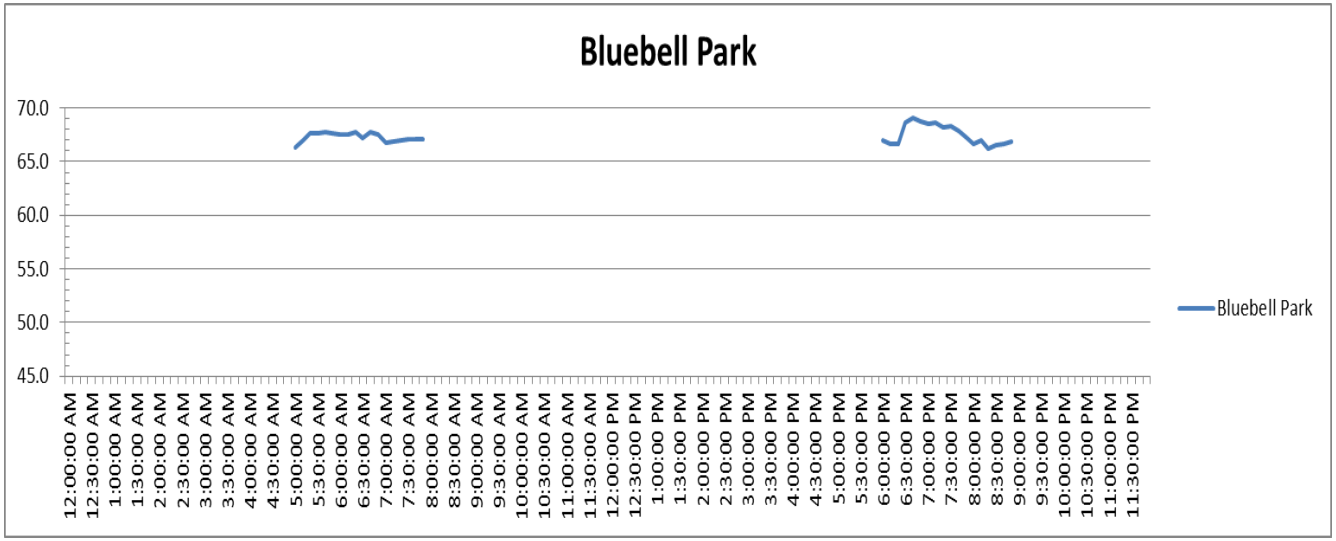
Figure 6-A (Continued)
CPE-3: BLUEBELL PARK
COLLEGE PARK EAST

Source: Environmental Impact Sciences

Figure 6-A (Continued)
CPE-3: BLUEBELL PARK
COLLEGE PARK EAST

Source: Environmental Impact Sciences

Figure 6-B
CPE-3: BLUEBELL PARK
COLLEGE PARK EAST
6-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Figure 7-A
CPW-1: EDISON PARK
COLLEGE PARK WEST

Source: Environmental Impact Sciences

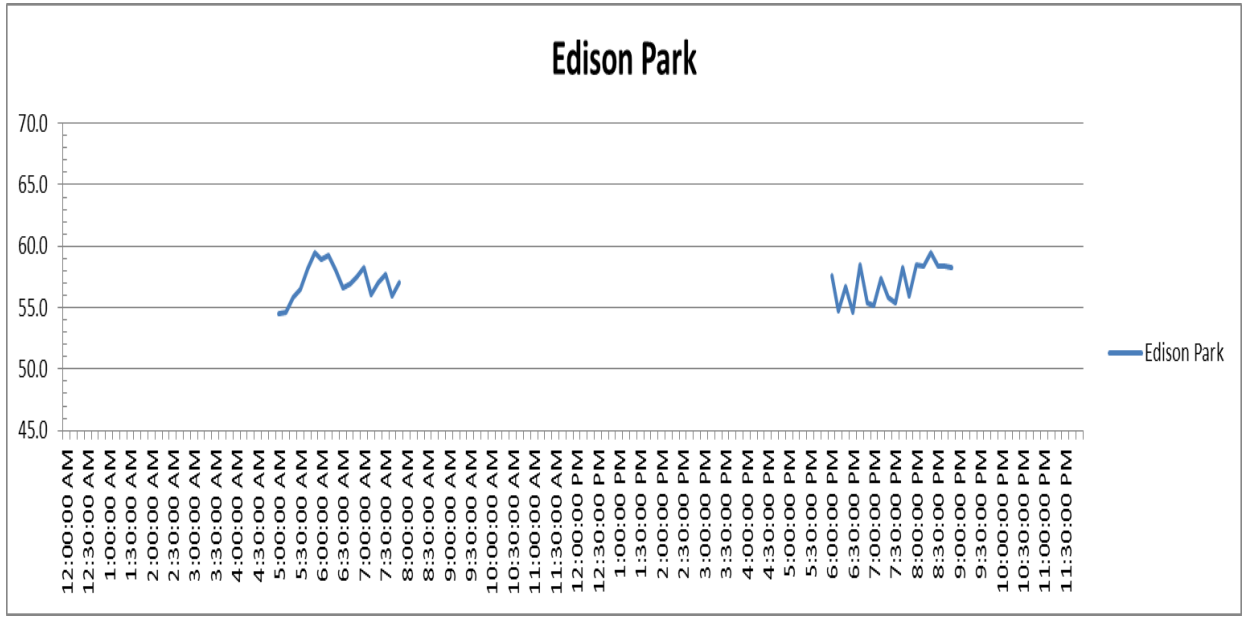
Figure 7-A (Continued)
CPW-1: EDISON PARK
COLLEGE PARK WEST

Source: Environmental Impact Sciences

Figure 7-A (Continued)
CPW-1: EDISON PARK
COLLEGE PARK WEST

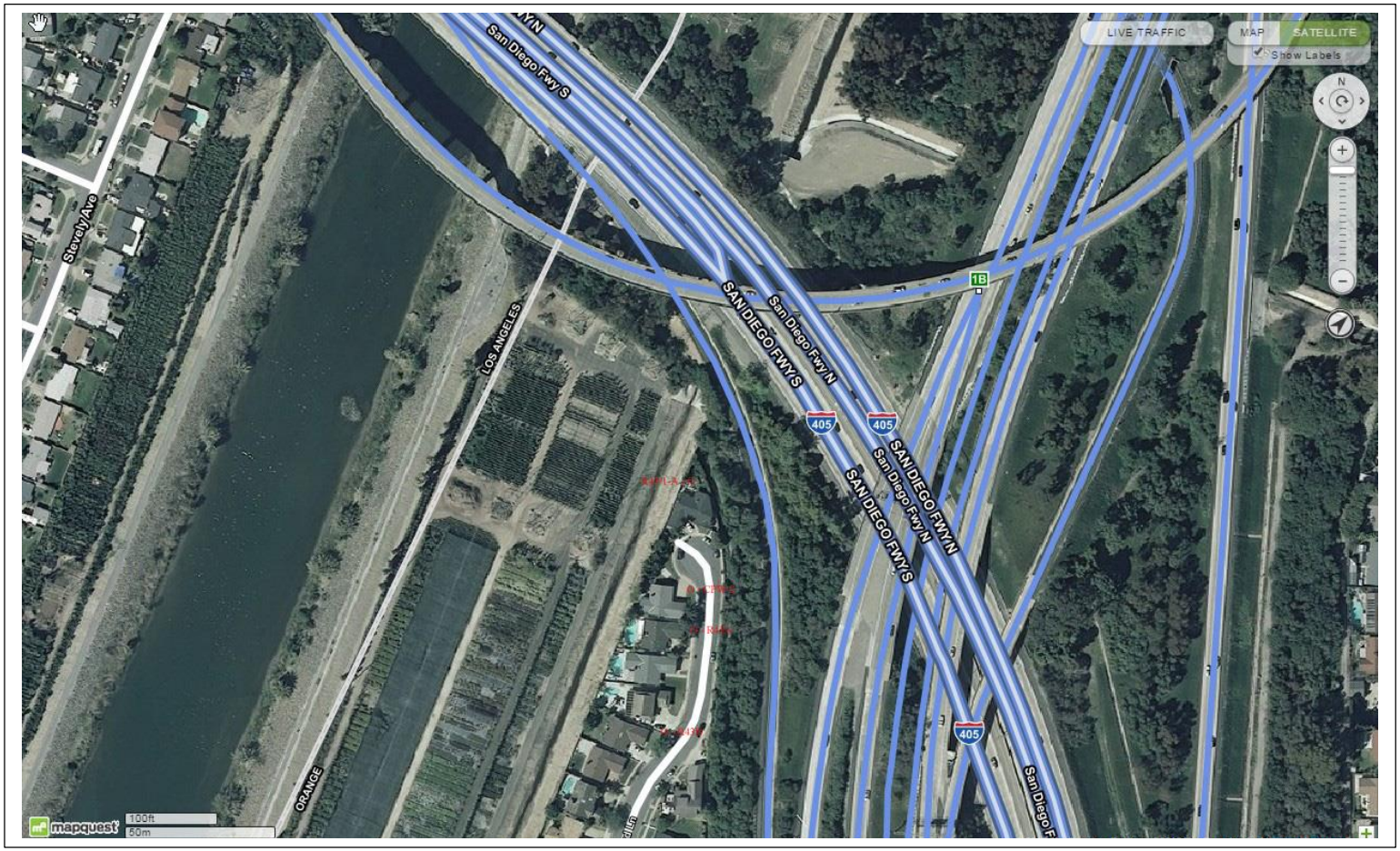
Source: Environmental Impact Sciences

Figure 7-B
CPW-1: EDISON PARK
COLLEGE PARK WEST
6-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Figure 8-A
CPW-2: 333 HARVARD LANE
COLLEGE PARK WEST



Source: Environmental Impact Sciences

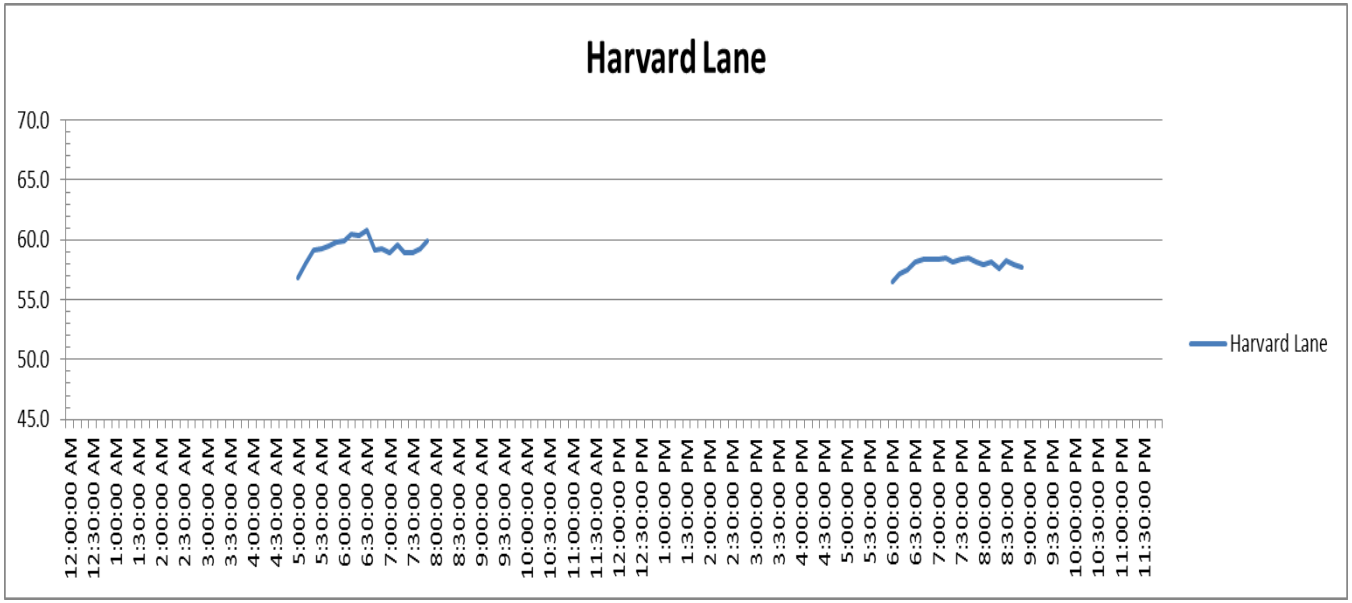
Figure 8-A (Continued)
CPW-2: 333 HARVARD LANE
COLLEGE PARK WEST

Source: Environmental Impact Sciences

Figure 8-A (Continued)
CPW-2: 333 HARVARD LANE
COLLEGE PARK WEST

Source: Environmental Impact Sciences

Figure 8-B
CPW-2: 333 HARVARD LANE
COLLEGE PARK WEST
6-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Figure 9-A
LW-1: 1201 SCIOTO ROAD, BUILDING 226
LEISURE WORLD

Source: Environmental Impact Sciences

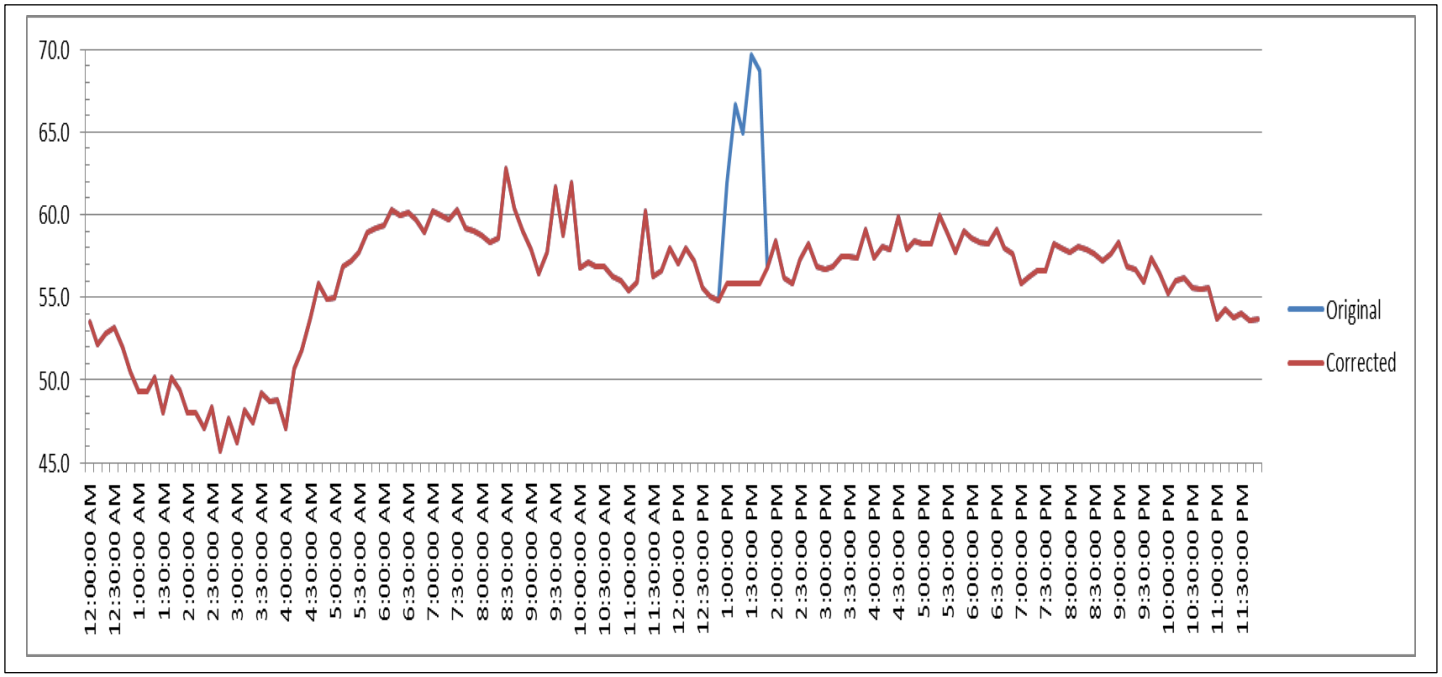
Figure 9-A (Continued)
LW-1: 1201 SCIOTO ROAD, BUILDING 226
LEISURE WORLD

Source: Environmental Impact Sciences

Figure 9-A (Continued)
LW-1: 1201 SCIOTO ROAD, BUILDING 226
LEISURE WORLD

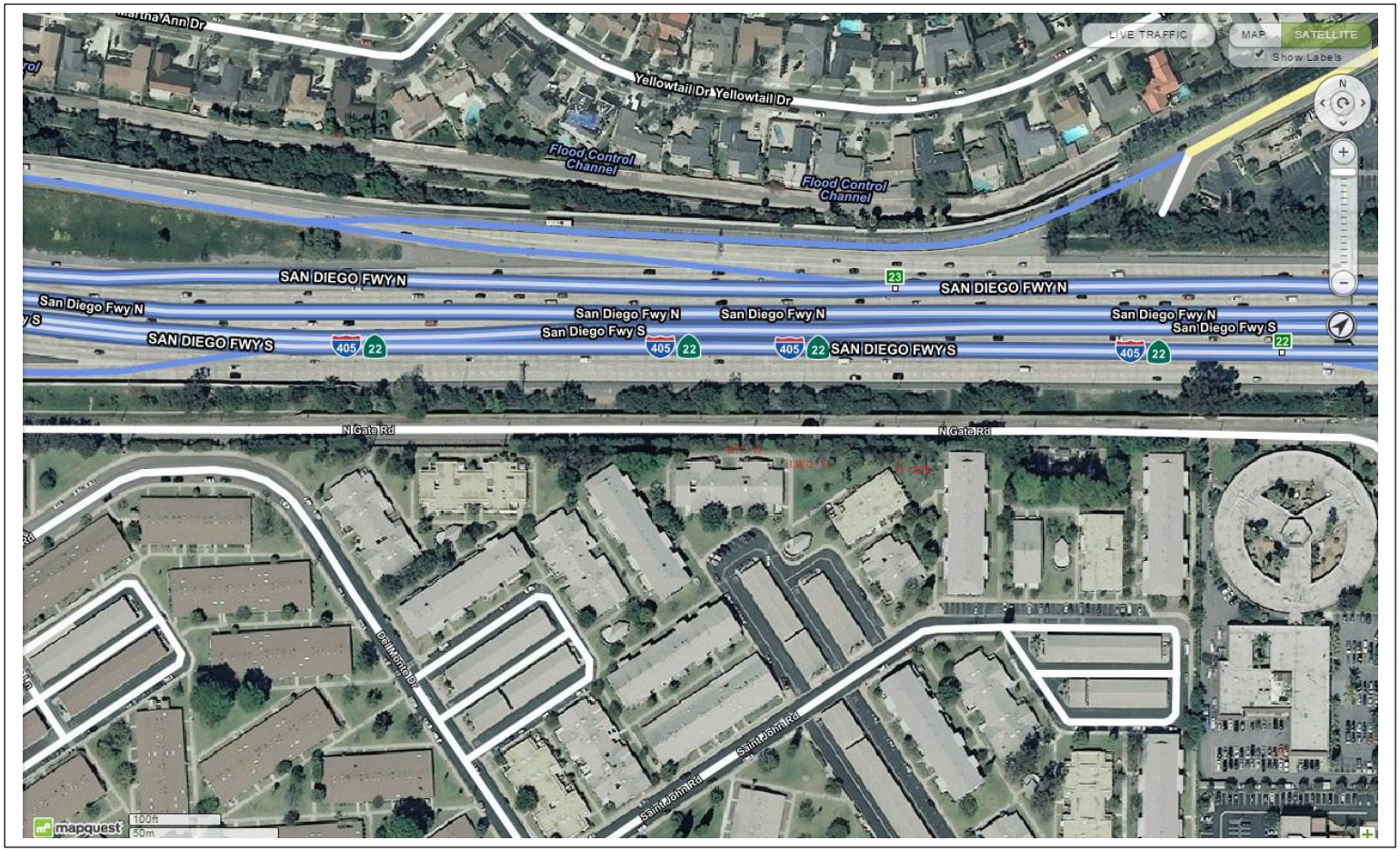
Source: Environmental Impact Sciences

Figure 9-B
LW-1: 1201 SCIOTO ROAD, BUILDING 226
LEISURE WORLD
24-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Figure 10-A
LW-2: 13048 DEL MONTE DRIVE/1801 ST. JOHN ROAD, BUILDING 40
LEISURE WORLD



Source: Environmental Impact Sciences

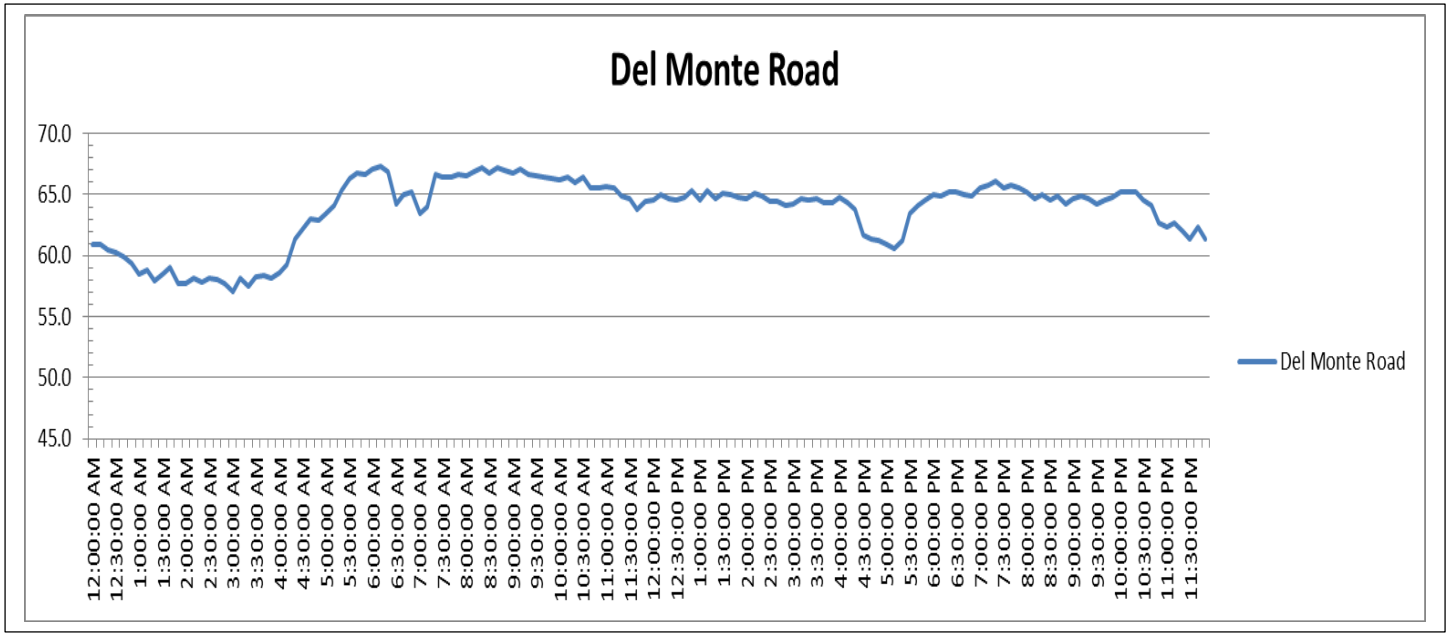
Figure 10-A (Continued)
LW-2: 13048 DEL MONTE DRIVE/1801 ST. JOHN ROAD, BUILDING 40
LEISURE WORLD

Source: Environmental Impact Sciences

Figure 10-A (Continued)
LW-2: 13048 DEL MONTE DRIVE/1801 ST. JOHN ROAD, BUILDING 40
LEISURE WORLD

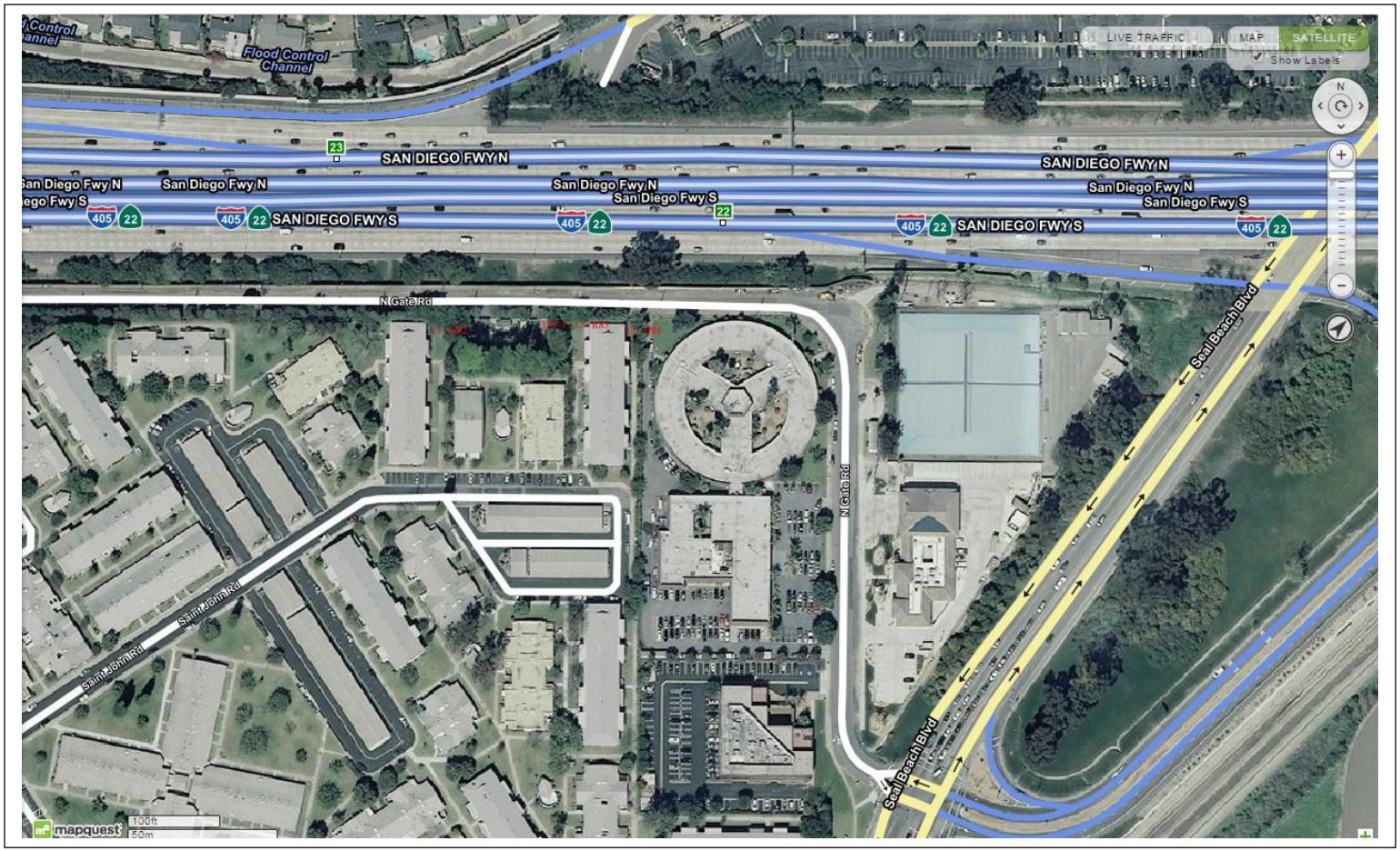
Source: Environmental Impact Sciences

Figure 10-A (Continued)
LW-2: 13048 DEL MONTE DRIVE/1801 ST. JOHN ROAD, BUILDING 40
LEISURE WORLD
24-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Figure 11-A
1941 ST. JOHN ROAD, BUILDING 34
LEISURE WORLD



Source: Environmental Impact Sciences

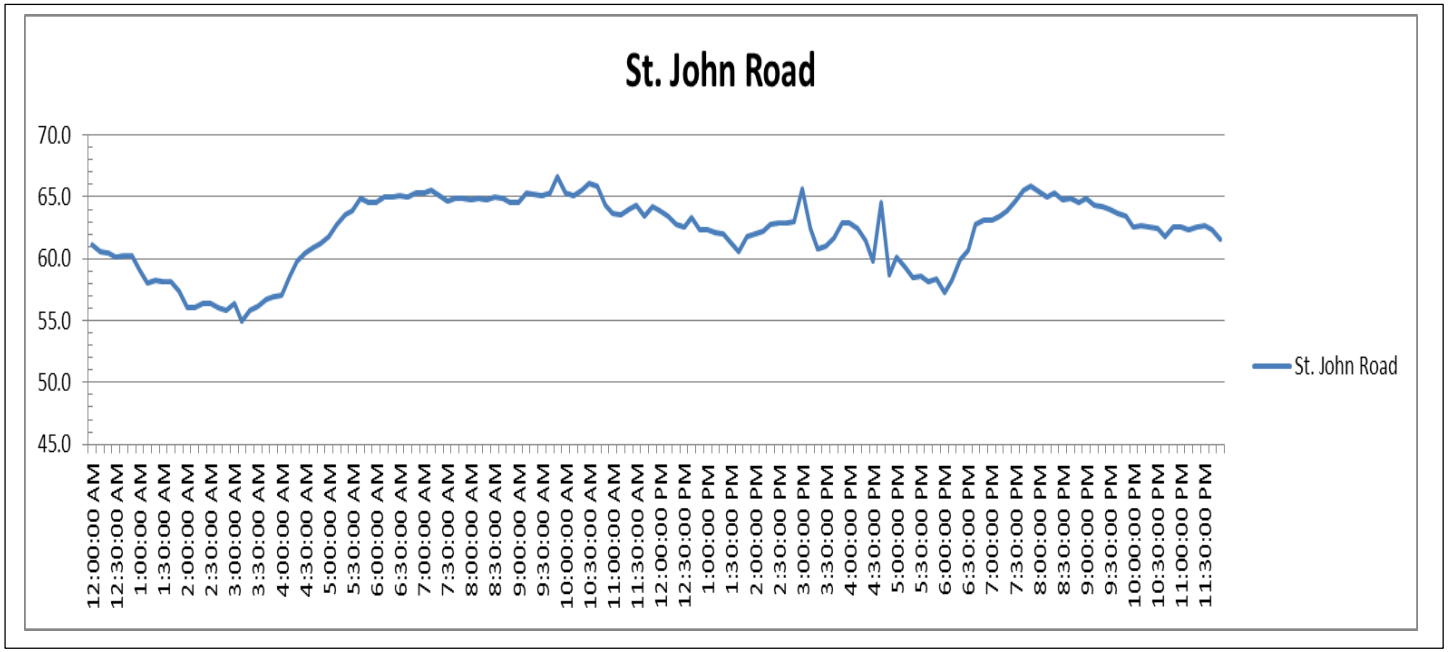
Figure 11-A (Continued)
1941 ST. JOHN ROAD, BUILDING 34
LEISURE WORLD

Source: Environmental Impact Sciences

Figure 11-A (Continued)
1941 ST. JOHN ROAD, BUILDING 34
LEISURE WORLD

Source: Environmental Impact Sciences

Figure 11-B
1941 ST. JOHN ROAD, BUILDING 34
LEISURE WORLD
24-HOUR LEQ NOISE LEVEL
(dBA)



Source: Environmental Impact Sciences

Appendix A
Certificates of Calibration

Certificate of Calibration

9201 Irvine Blvd., Irvine, CA 92618
Phone: 949-454-6603 Fax: 949-454-6642

Customer:

Synectecology
10232 Overhill Drive
Santa Ana, CA 92705

Contact: Todd Brody
Phone#: 714-669-9799

Certificate Number :	44237-1
Technician:	11
Customer PO#:	CHECK
Calibration Date:	3/20/2015
Cycle:	12
Next Cal Due:	3/20/2016
Date Inducted:	3/16/2015

Manufacturer: **Quest**
Model: **2900**
Description: SOUND METER LEVEL

Serial#: CD5030027
Asset#: NAN
Accuracy: ANSI TYPE II
Procedure: 4226

Environmental Conditions: Field Calibration: NO Temperature: 20 ° C Relative Humidity: 38 %

As Received: **IN TOLERANCE**
Comments:

As Returned: **IN TOLERANCE**
Comments:

Standards Used

ID	Manufacturer	Model	Description	Next Cal Due	Traceability
EXC-381	Tektronix	DM5010	Programmable Digital Multimeter	06/25/2015	33908-25
EXC-878	Bruel & Kjaer	4226	Acoustic Calibrator 94, 104 & 114dB	07/16/2016	33525-3

Excalibur Engineering is not liable for any damage, consequences, suitability of use or any legal remedy regarding this certification with the exception of the calibration within 30 days. Unless otherwise stated, the TUR is > 4:1. Excalibur Engineering warrants only that the instrument meets the specifications above at time of test. Standards used, as noted above, are current and traceable to the National Institute of Standards and Technology (NIST) where possible. The quality management system and records of Excalibur Engineering are in compliance with ISO 17025:2005, ISO 10012 and ANSI Z540-3 where applicable. This certificate/report shall not be reproduced in any form without written approval of Excalibur Engineering, Inc.

M. S 3/20/15
Authorizing Signature Date

Certificate of Calibration

9201 Irvine Blvd., Irvine, CA 92618
Phone: 949-454-6603 Fax: 949-454-6642

Customer:

Synectecology
10232 Overhill Drive
Santa Ana, CA 92705

Contact: Todd Brody
Phone#: 714-669-9799

Certificate Number :	44237-2
Technician:	11
Customer PO#:	CHECK
Calibration Date:	3/20/2015
Cycle:	12
Next Cal Due:	3/20/2016
Date Inducted:	3/16/2015

Manufacturer: **Quest**
Model: **QC-10**
Description: Sound Calibrator

Serial#: QE4100253
Asset#: NAN
Accuracy: ±0.5 dB
Procedure: 1211

Environmental Conditions: Field Calibration: NO Temperature: 20 ° C Relative Humidity: 38 %

As Received: **IN TOLERANCE**
Comments:

As Returned: **IN TOLERANCE**
Comments:

Standards Used

ID	Manufacturer	Model	Description	Next Cal Due	Traceability
EXC-051	Bruel & Kjaer	2639	Microphone Preamplifier for 1/2" microphone	06/10/2015	34605-30
EXC-089	Bruel & Kjaer	4228	Pistonphone	08/22/2015	35857-21
EXC-713	Fluke	8920A	Digital Voltmeter 10Hz-20MHz	05/23/2015	34605-7
EXC-938	Agilent/Keysight	8903B	Audio Analyzer	01/31/2017	43565-1
EXC-949	Bruel & Kjaer	2636	Measuring Amplifier-Voltmeter	01/31/2017	43565-2

Excalibur Engineering is not liable for any damage, consequences, suitability of use or any legal remedy regarding this certification with the exception of the calibration within 30 days. Unless otherwise stated, the TUR is > 4:1. Excalibur Engineering warrants only that the instrument meets the specifications above at time of test. Standards used, as noted above, are current and traceable to the National Institute of Standards and Technology (NIST) where possible. The quality management system and records of Excalibur Engineering are in compliance with ISO 17025:2005, ISO 10012 and ANSI Z540-3 where applicable. This certificate/report shall not be reproduced in any form without written approval of Excalibur Engineering, Inc.

M. A. 3/20/15
Authorizing Signature Date

Appendix B
Data Sheets

College Park East
CPE-1 (3651 Wisteria Lane) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 04-AUG-15 @ 10:31:25

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
04-AUG-15 @ 11:00:10	05-AUG-15 @ 11:00:10	24:00:00
Peak Level 88.0dB	05-AUG-15 @ 05:38:03	
Max Level 71.2dB	04-AUG-15 @ 14:09:46	
Min Level 41.7dB	05-AUG-15 @ 01:31:16	
Overload 0.00%		

LEQ	59.8dB	SEL(3)	109.2dB	TWA	64.6dB	TAKM5	60.5dB
LDN	65.4dB	CNEL	65.9dB	Pa2Sec	33.5		
L2	63.8dB	L8	62.9dB	L25	61.7dB	L50	59.4dB

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
11:10:10	62.1dB	65.9dB	63.0dB	61.0dB
11:20:10	62.3dB	66.1dB	63.4dB	61.3dB
11:30:10	61.8dB	65.2dB	62.9dB	60.7dB
11:40:10	62.0dB	65.8dB	63.1dB	60.9dB
11:50:10	62.2dB	65.6dB	63.1dB	61.1dB
12:00:10	62.0dB	64.5dB	63.1dB	60.8dB
12:10:10	61.9dB	65.5dB	63.1dB	60.5dB
12:20:10	61.8dB	64.3dB	62.9dB	60.6dB
12:30:10	62.0dB	66.0dB	63.1dB	60.6dB
12:40:10	61.9dB	64.6dB	62.8dB	61.0dB
12:50:10	61.7dB	65.6dB	62.8dB	60.3dB
13:00:10	62.3dB	64.4dB	63.4dB	60.9dB
13:10:10	62.2dB	65.9dB	63.3dB	60.8dB

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College Park East
CPE-1 (3651 Wisteria Lane) (2 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
13:20:10	62.2dB	64.7dB	63.2dB	61.3dB
13:30:10	61.8dB	64.1dB	62.8dB	60.7dB
13:40:10	62.2dB	69.5dB	63.3dB	60.7dB
13:50:10	61.9dB	65.5dB	62.9dB	60.7dB
14:00:10	62.1dB	67.9dB	63.2dB	61.0dB
14:10:10	61.9dB	71.2dB	63.0dB	60.3dB
14:20:10	62.4dB	65.3dB	63.6dB	61.1dB
14:30:10	62.2dB	66.5dB	63.2dB	60.9dB
14:40:10	62.4dB	67.9dB	63.4dB	61.2dB
14:50:10	62.4dB	67.3dB	63.3dB	61.5dB
15:00:10	59.9dB	63.4dB	61.9dB	56.6dB
15:10:10	59.4dB	69.0dB	62.2dB	56.3dB
15:20:10	61.6dB	63.7dB	62.8dB	60.2dB
15:30:10	61.9dB	65.6dB	63.1dB	60.4dB
15:40:10	60.2dB	63.4dB	61.6dB	58.4dB
15:50:10	58.4dB	62.4dB	60.4dB	55.7dB
16:00:10	58.2dB	65.7dB	60.3dB	54.1dB
16:10:10	56.4dB	61.2dB	57.9dB	54.8dB
16:20:10	58.9dB	62.2dB	60.5dB	56.3dB
16:30:10	57.4dB	64.6dB	58.8dB	55.7dB
16:40:10	56.3dB	60.1dB	57.6dB	54.9dB
16:50:10	57.8dB	62.7dB	60.5dB	55.2dB
17:00:10	60.4dB	65.0dB	61.4dB	59.3dB
17:10:10	59.0dB	66.0dB	61.2dB	55.7dB
17:20:10	56.0dB	60.6dB	58.4dB	53.7dB
17:30:10	55.5dB	61.0dB	57.1dB	53.0dB
17:40:10	55.4dB	62.6dB	57.6dB	52.9dB
17:50:10	55.3dB	61.4dB	57.2dB	53.0dB
18:00:10	58.0dB	61.6dB	59.7dB	56.1dB
18:10:10	58.6dB	65.4dB	60.1dB	55.7dB
18:20:10	58.1dB	65.1dB	59.8dB	55.4dB
18:30:10	59.0dB	67.1dB	61.5dB	55.7dB
18:40:10	59.4dB	64.2dB	61.3dB	57.3dB
18:50:10	57.6dB	67.0dB	59.0dB	55.5dB
19:00:10	61.2dB	65.4dB	62.3dB	60.0dB
19:10:10	61.5dB	63.9dB	62.5dB	60.3dB
19:20:10	61.0dB	66.6dB	61.9dB	59.5dB
19:30:10	61.8dB	64.3dB	63.0dB	60.5dB
19:40:10	62.0dB	64.6dB	63.2dB	60.8dB
19:50:10	62.4dB	69.9dB	63.8dB	60.5dB
20:00:10	61.2dB	65.8dB	62.3dB	59.9dB
20:10:10	60.9dB	64.4dB	61.8dB	59.9dB
20:20:10	61.2dB	63.9dB	62.3dB	60.1dB
20:30:10	60.9dB	63.4dB	61.8dB	59.7dB
20:40:10	61.9dB	65.9dB	63.3dB	60.2dB
20:50:10	61.0dB	69.7dB	62.3dB	59.2dB
21:00:10	60.3dB	64.7dB	61.5dB	58.9dB
21:10:10	60.6dB	65.4dB	61.8dB	59.3dB
21:20:10	61.0dB	63.6dB	62.0dB	60.0dB
21:30:10	60.8dB	64.0dB	61.8dB	59.7dB
21:40:10	60.3dB	65.4dB	61.6dB	58.4dB
21:50:10	60.4dB	65.0dB	61.5dB	59.2dB
22:00:10	60.1dB	64.7dB	61.5dB	58.5dB
22:10:10	59.6dB	65.3dB	60.9dB	58.0dB
22:20:10	59.5dB	66.1dB	60.6dB	58.1dB

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College Park East
CPE-1 (3651 Wisteria Lane) (3 of 4)

LOGGING (10 MIN)	LEQ	LMAX	L10	L90
Study 1				
22:30:10	59.7dB	65.3dB	60.9dB	58.2dB
22:40:10	59.2dB	66.1dB	60.5dB	57.5dB
22:50:10	59.1dB	64.0dB	60.4dB	57.3dB
23:00:10	58.4dB	61.6dB	59.7dB	56.7dB
23:10:10	58.9dB	64.2dB	60.4dB	57.3dB
23:20:10	58.6dB	66.4dB	60.0dB	56.7dB
23:30:10	57.7dB	63.4dB	59.1dB	55.4dB
23:40:10	57.8dB	65.8dB	59.5dB	55.5dB
23:50:10	56.6dB	60.4dB	58.4dB	54.4dB
00:00:10	56.1dB	60.5dB	57.9dB	53.7dB
00:10:10	55.6dB	68.4dB	57.6dB	52.4dB
00:20:10	55.3dB	60.9dB	57.6dB	52.4dB
00:30:10	55.3dB	59.9dB	57.0dB	52.6dB
00:40:10	54.8dB	60.0dB	56.6dB	52.2dB
00:50:10	53.9dB	61.2dB	56.0dB	51.6dB
01:00:10	53.0dB	58.0dB	55.1dB	50.1dB
01:10:10	53.4dB	64.5dB	55.8dB	49.4dB
01:20:10	53.5dB	60.1dB	55.7dB	50.6dB
01:30:10	52.4dB	58.9dB	54.5dB	48.5dB
01:40:10	51.9dB	60.7dB	54.4dB	46.5dB
01:50:10	52.6dB	63.7dB	54.7dB	48.9dB
02:00:10	52.5dB	61.1dB	55.1dB	47.4dB
02:10:10	53.1dB	63.1dB	55.2dB	47.6dB
02:20:10	53.1dB	59.1dB	55.6dB	49.3dB
02:30:10	52.7dB	62.2dB	55.6dB	48.5dB
02:40:10	52.7dB	64.5dB	54.5dB	48.0dB
02:50:10	52.4dB	61.8dB	54.8dB	48.5dB
03:00:10	51.8dB	60.2dB	54.3dB	48.3dB
03:10:10	52.6dB	57.6dB	55.2dB	48.9dB
03:20:10	53.3dB	62.0dB	56.1dB	48.7dB
03:30:10	53.7dB	62.4dB	55.9dB	50.2dB
03:40:10	54.5dB	62.0dB	56.7dB	50.7dB
03:50:10	54.7dB	59.6dB	56.9dB	51.7dB
04:00:10	54.6dB	60.3dB	56.5dB	51.8dB
04:10:10	54.5dB	59.7dB	56.5dB	51.9dB
04:20:10	56.6dB	63.5dB	58.7dB	52.7dB
04:30:10	57.7dB	62.1dB	59.1dB	55.6dB
04:40:10	58.9dB	63.6dB	60.5dB	56.9dB
04:50:10	59.9dB	66.5dB	61.6dB	58.0dB
05:00:10	60.3dB	65.5dB	61.5dB	58.4dB
05:10:10	60.6dB	66.0dB	61.9dB	59.0dB
05:20:10	62.4dB	64.8dB	63.5dB	61.2dB
05:30:10	62.6dB	65.5dB	63.7dB	61.5dB
05:40:10	62.7dB	70.4dB	63.6dB	61.6dB
05:50:10	62.6dB	65.9dB	63.5dB	61.7dB
06:00:10	62.7dB	65.5dB	63.6dB	61.4dB
06:10:10	62.6dB	66.3dB	63.5dB	61.8dB
06:20:10	62.6dB	65.4dB	63.5dB	61.6dB
06:30:10	62.3dB	68.6dB	63.6dB	59.6dB
06:40:10	63.7dB	70.3dB	64.6dB	62.5dB
06:50:10	63.1dB	65.2dB	63.9dB	62.3dB
07:00:10	63.4dB	66.7dB	64.3dB	62.1dB
07:10:10	62.7dB	65.2dB	63.6dB	61.7dB
07:20:10	62.9dB	67.2dB	64.3dB	61.6dB
07:30:10	62.5dB	64.7dB	63.3dB	61.6dB

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College Park East
CPE-1 (3651 Wisteria Lane) (4 of 4)

LOGGING (10 MIN)	LEQ	LMAX	L10	L90
Study 1				
07:40:10	57.1dB	63.5dB	58.9dB	55.1dB
07:50:10	56.0dB	63.8dB	57.7dB	54.2dB
08:00:10	59.0dB	62.5dB	61.2dB	55.7dB
08:10:10	54.7dB	61.1dB	56.3dB	52.3dB
08:20:10	57.1dB	64.7dB	58.9dB	54.6dB
08:30:10	56.8dB	67.7dB	59.6dB	53.0dB
08:40:10	55.2dB	61.4dB	57.3dB	52.7dB
08:50:10	55.4dB	67.2dB	56.9dB	53.4dB
09:00:10	54.4dB	64.3dB	56.3dB	51.1dB
09:10:10	55.3dB	62.0dB	56.9dB	52.8dB
09:20:10	55.8dB	62.9dB	57.3dB	53.6dB
09:30:10	53.1dB	59.2dB	54.9dB	50.3dB
09:40:10	54.6dB	63.7dB	56.2dB	51.8dB
09:50:10	53.3dB	58.3dB	54.6dB	51.7dB
10:00:10	53.9dB	56.4dB	55.1dB	51.7dB
10:10:10	54.5dB	61.1dB	56.3dB	51.9dB
10:20:10	56.5dB	62.4dB	59.3dB	53.6dB
10:30:10	60.7dB	64.3dB	62.1dB	58.8dB
10:40:10	62.7dB	68.7dB	64.0dB	61.4dB
10:50:10	62.3dB	69.3dB	63.4dB	61.0dB
11:00:10	61.8dB	66.1dB	62.9dB	60.8dB

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College Park East
CPE-2 (Almond Park) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.1dB 06-AUG-15 @ 04:47:16

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
06-AUG-15 @ 05:00:10	06-AUG-15 @ 08:10:12	3:10:01
Peak Level 89.8dB	06-AUG-15 @ 06:57:42	
Max Level 73.6dB	06-AUG-15 @ 06:57:42	
Min Level 61.8dB	06-AUG-15 @ 05:05:01	
Overload 0.00%		

LEQ	66.3dB	SEL(3)	106.9dB	TWA	62.3dB	TAKM5	67.3dB
LDN	74.5dB	CNEL	74.5dB	Pa2Sec	19.6		
L2	68.1dB	L8	67.4dB	L25	66.7dB	L50	66.2dB

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
05:10:10	64.9dB	69.9dB	66.2dB	63.5dB
05:20:10	66.1dB	71.8dB	67.2dB	64.7dB
05:30:10	66.6dB	68.9dB	67.5dB	65.6dB
05:40:10	66.3dB	68.2dB	67.1dB	65.3dB
05:50:10	66.8dB	72.7dB	67.6dB	65.8dB
06:00:10	66.4dB	71.5dB	67.3dB	65.4dB
06:10:10	66.0dB	68.7dB	66.8dB	65.1dB
06:20:10	66.7dB	69.6dB	67.5dB	65.8dB
06:30:10	66.3dB	73.5dB	67.0dB	65.3dB
06:40:10	66.3dB	70.0dB	67.3dB	65.3dB
06:50:10	66.3dB	72.3dB	67.3dB	65.1dB
07:00:10	66.5dB	73.6dB	67.3dB	65.4dB
07:10:10	66.2dB	68.6dB	67.1dB	65.4dB

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College Park East
CPE-2 (Almond Park) (2 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
07:20:10	66.4dB	71.3dB	67.1dB	65.6dB
07:30:10	66.2dB	68.7dB	67.1dB	65.3dB
07:40:10	66.3dB	73.1dB	67.4dB	65.2dB
07:50:10	65.8dB	67.9dB	66.6dB	64.9dB
08:00:10	66.4dB	71.4dB	67.1dB	65.5dB
08:10:10	66.8dB	69.4dB	67.6dB	66.0dB

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College Park East
CPE-2 (Almond Park) (3 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 06-AUG-15 @ 17:36:16

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
06-AUG-15 @ 18:00:10	06-AUG-15 @ 21:00:10	3:00:00
Peak Level 91.2dB	06-AUG-15 @ 19:40:25	
Max Level 74.3dB	06-AUG-15 @ 19:07:40	
Min Level 56.5dB	06-AUG-15 @ 18:00:11	
Overload 0.00%		

LEQ	65.4dB	SEL(3)	105.7dB	TWA	61.1dB	TAKM5	66.2dB
LDN	65.4dB	CNEL	69.7dB	Pa2Sec	15.1		
L2	67.9dB	L8	67.1dB	L25	66.3dB	L50	65.4dB

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
18:10:10	63.0dB	67.5dB	64.2dB	60.6dB
18:20:10	63.0dB	67.3dB	64.5dB	61.3dB
18:30:10	63.3dB	69.5dB	65.1dB	60.7dB
18:40:10	63.1dB	68.3dB	65.4dB	60.1dB
18:50:10	63.9dB	66.7dB	65.2dB	62.0dB
19:00:10	65.6dB	68.2dB	66.7dB	64.6dB
19:10:10	66.2dB	74.3dB	66.9dB	65.2dB
19:20:10	66.1dB	69.5dB	67.1dB	65.3dB
19:30:10	66.8dB	69.4dB	67.8dB	65.9dB
19:40:10	66.8dB	74.3dB	67.6dB	65.6dB
19:50:10	66.6dB	68.7dB	67.5dB	65.8dB
20:00:10	66.5dB	68.7dB	67.3dB	65.5dB
20:10:10	66.1dB	70.0dB	66.8dB	65.3dB

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College Park East
CPE-2 (Almond Park) (4 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
20:20:10	65.9dB	68.4dB	66.8dB	65.0dB
20:30:10	65.0dB	67.5dB	65.9dB	64.1dB
20:40:10	65.1dB	69.0dB	66.1dB	63.9dB
20:50:10	65.3dB	69.4dB	66.3dB	64.1dB
21:00:10	65.3dB	69.7dB	66.6dB	64.1dB

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College Park East
CPE-3 (Bluebell Park) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 10-AUG-15 @ 17:06:44

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
10-AUG-15 @ 18:00:10	10-AUG-15 @ 21:00:10	3:00:00
Peak Level 98.5dB	10-AUG-15 @ 20:12:35	
Max Level 79.8dB	10-AUG-15 @ 20:56:12	
Min Level 63.0dB	10-AUG-15 @ 18:01:13	
Overload 0.00%		

LEQ	67.6dB	SEL(3)	108.0dB	TWA	63.4dB	TAKM5	68.5dB
LDN	67.6dB	CNEL	71.4dB	Pa2Sec	25.3		
L2	70.3dB	L8	69.4dB	L25	68.4dB	L50	67.4dB

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
18:10:10	67.0dB	70.6dB	68.6dB	64.6dB
18:20:10	66.6dB	70.3dB	67.7dB	65.1dB
18:30:10	66.7dB	70.9dB	68.1dB	65.1dB
18:40:10	68.6dB	72.2dB	69.8dB	66.6dB
18:50:10	69.1dB	72.3dB	70.4dB	67.8dB
19:00:10	68.8dB	73.6dB	70.0dB	67.6dB
19:10:10	68.5dB	72.0dB	69.6dB	67.5dB
19:20:10	68.6dB	76.8dB	69.8dB	67.2dB
19:30:10	68.2dB	71.7dB	69.5dB	66.9dB
19:40:10	68.3dB	72.1dB	69.4dB	67.0dB
19:50:10	67.9dB	70.4dB	69.0dB	66.7dB
20:00:10	67.3dB	70.0dB	68.4dB	66.1dB
20:10:10	66.7dB	71.3dB	67.8dB	65.2dB

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College Park East
CPE-3 (Bluebell Park) (2 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
20:20:10	67.0dB	71.7dB	68.0dB	65.4dB
20:30:10	66.2dB	68.9dB	67.2dB	64.6dB
20:40:10	66.5dB	69.7dB	67.8dB	65.1dB
20:50:10	66.6dB	71.4dB	67.8dB	65.3dB
21:00:10	66.9dB	79.8dB	67.6dB	64.7dB

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College Park East
CPE-3 (Bluebell Park) (3 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 11-AUG-15 @ 04:38:18

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 2
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
11-AUG-15 @ 05:00:10	11-AUG-15 @ 08:00:10	3:00:00
Peak Level 91.9dB	11-AUG-15 @ 06:19:59	
Max Level 75.9dB	11-AUG-15 @ 06:19:58	
Min Level 61.8dB	11-AUG-15 @ 05:09:43	
Overload 0.00%		

LEQ	67.3dB	SEL(3)	107.6dB	TWA	63.1dB	TAKM5	68.1dB
LDN	75.9dB	CNEL	75.9dB	Pa2Sec	23.4		
L2	69.4dB	L8	68.5dB	L25	67.8dB	L50	67.2dB

LOGGING (10 MIN)	LEQ	LMAX	L10	L90
Study 2				
05:10:10	66.3dB	70.9dB	68.2dB	64.1dB
05:20:10	67.0dB	70.6dB	68.0dB	65.6dB
05:30:10	67.6dB	71.1dB	68.6dB	66.7dB
05:40:10	67.6dB	70.9dB	68.5dB	66.5dB
05:50:10	67.8dB	70.0dB	68.7dB	66.8dB
06:00:10	67.6dB	70.2dB	68.6dB	66.5dB
06:10:10	67.5dB	73.3dB	68.3dB	66.3dB
06:20:10	67.5dB	75.9dB	68.4dB	66.1dB
06:30:10	67.7dB	75.3dB	68.8dB	66.1dB
06:40:10	67.2dB	70.4dB	68.3dB	66.2dB
06:50:10	67.8dB	71.0dB	68.8dB	66.8dB
07:00:10	67.5dB	73.8dB	68.4dB	66.4dB
07:10:10	66.8dB	70.2dB	68.0dB	65.6dB

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College Park East
CPE-3 (Bluebell Park) (4 of 4)

LOGGING (10 MIN)	LEQ	LMAX	L10	L90
Study 2				
07:20:10	66.9dB	72.5dB	67.8dB	65.7dB
07:30:10	67.0dB	72.6dB	68.1dB	65.7dB
07:40:10	67.1dB	74.0dB	68.1dB	65.9dB
07:50:10	67.1dB	72.5dB	67.9dB	66.0dB
08:00:10	67.1dB	71.8dB	68.1dB	66.0dB

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College Park West
CPW-1 (Edison Park) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 12-AUG-15 @ 17:18:44

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
12-AUG-15 @ 18:00:10	12-AUG-15 @ 21:00:10	3:00:00
Peak Level 91.9dB	12-AUG-15 @ 18:26:19	
Max Level 75.2dB	12-AUG-15 @ 20:20:16	
Min Level 49.4dB	12-AUG-15 @ 18:03:49	
Overload 0.00%		

LEQ	57.3dB	SEL(3)	97.7dB	TWA	53.1dB	TAKM5	58.9dB
LDN	57.3dB	CNEL	61.4dB	Pa2Sec	2.3		
L2	63.7dB	L8	58.0dB	L25	56.3dB	L50	55.2dB

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
18:10:10	57.6dB	73.7dB	56.8dB	51.1dB
18:20:10	54.7dB	65.4dB	57.1dB	51.1dB
18:30:10	56.7dB	71.4dB	56.5dB	52.3dB
18:40:10	54.6dB	66.5dB	56.4dB	51.6dB
18:50:10	58.5dB	74.1dB	58.4dB	52.6dB
19:00:10	55.4dB	61.8dB	56.9dB	53.2dB
19:10:10	55.2dB	64.0dB	56.8dB	53.5dB
19:20:10	57.4dB	68.6dB	59.3dB	54.0dB
19:30:10	55.8dB	62.2dB	57.4dB	53.6dB
19:40:10	55.4dB	60.6dB	56.8dB	53.7dB
19:50:10	58.3dB	72.5dB	57.7dB	54.0dB
20:00:10	55.9dB	64.2dB	57.5dB	53.2dB
20:10:10	58.5dB	72.5dB	58.9dB	54.2dB

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College Park West
CPW-1 (Edison Park) (2 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
20:20:10	58.4dB	71.6dB	59.0dB	53.9dB
20:30:10	59.5dB	75.2dB	58.2dB	55.0dB
20:40:10	58.4dB	72.2dB	57.6dB	54.9dB
20:50:10	58.4dB	73.7dB	57.7dB	53.3dB
21:00:10	58.3dB	72.7dB	57.5dB	52.5dB

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College Park West
CPW-1 (Edison Park) (3 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 13-AUG-15 @ 04:31:44

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 3
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
13-AUG-15 @ 05:00:36	13-AUG-15 @ 08:00:37	3:00:00
Peak Level 89.9dB	13-AUG-15 @ 05:00:38	
Max Level 71.3dB	13-AUG-15 @ 07:08:38	
Min Level 51.1dB	13-AUG-15 @ 05:09:55	
Overload 0.00%		

LEQ	57.4dB	SEL(3)	97.7dB	TWA	53.1dB	TAKM5	58.4dB
LDN	65.9dB	CNEL	65.9dB	Pa2Sec	2.3		
L2	60.8dB	L8	59.7dB	L25	58.1dB	L50	56.4dB

LOGGING (10 MIN) Study 3	LEQ	LMAX	L10	L90
05:10:36	54.5dB	58.8dB	55.9dB	52.8dB
05:20:36	54.6dB	61.4dB	56.1dB	52.9dB
05:30:36	55.8dB	59.9dB	57.3dB	54.2dB
05:40:36	56.5dB	60.2dB	57.7dB	55.2dB
05:50:36	58.1dB	62.4dB	59.4dB	56.3dB
06:00:36	59.5dB	64.5dB	60.3dB	58.6dB
06:10:36	58.9dB	62.0dB	60.1dB	57.4dB
06:20:36	59.3dB	61.8dB	60.4dB	58.1dB
06:30:36	58.0dB	65.1dB	59.1dB	56.3dB
06:40:36	56.6dB	61.0dB	58.1dB	54.7dB
06:50:36	56.9dB	60.7dB	58.2dB	55.3dB
07:00:36	57.5dB	67.8dB	58.9dB	55.2dB
07:10:36	58.3dB	71.3dB	59.2dB	54.6dB

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College Park West
CPW-1 (Edison Park) (4 of 4)

LOGGING (10 MIN) Study 3	LEQ	LMAX	L10	L90
07:20:36	56.0dB	64.2dB	57.3dB	54.3dB
07:30:36	57.0dB	66.6dB	58.3dB	54.1dB
07:40:36	57.7dB	71.3dB	57.6dB	53.7dB
07:50:36	55.9dB	63.0dB	57.3dB	54.1dB
08:00:36	57.1dB	70.0dB	57.3dB	53.3dB

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College Park West
CPW-2 (333 Harvard Lane) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 25-AUG-15 @ 17:21:38

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 2
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
25-AUG-15 @ 18:00:10	25-AUG-15 @ 21:00:10	3:00:00
Peak Level 89.3dB	25-AUG-15 @ 20:52:23	
Max Level 67.1dB	25-AUG-15 @ 20:52:22	
Min Level 52.5dB	25-AUG-15 @ 20:21:17	
Overload 0.00%		

LEQ	58.0dB	SEL(3)	98.4dB	TWA	53.8dB	TAKM5	59.1dB
LDN	58.0dB	CNEL	62.0dB	Pa2Sec	2.7		
L2	60.3dB	L8	59.5dB	L25	58.7dB	L50	57.9dB

LOGGING (10 MIN) Study 2	LEQ	LMAX	L10	L90
18:10:10	56.5dB	63.9dB	57.7dB	55.0dB
18:20:10	57.2dB	63.1dB	58.2dB	56.1dB
18:30:10	57.5dB	61.3dB	58.6dB	56.4dB
18:40:10	58.2dB	62.9dB	59.3dB	56.9dB
18:50:10	58.4dB	61.8dB	59.4dB	57.2dB
19:00:10	58.4dB	63.6dB	59.5dB	57.2dB
19:10:10	58.4dB	60.8dB	59.3dB	57.1dB
19:20:10	58.5dB	63.8dB	59.9dB	56.9dB
19:30:10	58.2dB	62.6dB	59.4dB	56.7dB
19:40:10	58.4dB	61.5dB	59.5dB	56.8dB
19:50:10	58.5dB	62.4dB	59.8dB	56.8dB
20:00:10	58.1dB	62.3dB	59.3dB	56.6dB
20:10:10	57.9dB	61.5dB	59.1dB	56.5dB

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College Park West
CPW-2 (322 Harvard Lane) (2 of 4)

LOGGING (10 MIN) Study 2	LEQ	LMAX	L10	L90
20:20:10	58.2dB	64.7dB	59.6dB	56.4dB
20:30:10	57.6dB	61.5dB	59.1dB	55.7dB
20:40:10	58.3dB	63.0dB	59.5dB	56.6dB
20:50:10	57.9dB	61.3dB	59.3dB	56.1dB
21:00:10	57.7dB	67.1dB	59.0dB	55.8dB

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College Park West
CPW-2 (333 Harvard Lane) (3 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 26-AUG-15 @ 04:39:31

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 3
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
26-AUG-15 @ 05:00:10	26-AUG-15 @ 08:00:10	3:00:00
Peak Level 84.7dB	26-AUG-15 @ 05:50:16	
Max Level 68.6dB	26-AUG-15 @ 07:19:26	
Min Level 51.8dB	26-AUG-15 @ 05:12:12	
Overload 0.00%		

LEQ	59.4dB	SEL(3)	99.8dB	TWA	55.2dB	TAKM5	60.5dB
LDN	67.9dB	CNEL	67.9dB	Pa2Sec	3.8		
L2	62.0dB	L8	61.1dB	L25	60.1dB	L50	59.3dB

LOGGING (10 MIN) Study 3	LEQ	LMAX	L10	L90
05:10:10	56.8dB	61.6dB	58.3dB	54.8dB
05:20:10	58.0dB	61.8dB	59.5dB	55.8dB
05:30:10	59.2dB	63.9dB	60.6dB	57.5dB
05:40:10	59.3dB	62.2dB	60.6dB	57.6dB
05:50:10	59.5dB	62.6dB	60.7dB	58.0dB
06:00:10	59.8dB	64.7dB	61.1dB	58.3dB
06:10:10	59.9dB	62.9dB	61.0dB	58.3dB
06:20:10	60.5dB	67.3dB	61.7dB	58.9dB
06:30:10	60.4dB	64.2dB	61.5dB	58.9dB
06:40:10	60.8dB	66.6dB	61.9dB	59.3dB
06:50:10	59.1dB	62.6dB	60.3dB	57.9dB
07:00:10	59.3dB	63.0dB	60.4dB	58.0dB
07:10:10	58.9dB	62.0dB	60.2dB	57.2dB

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College Park West
CPW-2 (333 Harvard Lane) (4 of 4)

LOGGING (10 MIN) Study 3	LEQ	LMAX	L10	L90
07:20:10	59.6dB	68.6dB	60.5dB	57.7dB
07:30:10	58.9dB	65.0dB	60.4dB	57.0dB
07:40:10	58.9dB	66.6dB	60.1dB	57.3dB
07:50:10	59.3dB	62.8dB	60.4dB	57.9dB
08:00:10	59.9dB	62.9dB	61.2dB	58.4dB

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Leisure World
LW-1 (1201 Scioto Road, Building 226) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 18-AUG-15 @ 12:20:50

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
18-AUG-15 @ 12:30:10	19-AUG-15 @ 12:30:10	24:00:00
Peak Level 107.4dB	18-AUG-15 @ 13:44:57	
Max Level 85.7dB	18-AUG-15 @ 13:44:56	
Min Level 36.5dB	19-AUG-15 @ 02:09:23	
Overload 0.00%		

LEQ	58.3dB	SEL(3)	107.7dB	TWA	63.1dB	TAKM5	59.8dB
LDN	62.3dB	CNEL	62.7dB	Pa2Sec	23.7		
L2	65.0dB	L8	60.5dB	L25	58.1dB	L50	56.4dB

LOGGING (10 MIN)	LEQ	LMAX	L10	L90	
Study 1					
12:40:10	55.6dB	62.9dB	57.5dB	51.9dB	
12:50:10	55.1dB	62.4dB	57.3dB	50.8dB	
13:00:10	54.8dB	58.7dB	56.8dB	51.5dB	
13:10:10	61.9dB	81.6dB	64.3dB	51.9dB	
13:20:10	66.7dB	78.4dB	70.7dB	58.0dB	
13:30:10	64.9dB	72.2dB	69.1dB	57.2dB	
13:40:10	69.7dB	81.1dB	74.5dB	57.0dB	OL
13:50:10	68.7dB	85.7dB	71.0dB	57.1dB	OL
14:00:10	56.8dB	69.7dB	57.8dB	52.8dB	
14:10:10	58.4dB	68.0dB	62.0dB	52.3dB	
14:20:10	56.2dB	65.4dB	58.5dB	52.1dB	
14:30:10	55.8dB	64.3dB	57.7dB	51.9dB	
14:40:10	57.3dB	64.1dB	59.2dB	54.8dB	

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Leisure World
LW-1 (1201 Scioto Road, Building 226) (2 of 4)

LOGGING (10 MIN)	LEQ	LMAX	L10	L90
Study 1				
14:50:10	58.2dB	69.8dB	59.3dB	55.2dB
15:00:10	56.9dB	60.2dB	58.1dB	54.9dB
15:10:10	56.7dB	60.1dB	58.0dB	54.9dB
15:20:10	56.9dB	63.7dB	58.3dB	55.2dB
15:30:10	57.5dB	66.8dB	58.8dB	55.5dB
15:40:10	57.5dB	67.5dB	58.5dB	55.9dB
15:50:10	57.4dB	65.4dB	58.5dB	56.0dB
16:00:10	59.1dB	68.7dB	61.9dB	55.6dB
16:10:10	57.4dB	62.1dB	58.4dB	56.0dB
16:20:10	58.1dB	65.5dB	59.2dB	55.8dB
16:30:10	57.9dB	62.2dB	59.1dB	56.6dB
16:40:10	59.9dB	73.8dB	59.3dB	56.2dB
16:50:10	57.9dB	64.2dB	59.2dB	56.4dB
17:00:10	58.4dB	67.4dB	60.3dB	55.7dB
17:10:10	58.2dB	67.2dB	58.9dB	56.4dB
17:20:10	58.2dB	63.1dB	59.2dB	57.0dB
17:30:10	60.0dB	79.3dB	59.5dB	57.2dB
17:40:10	58.9dB	71.0dB	59.5dB	56.0dB
17:50:10	57.7dB	62.7dB	58.9dB	55.9dB
18:00:10	59.0dB	72.6dB	59.9dB	56.1dB
18:10:10	58.6dB	68.9dB	59.5dB	56.1dB
18:20:10	58.3dB	63.6dB	59.4dB	56.4dB
18:30:10	58.2dB	66.5dB	59.7dB	55.6dB
18:40:10	59.1dB	69.8dB	59.8dB	55.9dB
18:50:10	58.0dB	61.6dB	59.4dB	56.0dB
19:00:10	57.6dB	64.5dB	59.4dB	55.2dB
19:10:10	55.8dB	66.8dB	57.8dB	52.9dB
19:20:10	56.3dB	62.6dB	58.6dB	53.0dB
19:30:10	56.6dB	60.3dB	58.5dB	53.7dB
19:40:10	56.6dB	61.2dB	58.6dB	53.3dB
19:50:10	58.2dB	68.9dB	59.5dB	54.2dB
20:00:10	58.0dB	67.7dB	59.3dB	55.1dB
20:10:10	57.7dB	60.9dB	59.3dB	55.4dB
20:20:10	58.1dB	62.6dB	60.1dB	55.4dB
20:30:10	57.9dB	63.6dB	59.6dB	55.7dB
20:40:10	57.6dB	61.8dB	59.4dB	55.2dB
20:50:10	57.2dB	63.4dB	59.2dB	54.4dB
21:00:10	57.6dB	65.5dB	59.5dB	54.0dB
21:10:10	58.3dB	67.4dB	60.2dB	54.6dB
21:20:10	56.9dB	60.5dB	58.6dB	54.5dB
21:30:10	56.7dB	63.1dB	58.5dB	53.6dB
21:40:10	55.9dB	60.0dB	58.0dB	53.2dB
21:50:10	57.4dB	69.2dB	58.8dB	53.3dB
22:00:10	56.4dB	66.6dB	57.9dB	52.2dB
22:10:10	55.2dB	59.7dB	57.5dB	52.4dB
22:20:10	56.0dB	65.3dB	58.1dB	53.0dB
22:30:10	56.2dB	61.5dB	58.5dB	53.3dB
22:40:10	55.6dB	61.2dB	58.0dB	52.3dB
22:50:10	55.5dB	60.5dB	58.1dB	51.8dB
23:00:10	55.6dB	62.4dB	58.0dB	52.2dB
23:10:10	53.7dB	59.8dB	56.0dB	51.4dB
23:20:10	54.3dB	61.3dB	56.6dB	50.9dB
23:30:10	53.8dB	58.5dB	56.5dB	50.3dB
23:40:10	54.0dB	62.4dB	56.6dB	50.4dB
23:50:10	53.6dB	62.3dB	56.1dB	50.7dB

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Leisure World
LW-1 (1201 Scioto Road, Building 226) (3 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
00:00:10	53.7dB	62.4dB	56.2dB	51.0dB
00:10:10	53.5dB	68.3dB	55.5dB	49.7dB
00:20:10	52.1dB	56.8dB	54.4dB	49.4dB
00:30:10	52.8dB	65.4dB	54.9dB	49.1dB
00:40:10	53.2dB	61.5dB	56.4dB	48.7dB
00:50:10	52.0dB	62.4dB	54.8dB	47.8dB
01:00:10	50.5dB	58.1dB	53.5dB	46.9dB
01:10:10	49.3dB	56.3dB	52.2dB	45.7dB
01:20:10	49.3dB	56.9dB	52.1dB	44.9dB
01:30:10	50.2dB	58.5dB	53.5dB	45.2dB
01:40:10	48.0dB	56.8dB	51.1dB	42.9dB
01:50:10	50.2dB	61.1dB	52.9dB	43.0dB
02:00:10	49.4dB	61.2dB	52.8dB	43.0dB
02:10:10	48.0dB	55.8dB	51.4dB	40.4dB
02:20:10	48.0dB	56.2dB	51.2dB	42.4dB
02:30:10	47.1dB	55.6dB	50.5dB	41.8dB
02:40:10	48.4dB	58.3dB	52.0dB	42.3dB
02:50:10	45.7dB	53.1dB	49.0dB	40.9dB
03:00:10	47.7dB	56.0dB	51.4dB	41.8dB
03:10:10	46.2dB	56.3dB	49.9dB	40.4dB
03:20:10	48.2dB	56.8dB	51.6dB	43.7dB
03:30:10	47.4dB	55.7dB	50.1dB	43.4dB
03:40:10	49.2dB	58.0dB	53.2dB	42.1dB
03:50:10	48.7dB	57.5dB	51.7dB	44.4dB
04:00:10	48.8dB	56.7dB	52.2dB	43.8dB
04:10:10	47.1dB	57.1dB	50.1dB	42.3dB
04:20:10	50.7dB	59.2dB	54.1dB	46.1dB
04:30:10	51.8dB	60.1dB	54.7dB	45.8dB
04:40:10	53.7dB	60.7dB	56.6dB	49.2dB
04:50:10	55.8dB	66.2dB	58.3dB	52.0dB
05:00:10	54.9dB	60.3dB	57.3dB	51.6dB
05:10:10	55.0dB	63.4dB	57.5dB	50.5dB
05:20:10	56.9dB	63.1dB	58.9dB	53.9dB
05:30:10	57.2dB	61.1dB	59.7dB	53.9dB
05:40:10	57.7dB	62.4dB	60.4dB	53.7dB
05:50:10	58.9dB	62.9dB	61.1dB	55.6dB
06:00:10	59.2dB	69.2dB	60.8dB	56.2dB
06:10:10	59.4dB	63.4dB	61.6dB	56.4dB
06:20:10	60.3dB	65.0dB	62.3dB	57.3dB
06:30:10	60.0dB	69.1dB	61.9dB	56.0dB
06:40:10	60.1dB	64.4dB	61.5dB	57.3dB
06:50:10	59.7dB	65.5dB	61.5dB	55.6dB
07:00:10	58.9dB	62.3dB	60.6dB	56.0dB
07:10:10	60.2dB	67.3dB	61.8dB	57.5dB
07:20:10	60.0dB	67.6dB	61.3dB	56.7dB
07:30:10	59.7dB	65.8dB	61.1dB	57.7dB
07:40:10	60.3dB	75.5dB	60.9dB	56.8dB
07:50:10	59.2dB	64.9dB	60.8dB	56.2dB
08:00:10	59.0dB	64.7dB	60.5dB	56.1dB
08:10:10	58.8dB	62.2dB	60.7dB	56.1dB
08:20:10	58.3dB	63.5dB	59.9dB	55.3dB
08:30:10	58.6dB	64.4dB	60.0dB	56.6dB
08:40:10	62.8dB	73.4dB	67.0dB	56.0dB
08:50:10	60.4dB	67.5dB	63.4dB	55.5dB
09:00:10	59.0dB	69.6dB	60.3dB	54.9dB

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Leisure World
LW-1 (1201 Scioto Road, Building 226) (4 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
09:10:10	57.9dB	67.0dB	59.8dB	53.5dB
09:20:10	56.4dB	63.6dB	58.3dB	52.8dB
09:30:10	57.7dB	73.9dB	59.1dB	53.5dB
09:40:10	61.7dB	73.3dB	66.3dB	53.0dB
09:50:10	58.8dB	65.8dB	62.6dB	54.4dB
10:00:10	61.9dB	70.4dB	66.3dB	54.5dB
10:10:10	56.8dB	66.6dB	58.5dB	52.4dB
10:20:10	57.1dB	72.6dB	58.6dB	52.2dB
10:30:10	56.9dB	67.5dB	58.4dB	52.2dB
10:40:10	56.9dB	68.2dB	58.5dB	52.9dB
10:50:10	56.3dB	62.0dB	58.4dB	52.2dB
11:00:10	56.0dB	62.6dB	57.9dB	53.0dB
11:10:10	55.4dB	60.4dB	57.6dB	51.8dB
11:20:10	55.9dB	62.5dB	58.2dB	52.3dB
11:30:10	60.2dB	69.8dB	64.1dB	53.9dB
11:40:10	56.3dB	64.0dB	59.0dB	51.7dB
11:50:10	56.6dB	66.3dB	58.6dB	53.1dB
12:00:10	58.0dB	65.9dB	59.2dB	55.1dB
12:10:10	57.0dB	60.9dB	58.5dB	55.2dB
12:20:10	58.0dB	69.8dB	58.4dB	54.9dB
12:30:10	57.2dB	64.1dB	58.1dB	55.3dB

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Leisure World
LW-2 (13048 Del Monte Drive1801 St. John Road) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.0dB 19-AUG-15 @ 13:15:08

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
19-AUG-15 @ 13:30:10	20-AUG-15 @ 13:30:10	24:00:00
Peak Level 92.1dB	19-AUG-15 @ 20:12:40	
Max Level 77.2dB	19-AUG-15 @ 20:12:39	
Min Level 45.8dB	20-AUG-15 @ 02:57:25	
Overload 0.00%		

LEQ	64.4dB	SEL(3)	113.7dB	TWA	69.1dB	TAKM5	65.0dB
LDN	69.5dB	CNEL	69.9dB	Pa2Sec	95.4		
L2	67.8dB	L8	66.9dB	L25	65.6dB	L50	64.4dB

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
13:40:10	65.1dB	68.8dB	66.1dB	64.0dB
13:50:10	65.0dB	71.2dB	65.9dB	64.0dB
14:00:10	64.8dB	68.7dB	65.8dB	63.7dB
14:10:10	64.7dB	68.5dB	65.8dB	63.6dB
14:20:10	65.1dB	70.7dB	65.9dB	64.1dB
14:30:10	64.9dB	70.8dB	65.7dB	63.6dB
14:40:10	64.4dB	67.7dB	65.3dB	63.4dB
14:50:10	64.4dB	70.4dB	65.6dB	63.1dB
15:00:10	64.1dB	66.8dB	65.1dB	63.0dB
15:10:10	64.2dB	67.0dB	65.3dB	63.0dB
15:20:10	64.7dB	67.6dB	65.6dB	63.6dB
15:30:10	64.5dB	68.4dB	65.5dB	63.6dB
15:40:10	64.7dB	67.9dB	65.5dB	63.8dB

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Leisure World
LW-2 (13048 Del Monte Drive1801 St. John Road) (2 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
15:50:10	64.3dB	68.0dB	65.4dB	63.2dB
16:00:10	64.3dB	68.8dB	65.3dB	62.9dB
16:10:10	64.8dB	72.7dB	65.8dB	63.5dB
16:20:10	64.3dB	71.3dB	65.2dB	63.3dB
16:30:10	63.8dB	66.4dB	64.9dB	61.9dB
16:40:10	61.7dB	70.3dB	63.0dB	59.8dB
16:50:10	61.4dB	69.5dB	62.6dB	59.7dB
17:00:10	61.2dB	68.6dB	62.5dB	59.5dB
17:10:10	60.9dB	66.9dB	62.6dB	58.7dB
17:20:10	60.6dB	64.1dB	61.8dB	59.1dB
17:30:10	61.2dB	65.7dB	62.3dB	59.9dB
17:40:10	63.4dB	67.7dB	64.7dB	61.5dB
17:50:10	64.1dB	66.6dB	64.9dB	63.2dB
18:00:10	64.5dB	67.9dB	65.4dB	63.4dB
18:10:10	65.0dB	73.7dB	65.8dB	63.9dB
18:20:10	64.9dB	74.2dB	65.6dB	63.8dB
18:30:10	65.2dB	70.2dB	66.0dB	64.2dB
18:40:10	65.2dB	68.7dB	65.9dB	64.3dB
18:50:10	65.0dB	68.6dB	66.0dB	63.9dB
19:00:10	64.9dB	67.4dB	65.7dB	64.0dB
19:10:10	65.5dB	68.6dB	66.6dB	64.0dB
19:20:10	65.8dB	68.8dB	66.8dB	64.8dB
19:30:10	66.1dB	74.9dB	66.9dB	64.8dB
19:40:10	65.5dB	67.8dB	66.4dB	64.5dB
19:50:10	65.8dB	67.9dB	66.7dB	64.8dB
20:00:10	65.5dB	74.4dB	66.5dB	64.0dB
20:10:10	65.2dB	68.6dB	66.1dB	64.0dB
20:20:10	64.7dB	77.2dB	65.6dB	63.0dB
20:30:10	65.0dB	71.1dB	66.1dB	63.7dB
20:40:10	64.6dB	68.0dB	65.6dB	63.4dB
20:50:10	64.9dB	67.7dB	65.8dB	63.7dB
21:00:10	64.2dB	66.4dB	65.3dB	62.6dB
21:10:10	64.7dB	70.2dB	65.8dB	63.2dB
21:20:10	64.9dB	67.2dB	66.0dB	63.6dB
21:30:10	64.7dB	68.9dB	65.5dB	63.5dB
21:40:10	64.2dB	67.8dB	65.3dB	62.8dB
21:50:10	64.5dB	66.8dB	65.6dB	63.0dB
22:00:10	64.8dB	68.7dB	66.1dB	63.0dB
22:10:10	65.2dB	68.8dB	66.5dB	63.7dB
22:20:10	65.2dB	68.3dB	66.3dB	64.1dB
22:30:10	65.2dB	68.0dB	66.5dB	63.6dB
22:40:10	64.6dB	68.4dB	65.9dB	63.2dB
22:50:10	64.1dB	69.2dB	65.3dB	62.3dB
23:00:10	62.7dB	65.4dB	64.0dB	60.9dB
23:10:10	62.4dB	68.2dB	63.8dB	60.6dB
23:20:10	62.7dB	70.9dB	64.0dB	60.5dB
23:30:10	62.0dB	66.3dB	63.7dB	59.9dB
23:40:10	61.3dB	67.4dB	62.7dB	59.2dB
23:50:10	62.4dB	67.2dB	63.9dB	60.3dB
00:00:10	61.3dB	67.0dB	62.9dB	58.7dB
00:10:10	60.9dB	64.1dB	62.7dB	58.5dB
00:20:10	60.9dB	64.6dB	62.6dB	58.5dB
00:30:10	60.5dB	64.2dB	62.7dB	57.3dB
00:40:10	60.2dB	64.0dB	62.3dB	56.5dB
00:50:10	59.9dB	68.8dB	61.8dB	56.0dB

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Leisure World

LW-2 (13048 Del Monte Drive1801 St. John Road) (3 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
01:00:10	59.4dB	64.6dB	61.7dB	56.2dB
01:10:10	58.5dB	63.2dB	60.3dB	56.2dB
01:20:10	58.8dB	68.4dB	61.2dB	54.9dB
01:30:10	57.9dB	64.0dB	60.4dB	54.1dB
01:40:10	58.5dB	66.7dB	61.1dB	54.0dB
01:50:10	59.0dB	73.2dB	61.0dB	54.9dB
02:00:10	57.7dB	65.6dB	60.3dB	53.1dB
02:10:10	57.7dB	65.7dB	60.1dB	53.6dB
02:20:10	58.2dB	64.5dB	60.8dB	54.1dB
02:30:10	57.8dB	63.2dB	59.9dB	54.0dB
02:40:10	58.1dB	63.2dB	60.5dB	54.0dB
02:50:10	58.0dB	64.4dB	60.6dB	53.8dB
03:00:10	57.7dB	63.7dB	60.1dB	53.2dB
03:10:10	57.1dB	62.4dB	59.7dB	52.3dB
03:20:10	58.1dB	64.6dB	60.7dB	53.9dB
03:30:10	57.5dB	62.6dB	59.7dB	53.3dB
03:40:10	58.3dB	62.4dB	60.7dB	54.8dB
03:50:10	58.4dB	64.5dB	60.6dB	55.0dB
04:00:10	58.2dB	63.6dB	60.5dB	54.0dB
04:10:10	58.6dB	66.3dB	61.2dB	54.9dB
04:20:10	59.3dB	63.8dB	61.6dB	55.9dB
04:30:10	61.3dB	67.2dB	63.0dB	59.1dB
04:40:10	62.2dB	66.4dB	63.8dB	60.1dB
04:50:10	63.0dB	66.6dB	64.7dB	60.6dB
05:00:10	62.9dB	66.6dB	64.5dB	60.7dB
05:10:10	63.4dB	67.3dB	64.8dB	61.2dB
05:20:10	64.1dB	66.8dB	65.6dB	62.3dB
05:30:10	65.3dB	69.3dB	66.5dB	63.8dB
05:40:10	66.3dB	68.5dB	67.5dB	64.5dB
05:50:10	66.8dB	69.6dB	67.6dB	65.9dB
06:00:10	66.6dB	68.9dB	67.7dB	65.4dB
06:10:10	67.1dB	69.1dB	68.0dB	66.2dB
06:20:10	67.3dB	70.2dB	68.1dB	66.6dB
06:30:10	66.9dB	68.7dB	67.6dB	66.0dB
06:40:10	64.2dB	74.7dB	65.7dB	62.1dB
06:50:10	65.0dB	69.8dB	66.9dB	60.7dB
07:00:10	65.2dB	69.8dB	66.9dB	62.2dB
07:10:10	63.4dB	71.5dB	66.1dB	60.6dB
07:20:10	64.0dB	73.6dB	65.1dB	62.5dB
07:30:10	66.6dB	76.4dB	67.5dB	64.6dB
07:40:10	66.4dB	68.7dB	67.3dB	65.3dB
07:50:10	66.4dB	69.9dB	67.3dB	65.4dB
08:00:10	66.6dB	69.2dB	67.5dB	65.5dB
08:10:10	66.5dB	76.5dB	67.6dB	65.0dB
08:20:10	66.9dB	70.2dB	68.0dB	65.8dB
08:30:10	67.2dB	70.9dB	68.0dB	66.2dB
08:40:10	66.8dB	69.8dB	67.8dB	65.8dB
08:50:10	67.2dB	69.8dB	68.3dB	66.0dB
09:00:10	67.0dB	69.4dB	68.1dB	66.0dB
09:10:10	66.8dB	70.9dB	67.8dB	65.7dB
09:20:10	67.1dB	76.1dB	67.8dB	65.7dB
09:30:10	66.6dB	68.8dB	67.7dB	65.3dB
09:40:10	66.5dB	70.1dB	67.5dB	65.5dB
09:50:10	66.4dB	69.9dB	67.5dB	64.9dB
10:00:10	66.3dB	69.5dB	67.3dB	65.0dB

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Leisure World

LW-2 (13048 Del Monte Drive1801 St. John Road) (4 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
10:10:10	66.2dB	70.2dB	67.3dB	65.1dB
10:20:10	66.4dB	68.6dB	67.5dB	65.3dB
10:30:10	66.0dB	68.7dB	67.0dB	64.7dB
10:40:10	66.4dB	68.6dB	67.3dB	65.4dB
10:50:10	65.5dB	68.3dB	66.4dB	64.3dB
11:00:10	65.5dB	68.7dB	66.5dB	64.5dB
11:10:10	65.7dB	68.1dB	66.8dB	64.2dB
11:20:10	65.5dB	69.9dB	67.0dB	64.0dB
11:30:10	64.9dB	68.2dB	66.1dB	63.6dB
11:40:10	64.7dB	72.6dB	66.3dB	60.4dB
11:50:10	63.8dB	73.7dB	65.4dB	61.6dB
12:00:10	64.4dB	72.1dB	65.7dB	62.5dB
12:10:10	64.5dB	68.2dB	65.8dB	63.1dB
12:20:10	65.0dB	72.0dB	65.9dB	63.4dB
12:30:10	64.7dB	70.4dB	65.8dB	63.6dB
12:40:10	64.6dB	67.7dB	65.5dB	63.4dB
12:50:10	64.8dB	67.9dB	66.0dB	63.2dB
13:00:10	65.3dB	73.2dB	66.3dB	64.0dB
13:10:10	64.5dB	66.9dB	65.4dB	63.5dB
13:20:10	65.3dB	73.2dB	66.3dB	64.0dB
13:30:10	64.7dB	66.9dB	65.8dB	63.3dB

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Leisure World
LW-3 (1941 St. John Road, Building 34) (1 of 4)

QUEST TECHNOLOGIES
2900 INTEGRATING/LOGGING SOUND LEVEL METER

Unit Version Number: 02.4 Serial Number:

Name _____

Work Area _____

Comments _____

Meter Calibration: 114.1dB 20-AUG-15 @ 14:08:44

Calibrator:
Serial Number _____ Calibration Date _____

STUDY 1
Notes _____

Measuring Parameters:

Range	40-100dB	Weighting	A	Time Constant	SLOW
Threshold	OFF	Exchange Rate	3dB	Peak Weighting	A

Session Started	Session Stopped	Run Time
20-AUG-15 @ 14:30:10	21-AUG-15 @ 14:30:10	24:00:00

Peak Level	97.4dB	20-AUG-15 @ 16:42:10
Max Level	84.5dB	20-AUG-15 @ 15:03:21
Min Level	44.7dB	21-AUG-15 @ 03:18:35
Overload	0.00%	

LEQ	63.0dB	SEL(3)	112.4dB	TWA	67.8dB	TAKM5	63.7dB
LDN	68.3dB	CNEL	68.7dB	Pa2Sec	69.4		
L2	66.5dB	L8	65.6dB	L25	64.4dB	L50	62.7dB

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
14:40:10	62.9dB	69.2dB	64.0dB	61.7dB
14:50:10	62.9dB	68.5dB	63.9dB	61.7dB
15:00:10	63.0dB	71.3dB	63.9dB	61.3dB
15:10:10	65.7dB	84.5dB	63.7dB	61.1dB
15:20:10	62.5dB	72.5dB	63.4dB	61.0dB
15:30:10	60.8dB	74.1dB	62.2dB	58.6dB
15:40:10	61.0dB	63.9dB	62.2dB	59.7dB
15:50:10	61.7dB	66.5dB	63.6dB	60.0dB
16:00:10	62.9dB	68.0dB	63.9dB	61.8dB
16:10:10	62.9dB	66.5dB	64.1dB	61.5dB
16:20:10	62.5dB	64.9dB	63.5dB	61.5dB
16:30:10	61.5dB	66.1dB	62.9dB	58.8dB
16:40:10	59.8dB	67.2dB	61.8dB	57.3dB

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Leisure World
LW-3 (1941 St. John Road, Building 34) (2 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
16:50:10	64.6dB	80.7dB	62.3dB	56.8dB
17:00:10	58.7dB	66.8dB	60.2dB	56.7dB
17:10:10	60.1dB	66.3dB	61.2dB	59.0dB
17:20:10	59.4dB	66.0dB	60.7dB	57.4dB
17:30:10	58.5dB	67.2dB	60.5dB	56.1dB
17:40:10	58.6dB	66.8dB	60.0dB	56.8dB
17:50:10	58.1dB	70.9dB	59.5dB	55.7dB
18:00:10	58.4dB	64.7dB	59.5dB	57.1dB
18:10:10	57.3dB	61.1dB	58.8dB	55.5dB
18:20:10	58.3dB	61.4dB	59.7dB	56.6dB
18:30:10	59.9dB	63.8dB	61.4dB	57.8dB
18:40:10	60.7dB	65.9dB	62.2dB	59.0dB
18:50:10	62.8dB	70.6dB	63.8dB	60.7dB
19:00:10	63.1dB	72.2dB	63.9dB	61.5dB
19:10:10	63.1dB	70.2dB	64.1dB	61.6dB
19:20:10	63.4dB	67.5dB	64.2dB	62.3dB
19:30:10	63.9dB	67.1dB	64.7dB	63.0dB
19:40:10	64.7dB	67.6dB	65.9dB	63.6dB
19:50:10	65.6dB	68.3dB	66.5dB	64.4dB
20:00:10	65.9dB	69.8dB	67.0dB	64.8dB
20:10:10	65.4dB	73.0dB	66.4dB	64.1dB
20:20:10	65.0dB	71.1dB	66.1dB	63.7dB
20:30:10	65.3dB	71.9dB	66.2dB	64.3dB
20:40:10	64.8dB	67.1dB	65.9dB	63.6dB
20:50:10	64.9dB	69.4dB	65.9dB	63.7dB
21:00:10	64.6dB	68.5dB	65.5dB	63.4dB
21:10:10	64.9dB	68.6dB	66.1dB	63.8dB
21:20:10	64.3dB	67.5dB	65.2dB	63.4dB
21:30:10	64.2dB	68.0dB	65.3dB	62.9dB
21:40:10	64.0dB	67.6dB	65.2dB	62.5dB
21:50:10	63.7dB	67.0dB	64.9dB	62.4dB
22:00:10	63.5dB	67.1dB	64.8dB	62.1dB
22:10:10	62.6dB	68.9dB	63.9dB	61.0dB
22:20:10	62.7dB	65.6dB	63.8dB	61.0dB
22:30:10	62.6dB	65.7dB	64.0dB	60.6dB
22:40:10	62.5dB	66.2dB	63.9dB	60.7dB
22:50:10	61.8dB	71.2dB	63.1dB	59.8dB
23:00:10	62.6dB	74.7dB	63.5dB	60.7dB
23:10:10	62.6dB	69.0dB	64.4dB	60.4dB
23:20:10	62.3dB	66.1dB	63.7dB	60.2dB
23:30:10	62.6dB	66.3dB	63.9dB	61.0dB
23:40:10	62.7dB	67.1dB	64.0dB	61.0dB
23:50:10	62.3dB	68.7dB	63.9dB	60.3dB
00:00:10	61.6dB	64.6dB	63.0dB	59.8dB
00:10:10	61.1dB	68.9dB	62.8dB	58.8dB
00:20:10	60.6dB	64.7dB	62.4dB	58.3dB
00:30:10	60.5dB	67.9dB	62.2dB	57.8dB
00:40:10	60.1dB	63.5dB	62.1dB	57.5dB
00:50:10	60.2dB	65.1dB	61.9dB	57.8dB
01:00:10	60.2dB	65.2dB	61.9dB	57.9dB
01:10:10	59.1dB	63.1dB	61.1dB	56.3dB
01:20:10	58.0dB	62.6dB	60.2dB	54.4dB
01:30:10	58.3dB	62.5dB	59.9dB	56.1dB
01:40:10	58.1dB	63.2dB	60.5dB	54.7dB
01:50:10	58.1dB	64.6dB	60.0dB	55.3dB

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Leisure World
LW-3 (1941 St. John Road, Building 34) (3 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
02:00:10	57.4dB	65.2dB	59.7dB	54.2dB
02:10:10	56.0dB	61.5dB	58.3dB	52.2dB
02:20:10	56.1dB	61.4dB	58.4dB	52.5dB
02:30:10	56.4dB	61.1dB	58.5dB	53.3dB
02:40:10	56.4dB	62.9dB	58.9dB	52.9dB
02:50:10	56.0dB	59.8dB	58.0dB	53.2dB
03:00:10	55.8dB	61.3dB	58.2dB	51.6dB
03:10:10	56.4dB	69.9dB	58.3dB	51.7dB
03:20:10	54.9dB	60.8dB	57.4dB	51.5dB
03:30:10	55.8dB	62.6dB	58.1dB	52.3dB
03:40:10	56.3dB	61.8dB	58.7dB	52.0dB
03:50:10	56.7dB	63.2dB	58.8dB	53.2dB
04:00:10	56.9dB	61.8dB	58.8dB	53.5dB
04:10:10	57.0dB	64.8dB	59.2dB	53.5dB
04:20:10	58.6dB	70.2dB	60.5dB	55.2dB
04:30:10	59.8dB	64.5dB	61.7dB	57.3dB
04:40:10	60.5dB	64.4dB	62.3dB	58.4dB
04:50:10	60.9dB	64.6dB	62.3dB	59.1dB
05:00:10	61.2dB	65.0dB	62.9dB	58.9dB
05:10:10	61.4dB	66.8dB	62.8dB	59.6dB
05:20:10	62.8dB	66.2dB	64.1dB	61.1dB
05:30:10	63.6dB	69.2dB	64.9dB	62.1dB
05:40:10	63.9dB	67.4dB	65.3dB	62.3dB
05:50:10	64.9dB	68.2dB	65.8dB	63.9dB
06:00:10	64.5dB	66.9dB	65.5dB	63.5dB
06:10:10	64.5dB	68.8dB	65.5dB	63.2dB
06:20:10	65.0dB	67.0dB	65.9dB	63.8dB
06:30:10	65.0dB	67.5dB	66.1dB	63.9dB
06:40:10	65.1dB	70.6dB	66.2dB	63.9dB
06:50:10	65.0dB	68.4dB	66.0dB	63.9dB
07:00:10	65.3dB	68.6dB	66.2dB	64.3dB
07:10:10	65.3dB	68.6dB	66.3dB	64.0dB
07:20:10	65.5dB	76.3dB	66.1dB	64.1dB
07:30:10	65.1dB	67.9dB	66.1dB	64.1dB
07:40:10	64.7dB	66.9dB	65.6dB	63.8dB
07:50:10	64.9dB	70.7dB	66.0dB	63.5dB
08:00:10	64.9dB	67.4dB	65.7dB	63.6dB
08:10:10	64.8dB	71.3dB	65.8dB	63.7dB
08:20:10	64.9dB	68.1dB	65.8dB	63.9dB
08:30:10	64.8dB	67.3dB	65.8dB	63.7dB
08:40:10	65.0dB	69.2dB	66.0dB	63.8dB
08:50:10	64.9dB	73.7dB	65.9dB	63.2dB
09:00:10	64.6dB	72.1dB	65.7dB	63.2dB
09:10:10	64.6dB	73.8dB	65.7dB	63.1dB
09:20:10	65.3dB	69.2dB	66.4dB	64.2dB
09:30:10	65.2dB	68.2dB	66.2dB	64.0dB
09:40:10	65.1dB	69.0dB	66.0dB	64.1dB
09:50:10	65.3dB	70.2dB	66.4dB	64.2dB
10:00:10	66.7dB	80.7dB	66.9dB	64.5dB
10:10:10	65.3dB	68.8dB	66.2dB	64.1dB
10:20:10	65.1dB	69.6dB	66.1dB	63.8dB
10:30:10	65.5dB	67.5dB	66.4dB	64.6dB
10:40:10	66.1dB	69.6dB	67.4dB	64.3dB
10:50:10	65.9dB	68.3dB	67.2dB	64.5dB
11:00:10	64.3dB	70.5dB	65.5dB	63.0dB

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Leisure World
LW-3 (1941 St. John Road, Building 34) (4 of 4)

LOGGING (10 MIN) Study 1	LEQ	LMAX	L10	L90
11:10:10	63.7dB	66.5dB	64.6dB	62.6dB
11:20:10	63.6dB	66.6dB	64.7dB	62.4dB
11:30:10	64.0dB	68.7dB	65.1dB	62.6dB
11:40:10	64.3dB	68.4dB	65.4dB	62.9dB
11:50:10	63.4dB	68.6dB	64.5dB	62.0dB
12:00:10	64.2dB	68.7dB	65.2dB	63.1dB
12:10:10	63.9dB	71.0dB	64.9dB	62.6dB
12:20:10	63.5dB	66.1dB	64.7dB	62.0dB
12:30:10	62.8dB	66.0dB	63.9dB	61.3dB
12:40:10	62.6dB	70.0dB	64.0dB	60.7dB
12:50:10	63.3dB	69.7dB	64.5dB	61.9dB
13:00:10	62.3dB	68.1dB	63.4dB	60.8dB
13:10:10	62.4dB	64.5dB	63.4dB	61.3dB
13:20:10	62.1dB	66.4dB	63.4dB	59.2dB
13:30:10	62.0dB	65.6dB	63.1dB	60.6dB
13:40:10	61.2dB	63.9dB	62.6dB	58.0dB
13:50:10	60.6dB	66.1dB	61.7dB	58.9dB
14:00:10	61.8dB	67.3dB	63.1dB	60.2dB
14:10:10	62.0dB	68.2dB	62.8dB	60.7dB
14:20:10	62.2dB	66.4dB	63.3dB	61.1dB
14:30:10	62.8dB	67.9dB	63.9dB	61.4dB

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Appendix C
Excel Files

Meter Data and the Calculation of Peak Hour, (

	Wisteria		Almond Park		Bluebell Park		Edison Park	
Period Starting	10 Min Leq	Hourly Leq	10 Min Leq	Hourly Leq	10 Min Leq	Hourly Leq	10 Min Leq	Hourly Leq
12:00:00 AM	55.6	55						
12:10:00 AM	55.3							
12:20:00 AM	55.3							
12:30:00 AM	54.8							
12:40:00 AM	53.9							
12:50:00 AM	53.0							
1:00:00 AM	53.4	53						
1:10:00 AM	53.5							
1:20:00 AM	52.4							
1:30:00 AM	51.9							
1:40:00 AM	52.6							
1:50:00 AM	52.5							
2:00:00 AM	53.1	53						
2:10:00 AM	53.1							
2:20:00 AM	52.7							
2:30:00 AM	52.7							
2:40:00 AM	52.4							
2:50:00 AM	51.8							
3:00:00 AM	52.6	54						
3:10:00 AM	53.3							
3:20:00 AM	53.7							
3:30:00 AM	54.5							
3:40:00 AM	54.7							
3:50:00 AM	54.6							
4:00:00 AM	54.5	58						
4:10:00 AM	56.6							
4:20:00 AM	57.7							
4:30:00 AM	58.9							
4:40:00 AM	59.9							
4:50:00 AM	60.3							
5:00:00 AM	60.6	62	64.9	66	66.3	67	54.5	57
5:10:00 AM	62.4	63	66.1	66	67.0	68	54.6	58
5:20:00 AM	62.6	63	66.6	66	67.6	68	55.8	58
5:30:00 AM	62.7	63	66.3	66	67.6	68	56.5	58
5:40:00 AM	62.6	63	66.8	66	67.8	68	58.1	59
5:50:00 AM	62.7	63	66.4	66	67.6	68	59.5	58
6:00:00 AM	62.6	63	66.0	66	67.5	68	58.9	58
6:10:00 AM	62.6	63	66.7	66	67.5	67	59.3	58
6:20:00 AM	62.3	63	66.3	66	67.7	67	58.0	57
6:30:00 AM	63.7	63	66.3	66	67.2	67	56.6	57
6:40:00 AM	63.1	62	66.3	66	67.8	67	56.9	57

6:50:00 AM	63.4	62	66.5	66	67.5	67	57.5	57
7:00:00 AM	62.7	61	66.2	66	66.8	67	58.3	57
7:10:00 AM	62.9	60	66.4	66	66.9		56.0	
7:20:00 AM	62.5	59	66.2		67.0		57.0	
7:30:00 AM	57.1	57	66.3		67.1		57.7	
7:40:00 AM	56.0	57	65.8		67.1		55.9	
7:50:00 AM	59.0	57	66.4		67.1		57.1	
8:00:00 AM	54.7	56	66.8					
8:10:00 AM	57.1	56						
8:20:00 AM	56.8	56						
8:30:00 AM	55.2	55						
8:40:00 AM	55.4	55						
8:50:00 AM	54.4	55						
9:00:00 AM	55.3	54						
9:10:00 AM	55.8							
9:20:00 AM	53.1							
9:30:00 AM	54.6							
9:40:00 AM	53.3							
9:50:00 AM	53.9							
10:00:00 AM	54.5	61						
10:10:00 AM	56.5							
10:20:00 AM	60.7							
10:30:00 AM	62.7							
10:40:00 AM	62.3							
10:50:00 AM	61.8							
11:00:00 AM	62.1	62						
11:10:00 AM	62.3							
11:20:00 AM	61.8							
11:30:00 AM	62.0							
11:40:00 AM	62.2							
11:50:00 AM	62.0							
12:00:00 PM	61.9	62						
12:10:00 PM	61.8							
12:20:00 PM	62.0							
12:30:00 PM	61.9							
12:40:00 PM	61.7							
12:50:00 PM	62.3							
1:00:00 PM	62.2	62						
1:10:00 PM	62.2							
1:20:00 PM	61.8							
1:30:00 PM	62.2							
1:40:00 PM	61.9							
1:50:00 PM	62.1							
2:00:00 PM	61.9	62						

2:10:00 PM	62.4							
2:20:00 PM	62.2							
2:30:00 PM	62.4							
2:40:00 PM	62.4							
2:50:00 PM	59.9							
3:00:00 PM	59.4	60						
3:10:00 PM	61.6							
3:20:00 PM	61.9							
3:30:00 PM	60.2							
3:40:00 PM	58.4							
3:50:00 PM	58.2							
4:00:00 PM	56.4	58						
4:10:00 PM	58.9							
4:20:00 PM	57.4							
4:30:00 PM	56.3							
4:40:00 PM	57.8							
4:50:00 PM	60.4							
5:00:00 PM	59.0	57						
5:10:00 PM	56.0							
5:20:00 PM	55.5							
5:30:00 PM	55.4							
5:40:00 PM	55.3							
5:50:00 PM	58.0							
6:00:00 PM	58.6	59	63.0	64	67.0	68	57.6	57
6:10:00 PM	58.1	60	63.0	64	66.6	68	54.7	56
6:20:00 PM	59.0	60	63.3	65	66.7	68	56.7	57
6:30:00 PM	59.4	61	63.1	65	68.6	69	54.6	56
6:40:00 PM	57.6	61	63.9	66	69.1	69	58.5	56
6:50:00 PM	61.2	62	65.6	66	68.8	68	55.4	56
7:00:00 PM	61.5	62	66.2	67	68.5	68	55.2	56
7:10:00 PM	61.0	62	66.1	66	68.6	68	57.4	57
7:20:00 PM	61.8	62	66.8	66	68.2	68	55.8	57
7:30:00 PM	62.0	61	66.8	66	68.3	67	55.4	58
7:40:00 PM	62.4	61	66.6	66	67.9	67	58.3	58
7:50:00 PM	61.2	61	66.5	66	67.3	67	55.9	58
8:00:00 PM	60.9	61	66.1	65	66.7	67	58.5	59
8:10:00 PM	61.2		65.9		67.0		58.4	
8:20:00 PM	60.9		65.0		66.2		59.5	
8:30:00 PM	61.9		65.1		66.5		58.4	
8:40:00 PM	61.0		65.3		66.6		58.4	
8:50:00 PM	60.3		65.3		66.9		58.3	
9:00:00 PM	60.6	61						
9:10:00 PM	61.0							
9:20:00 PM	60.8							

9:30:00 PM	60.3	
9:40:00 PM	60.4	
9:50:00 PM	60.1	
10:00:00 PM	59.6	59
10:10:00 PM	59.5	
10:20:00 PM	59.7	
10:30:00 PM	59.2	
10:40:00 PM	59.1	
10:50:00 PM	58.4	
11:00:00 PM	58.9	58
11:10:00 PM	58.6	
11:20:00 PM	57.7	
11:30:00 PM	57.8	
11:40:00 PM	56.6	
11:50:00 PM	56.1	

Day	60
Evening	61
Night	59
Ldn	65
CNEL	66

CNEL, and Ldn (dBA)

Harvard		Scioto		Del Monte		St. John	
10 Min Leq	Hourly Leq	Min Leq dl	Hourly Leq	10 Min Leq	Hourly Leq	10 Min Leq	Hourly Leq
		53.5	52	60.9	60	61.1	60
		52.1		60.9		60.6	
		52.8		60.5		60.5	
		53.2		60.2		60.1	
		52.0		59.9		60.2	
		50.5		59.4		60.2	
		49.3	49	58.5	58	59.1	58
		49.3		58.8		58.0	
		50.2		57.9		58.3	
		48.0		58.5		58.1	
		50.2		59.0		58.1	
		49.4		57.7		57.4	
		48.0	48	57.7	58	56.0	56
		48.0		58.2		56.1	
		47.1		57.8		56.4	
		48.4		58.1		56.4	
		45.7		58.0		56.0	
		47.7		57.7		55.8	
		46.2	48	57.1	58	56.4	56
		48.2		58.1		54.9	
		47.4		57.5		55.8	
		49.2		58.3		56.2	
		48.7		58.4		56.7	
		48.8		58.2		56.9	
		47.1	53	58.6	62	57.0	60
		50.7		59.3		58.6	
		51.8		61.3		59.8	
		53.7		62.2		60.5	
		55.8		63.0		60.9	
		54.9		62.9		61.2	
56.8	59	55.0	58	63.4	66	61.8	64
58.0	59	56.9	58	64.1	66	62.8	64
59.2	60	57.2	59	65.3	67	63.6	64
59.3	60	57.7	59	66.3	67	63.9	65
59.5	60	58.9	60	66.8	67	64.9	65
59.8	60	59.2	60	66.6	66	64.5	65
59.9	60	59.4	60	67.1	66	64.5	65
60.5	60	60.3	60	67.3	66	65.0	65
60.4	60	60.0	60	66.9	65	65.0	65
60.8	59	60.1	60	64.2	65	65.1	65
59.1	59	59.7	60	65.0	65	65.0	65

59.3	59	58.9	60	65.2	66	65.3	65
58.9	59	60.2	60	63.4	66	65.3	65
59.6		60.0	60	64.0	66	65.5	65
58.9		59.7	59	66.6	67	65.1	65
58.9		60.3	59	66.4	67	64.7	65
59.3		59.2	60	66.4	67	64.9	65
59.9		59.0	60	66.6	67	64.9	65
		58.8	60	66.5	67	64.8	65
		58.3	60	66.9	67	64.9	65
		58.6	60	67.2	67	64.8	65
		62.8	60	66.8	67	65.0	65
		60.4	59	67.2	67	64.9	65
		59.0	59	67.0	67	64.6	65
		57.9	60	66.8	67	64.6	65
		56.4		67.1		65.3	66
		57.7		66.6		65.2	65
		61.7		66.5		65.1	66
		58.8		66.4		65.3	66
		61.9		66.3		66.7	66
		56.8	57	66.2	66	65.3	65
		57.1		66.4		65.1	65
		56.9		66.0		65.5	65
		56.9		66.4		66.1	65
		56.3		65.5		65.9	64
		56.0		65.5		64.3	64
		55.4	57	65.7	65	63.7	64
		55.9		65.5		63.6	
		60.2		64.9		64.0	
		56.3		64.7		64.3	
		56.6		63.8		63.4	
		58.0		64.4		64.2	
		57.0	56	64.5	65	63.9	63
		58.0		65.0		63.5	
		57.2		64.7		62.8	
		55.6		64.6		62.6	
		55.1		64.8		63.3	
		54.8		65.3		62.3	
		61.9	66	64.5	65	62.4	62
		66.7		65.3		62.1	
		64.9		64.7		62.0	
		69.7		65.1		61.2	
		68.7		65.0		60.6	
		56.8		64.8		61.8	
		58.4	57	64.7	65	62.0	63

		56.2		65.1		62.2	
		55.8		64.9		62.8	
		57.3		64.4		62.9	
		58.2		64.4		62.9	
		56.9		64.1		63.0	
		56.7	58	64.2	64	65.7	63
		56.9		64.7		62.5	
		57.5		64.5		60.8	
		57.5		64.7		61.0	
		57.4		64.3		61.7	
		59.1		64.3		62.9	
		57.4	58	64.8	63	62.9	62
		58.1		64.3		62.5	
		57.9		63.8		61.5	
		59.9		61.7		59.8	
		57.9		61.4		64.6	
		58.4		61.2		58.7	
		58.2	59	60.9	63	60.1	59
		58.2		60.6		59.4	
		60.0		61.2		58.5	
		58.9		63.4		58.6	
		57.7		64.1		58.1	
		59.0		64.5		58.4	
56.5	58	58.6	58	65.0	65	57.3	61
57.2	58	58.3	58	64.9	65	58.3	62
57.5	58	58.2	58	65.2	65	59.9	62
58.2	58	59.1	57	65.2	65	60.7	63
58.4	58	58.0	57	65.0	65	62.8	64
58.4	58	57.6	57	64.9	66	63.1	64
58.4	58	55.8	57	65.5	66	63.1	65
58.5	58	56.3	57	65.8	66	63.4	65
58.2	58	56.6	58	66.1	65	63.9	65
58.4	58	56.6	58	65.5	65	64.7	65
58.5	58	58.2	58	65.8	65	65.6	65
58.1	58	58.0	58	65.5	65	65.9	65
57.9	58	57.7	58	65.2	65	65.4	65
58.2		58.1		64.7		65.0	
57.6		57.9		65.0		65.3	
58.3		57.6		64.6		64.8	
57.9		57.2		64.9		64.9	
57.7		57.6		64.2		64.6	
		58.3	57	64.7	65	64.9	64
		56.9		64.9		64.3	
		56.7		64.7		64.2	

55.9		64.2		64.0	
57.4		64.5		63.7	
56.4		64.8		63.5	
55.2	56	65.2	65	62.6	62
56.0		65.2		62.7	
56.2		65.2		62.6	
55.6		64.6		62.5	
55.5		64.1		61.8	
55.6		62.7		62.6	
53.7	54	62.4	62	62.6	62
54.3		62.7		62.3	
53.8		62.0		62.6	
54.0		61.3		62.7	
53.6		62.4		62.3	
53.7		61.3		61.6	
Day	60	Day	65	Day	63
Evening	57	Evening	65	Evening	65
Night	55	Night	63	Night	61
Ldn	62	Ldn	70	Ldn	68
CNEL	63	CNEL	70	CNEL	69

Derivation of the CNEL and Ldn from the Peak Hours

Period Starting	Wisteria	Scioto	Del Monte	St. John	Avg. Leq	Avg. Hour
12:00:00 AM	55.6	53.5	60.9	61.1	57.8	57.0
12:10:00 AM	55.3	52.1	60.9	60.6	57.2	
12:20:00 AM	55.3	52.8	60.5	60.5	57.3	
12:30:00 AM	54.8	53.2	60.2	60.1	57.1	
12:40:00 AM	53.9	52.0	59.9	60.2	56.5	
12:50:00 AM	53.0	50.5	59.4	60.2	55.8	
1:00:00 AM	53.4	49.3	58.5	59.1	55.1	54.7
1:10:00 AM	53.5	49.3	58.8	58.0	54.9	
1:20:00 AM	52.4	50.2	57.9	58.3	54.7	
1:30:00 AM	51.9	48.0	58.5	58.1	54.1	
1:40:00 AM	52.6	50.2	59.0	58.1	55.0	
1:50:00 AM	52.5	49.4	57.7	57.4	54.3	
2:00:00 AM	53.1	48.0	57.7	56.0	53.7	53.5
2:10:00 AM	53.1	48.0	58.2	56.1	53.9	
2:20:00 AM	52.7	47.1	57.8	56.4	53.5	
2:30:00 AM	52.7	48.4	58.1	56.4	53.9	
2:40:00 AM	52.4	45.7	58.0	56.0	53.0	
2:50:00 AM	51.8	47.7	57.7	55.8	53.3	
3:00:00 AM	52.6	46.2	57.1	56.4	53.1	54.1
3:10:00 AM	53.3	48.2	58.1	54.9	53.6	
3:20:00 AM	53.7	47.4	57.5	55.8	53.6	
3:30:00 AM	54.5	49.2	58.3	56.2	54.6	
3:40:00 AM	54.7	48.7	58.4	56.7	54.6	
3:50:00 AM	54.6	48.8	58.2	56.9	54.6	
4:00:00 AM	54.5	47.1	58.6	57.0	54.3	58.2
4:10:00 AM	56.6	50.7	59.3	58.6	56.3	
4:20:00 AM	57.7	51.8	61.3	59.8	57.7	
4:30:00 AM	58.9	53.7	62.2	60.5	58.8	
4:40:00 AM	59.9	55.8	63.0	60.9	59.9	
4:50:00 AM	60.3	54.9	62.9	61.2	59.8	
5:00:00 AM	60.6	55.0	63.4	61.8	60.2	62.3
5:10:00 AM	62.4	56.9	64.1	62.8	61.6	
5:20:00 AM	62.6	57.2	65.3	63.6	62.2	
5:30:00 AM	62.7	57.7	66.3	63.9	62.7	
5:40:00 AM	62.6	58.9	66.8	64.9	63.3	
5:50:00 AM	62.7	59.2	66.6	64.5	63.3	
6:00:00 AM	62.6	59.4	67.1	64.5	63.4	63.4
6:10:00 AM	62.6	60.3	67.3	65.0	63.8	
6:20:00 AM	62.3	60.0	66.9	65.0	63.6	
6:30:00 AM	63.7	60.1	64.2	65.1	63.3	
6:40:00 AM	63.1	59.7	65.0	65.0	63.2	
6:50:00 AM	63.4	58.9	65.2	65.3	63.2	
7:00:00 AM	62.7	60.2	63.4	65.3	62.9	63.3
7:10:00 AM	62.9	60.0	64.0	65.5	63.1	

7:20:00 AM	62.5	59.7	66.6	65.1	63.5	
7:30:00 AM	62.6	60.3	66.4	64.7	63.5	
7:40:00 AM	61.5	59.2	66.4	64.9	63.0	
7:50:00 AM	64.5	59.0	66.6	64.9	63.8	
8:00:00 AM	60.2	58.8	66.5	64.8	62.6	63.2
8:10:00 AM	62.6	58.3	66.9	64.9	63.2	
8:20:00 AM	62.3	58.6	67.2	64.8	63.2	
8:30:00 AM	60.7	62.8	66.8	65.0	63.8	
8:40:00 AM	60.9	60.4	67.2	64.9	63.4	
8:50:00 AM	59.9	59.0	67.0	64.6	62.6	
9:00:00 AM	60.8	57.9	66.8	64.6	62.5	62.8
9:10:00 AM	61.3	56.4	67.1	65.3	62.5	
9:20:00 AM	58.6	57.7	66.6	65.2	62.0	
9:30:00 AM	60.1	61.7	66.5	65.1	63.4	
9:40:00 AM	58.8	58.8	66.4	65.3	62.3	
9:50:00 AM	59.4	61.9	66.3	66.7	63.6	
10:00:00 AM	60.0	56.8	66.2	65.3	62.1	62.4
10:10:00 AM	62.0	57.1	66.4	65.1	62.7	
10:20:00 AM	60.7	56.9	66.0	65.5	62.3	
10:30:00 AM	62.7	56.9	66.4	66.1	63.0	
10:40:00 AM	62.3	56.3	65.5	65.9	62.5	
10:50:00 AM	61.8	56.0	65.5	64.3	61.9	
11:00:00 AM	62.1	55.4	65.7	63.7	61.7	62.0
11:10:00 AM	62.3	55.9	65.5	63.6	61.8	
11:20:00 AM	61.8	60.2	64.9	64.0	62.7	
11:30:00 AM	62.0	56.3	64.7	64.3	61.8	
11:40:00 AM	62.2	56.6	63.8	63.4	61.5	
11:50:00 AM	62.0	58.0	64.4	64.2	62.2	
12:00:00 PM	61.9	57.0	64.5	63.9	61.8	61.5
12:10:00 PM	61.8	58.0	65.0	63.5	62.1	
12:20:00 PM	62.0	57.2	64.7	62.8	61.7	
12:30:00 PM	61.9	55.6	64.6	62.6	61.2	
12:40:00 PM	61.7	55.1	64.8	63.3	61.2	
12:50:00 PM	62.3	54.8	65.3	62.3	61.2	
1:00:00 PM	62.2	55.8	64.5	62.4	61.2	61.2
1:10:00 PM	62.2	55.8	65.3	62.1	61.4	
1:20:00 PM	61.8	55.8	64.7	62.0	61.1	
1:30:00 PM	62.2	55.8	65.1	61.2	61.1	
1:40:00 PM	61.9	55.8	65.0	60.6	60.8	
1:50:00 PM	62.1	56.8	64.8	61.8	61.4	
2:00:00 PM	61.9	58.4	64.7	62.0	61.8	61.6
2:10:00 PM	62.4	56.2	65.1	62.2	61.5	
2:20:00 PM	62.2	55.8	64.9	62.8	61.4	
2:30:00 PM	62.4	57.3	64.4	62.9	61.8	
2:40:00 PM	62.4	58.2	64.4	62.9	62.0	
2:50:00 PM	59.9	56.9	64.1	63.0	61.0	
3:00:00 PM	59.4	56.7	64.2	65.7	61.5	61.1

3:10:00 PM	61.6	56.9	64.7	62.5	61.4	
3:20:00 PM	61.9	57.5	64.5	60.8	61.2	
3:30:00 PM	60.2	57.5	64.7	61.0	60.9	
3:40:00 PM	58.4	57.4	64.3	61.7	60.5	
3:50:00 PM	58.2	59.1	64.3	62.9	61.1	
4:00:00 PM	56.4	57.4	64.8	62.9	60.4	60.2
4:10:00 PM	58.9	58.1	64.3	62.5	61.0	
4:20:00 PM	57.4	57.9	63.8	61.5	60.2	
4:30:00 PM	56.3	59.9	61.7	59.8	59.4	
4:40:00 PM	57.8	57.9	61.4	64.6	60.4	
4:50:00 PM	60.4	58.4	61.2	58.7	59.7	
5:00:00 PM	59.0	58.2	60.9	60.1	59.6	59.2
5:10:00 PM	56.0	58.2	60.6	59.4	58.6	
5:20:00 PM	55.5	60.0	61.2	58.5	58.8	
5:30:00 PM	55.4	58.9	63.4	58.6	59.1	
5:40:00 PM	55.3	57.7	64.1	58.1	58.8	
5:50:00 PM	58.0	59.0	64.5	58.4	60.0	
6:00:00 PM	58.6	58.6	65.0	57.3	59.9	60.7
6:10:00 PM	58.1	58.3	64.9	58.3	59.9	
6:20:00 PM	59.0	58.2	65.2	59.9	60.6	
6:30:00 PM	59.4	59.1	65.2	60.7	61.1	
6:40:00 PM	57.6	58.0	65.0	62.8	60.9	
6:50:00 PM	61.2	57.6	64.9	63.1	61.7	
7:00:00 PM	61.5	55.8	65.5	63.1	61.5	62.2
7:10:00 PM	61.0	56.3	65.8	63.4	61.6	
7:20:00 PM	61.8	56.6	66.1	63.9	62.1	
7:30:00 PM	62.0	56.6	65.5	64.7	62.2	
7:40:00 PM	62.4	58.2	65.8	65.6	63.0	
7:50:00 PM	61.2	58.0	65.5	65.9	62.7	
8:00:00 PM	60.9	57.7	65.2	65.4	62.3	62.1
8:10:00 PM	61.2	58.1	64.7	65.0	62.3	
8:20:00 PM	60.9	57.9	65.0	65.3	62.3	
8:30:00 PM	61.9	57.6	64.6	64.8	62.2	
8:40:00 PM	61.0	57.2	64.9	64.9	62.0	
8:50:00 PM	60.3	57.6	64.2	64.6	61.7	
9:00:00 PM	60.6	58.3	64.7	64.9	62.1	61.6
9:10:00 PM	61.0	56.9	64.9	64.3	61.8	
9:20:00 PM	60.8	56.7	64.7	64.2	61.6	
9:30:00 PM	60.3	55.9	64.2	64.0	61.1	
9:40:00 PM	60.4	57.4	64.5	63.7	61.5	
9:50:00 PM	60.1	56.4	64.8	63.5	61.2	
10:00:00 PM	59.6	55.2	65.2	62.6	60.7	60.5
10:10:00 PM	59.5	56.0	65.2	62.7	60.9	
10:20:00 PM	59.7	56.2	65.2	62.6	60.9	
10:30:00 PM	59.2	55.6	64.6	62.5	60.5	
10:40:00 PM	59.1	55.5	64.1	61.8	60.1	
10:50:00 PM	58.4	55.6	62.7	62.6	59.8	

11:00:00 PM	58.9	53.7	62.4	62.6	59.4	59.0
11:10:00 PM	58.6	54.3	62.7	62.3	59.5	
11:20:00 PM	57.7	53.8	62.0	62.6	59.0	
11:30:00 PM	57.8	54.0	61.3	62.7	59.0	
11:40:00 PM	56.6	53.6	62.4	62.3	58.7	
11:50:00 PM	56.1	53.7	61.3	61.6	58.2	

Day	61.7
Evening	62.0
Night	59.3
Ldn	66.2
CNEL	66.6

To	AM/PM	62.4	
Calculate	Ldn =		3.8
Add	CNEL		4.2

Period Starting	Almond	Hourly Leq	Bluebell	Hourly Leq	Edison	Hourly Leq	Harvard	Hourly Leq
12:00:00 AM								
12:10:00 AM								
12:20:00 AM								
12:30:00 AM								
12:40:00 AM								
12:50:00 AM								
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4:20:00 AM								
4:30:00 AM								

4:40:00 AM								
4:50:00 AM								
5:00:00 AM	64.9	66.2	66.3	67.3	54.5	56.9	56.8	58.9
5:10:00 AM	66.1		67.0		54.6		58.0	
5:20:00 AM	66.6		67.6		55.8		59.2	
5:30:00 AM	66.3		67.6		56.5		59.3	
5:40:00 AM	66.8		67.8		58.1		59.5	
5:50:00 AM	66.4		67.6		59.5		59.8	
6:00:00 AM	66.0	66.4	67.5	67.5	58.9	58.0	59.9	60.0
6:10:00 AM	66.7		67.5		59.3		60.5	
6:20:00 AM	66.3		67.7		58.0		60.4	
6:30:00 AM	66.3		67.2		56.6		60.8	
6:40:00 AM	66.3		67.8		56.9		59.1	
6:50:00 AM	66.5		67.5		57.5		59.3	
7:00:00 AM	66.2	66.2	66.8	67.0	58.3	57.1	58.9	59.3
7:10:00 AM	66.4		66.9		56.0		59.6	
7:20:00 AM	66.2		67.0		57.0		58.9	
7:30:00 AM	66.3		67.1		57.7		58.9	
7:40:00 AM	65.8		67.1		55.9		59.3	
7:50:00 AM	66.4		67.1		57.1		59.9	
8:00:00 AM	66.8							
8:10:00 AM								
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5:40:00 PM								
5:50:00 PM								
6:00:00 PM	63.0	63.8	67.0	67.9	57.6	56.5	56.5	57.8
6:10:00 PM	63.0		66.6		54.7		57.2	
6:20:00 PM	63.3		66.7		56.7		57.5	
6:30:00 PM	63.1		68.6		54.6		58.2	
6:40:00 PM	63.9		69.1		58.5		58.4	
6:50:00 PM	65.6		68.8		55.4		58.4	
7:00:00 PM	66.2	66.5	68.5	68.2	55.2	56.5	58.4	58.4
7:10:00 PM	66.1		68.6		57.4		58.5	
7:20:00 PM	66.8		68.2		55.8		58.2	
7:30:00 PM	66.8		68.3		55.4		58.4	
7:40:00 PM	66.6		67.9		58.3		58.5	
7:50:00 PM	66.5		67.3		55.9		58.1	
8:00:00 PM	66.1	65.5	66.7	66.7	58.5	58.6	57.9	57.9
8:10:00 PM	65.9		67.0		58.4		58.2	

8:20:00 PM	65.0	66.2	59.5	57.6
8:30:00 PM	65.1	66.5	58.4	58.3
8:40:00 PM	65.3	66.6	58.4	57.9
8:50:00 PM	65.3	66.9	58.3	57.7
9:00:00 PM				
9:10:00 PM				
9:20:00 PM				
9:30:00 PM				
9:40:00 PM				
9:50:00 PM				
10:00:00 PM				
10:10:00 PM				
10:20:00 PM				
10:30:00 PM				
10:40:00 PM				
10:50:00 PM				
11:00:00 PM				
11:10:00 PM				
11:20:00 PM				
11:30:00 PM				
11:40:00 PM				
11:50:00 PM				

AM/PM	65.9	AM/PM	67.5	AM/PM	57.3	AM/PM	58.8
Ldn =	69.7	Ldn =	71.3	Ldn =	61.1	Ldn =	62.6
CNEL =	70.1	CNEL =	71.7	CNEL =	61.5	CNEL =	63.0

Plots of Noise Over Time for the Various Monitored Locations

Time	Wisteria	Almond	Bluebell	Edison	Scioto	Del Monte	St. John	Harvard
12:00:00 AM	55.6				53.5	60.9	61.1	
12:10:00 AM	55.3				52.1	60.9	60.6	
12:20:00 AM	55.3				52.8	60.5	60.5	
12:30:00 AM	54.8				53.2	60.2	60.1	
12:40:00 AM	53.9				52.0	59.9	60.2	
12:50:00 AM	53.0				50.5	59.4	60.2	
1:00:00 AM	53.4				49.3	58.5	59.1	
1:10:00 AM	53.5				49.3	58.8	58.0	
1:20:00 AM	52.4				50.2	57.9	58.3	
1:30:00 AM	51.9				48.0	58.5	58.1	
1:40:00 AM	52.6				50.2	59.0	58.1	
1:50:00 AM	52.5				49.4	57.7	57.4	
2:00:00 AM	53.1				48.0	57.7	56.0	
2:10:00 AM	53.1				48.0	58.2	56.1	
2:20:00 AM	52.7				47.1	57.8	56.4	
2:30:00 AM	52.7				48.4	58.1	56.4	
2:40:00 AM	52.4				45.7	58.0	56.0	
2:50:00 AM	51.8				47.7	57.7	55.8	
3:00:00 AM	52.6				46.2	57.1	56.4	
3:10:00 AM	53.3				48.2	58.1	54.9	
3:20:00 AM	53.7				47.4	57.5	55.8	
3:30:00 AM	54.5				49.2	58.3	56.2	
3:40:00 AM	54.7				48.7	58.4	56.7	
3:50:00 AM	54.6				48.8	58.2	56.9	
4:00:00 AM	54.5				47.1	58.6	57.0	
4:10:00 AM	56.6				50.7	59.3	58.6	
4:20:00 AM	57.7				51.8	61.3	59.8	
4:30:00 AM	58.9				53.7	62.2	60.5	
4:40:00 AM	59.9				55.8	63.0	60.9	
4:50:00 AM	60.3				54.9	62.9	61.2	
5:00:00 AM	60.6	64.9	66.3	54.5	55.0	63.4	61.8	56.8
5:10:00 AM	62.4	66.1	67.0	54.6	56.9	64.1	62.8	58.0
5:20:00 AM	62.6	66.6	67.6	55.8	57.2	65.3	63.6	59.2
5:30:00 AM	62.7	66.3	67.6	56.5	57.7	66.3	63.9	59.3
5:40:00 AM	62.6	66.8	67.8	58.1	58.9	66.8	64.9	59.5
5:50:00 AM	62.7	66.4	67.6	59.5	59.2	66.6	64.5	59.8
6:00:00 AM	62.6	66.0	67.5	58.9	59.4	67.1	64.5	59.9
6:10:00 AM	62.6	66.7	67.5	59.3	60.3	67.3	65.0	60.5
6:20:00 AM	62.3	66.3	67.7	58.0	60.0	66.9	65.0	60.4
6:30:00 AM	63.7	66.3	67.2	56.6	60.1	64.2	65.1	60.8
6:40:00 AM	63.1	66.3	67.8	56.9	59.7	65.0	65.0	59.1
6:50:00 AM	63.4	66.5	67.5	57.5	58.9	65.2	65.3	59.3
7:00:00 AM	62.7	66.2	66.8	58.3	60.2	63.4	65.3	58.9
7:10:00 AM	62.9	66.4	66.9	56.0	60.0	64.0	65.5	59.6
7:20:00 AM	62.5	66.2	67.0	57.0	59.7	66.6	65.1	58.9

7:30:00 AM	62.6	66.3	67.1	57.7	60.3	66.4	64.7	58.9
7:40:00 AM	61.5	65.8	67.1	55.9	59.2	66.4	64.9	59.3
7:50:00 AM	64.5	66.4	67.1	57.1	59.0	66.6	64.9	59.9
8:00:00 AM	60.2	66.8			58.8	66.5	64.8	
8:10:00 AM	62.6				58.3	66.9	64.9	
8:20:00 AM	62.3				58.6	67.2	64.8	
8:30:00 AM	60.7				62.8	66.8	65.0	
8:40:00 AM	60.9				60.4	67.2	64.9	
8:50:00 AM	59.9				59.0	67.0	64.6	
9:00:00 AM	60.8				57.9	66.8	64.6	
9:10:00 AM	61.3				56.4	67.1	65.3	
9:20:00 AM	58.6				57.7	66.6	65.2	
9:30:00 AM	60.1				61.7	66.5	65.1	
9:40:00 AM	58.8				58.8	66.4	65.3	
9:50:00 AM	59.4				61.9	66.3	66.7	
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10:10:00 AM	62.0				57.1	66.4	65.1	
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3:10:00 PM	61.6				56.9	64.7	62.5	

3:20:00 PM	61.9				57.5	64.5	60.8	
3:30:00 PM	60.2				57.5	64.7	61.0	
3:40:00 PM	58.4				57.4	64.3	61.7	
3:50:00 PM	58.2				59.1	64.3	62.9	
4:00:00 PM	56.4				57.4	64.8	62.9	
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4:20:00 PM	57.4				57.9	63.8	61.5	
4:30:00 PM	56.3				59.9	61.7	59.8	
4:40:00 PM	57.8				57.9	61.4	64.6	
4:50:00 PM	60.4				58.4	61.2	58.7	
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5:30:00 PM	55.4				58.9	63.4	58.6	
5:40:00 PM	55.3				57.7	64.1	58.1	
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6:30:00 PM	59.4	63.1	68.6	54.6	59.1	65.2	60.7	58.2
6:40:00 PM	57.6	63.9	69.1	58.5	58.0	65.0	62.8	58.4
6:50:00 PM	61.2	65.6	68.8	55.4	57.6	64.9	63.1	58.4
7:00:00 PM	61.5	66.2	68.5	55.2	55.8	65.5	63.1	58.4
7:10:00 PM	61.0	66.1	68.6	57.4	56.3	65.8	63.4	58.5
7:20:00 PM	61.8	66.8	68.2	55.8	56.6	66.1	63.9	58.2
7:30:00 PM	62.0	66.8	68.3	55.4	56.6	65.5	64.7	58.4
7:40:00 PM	62.4	66.6	67.9	58.3	58.2	65.8	65.6	58.5
7:50:00 PM	61.2	66.5	67.3	55.9	58.0	65.5	65.9	58.1
8:00:00 PM	60.9	66.1	66.7	58.5	57.7	65.2	65.4	57.9
8:10:00 PM	61.2	65.9	67.0	58.4	58.1	64.7	65.0	58.2
8:20:00 PM	60.9	65.0	66.2	59.5	57.9	65.0	65.3	57.6
8:30:00 PM	61.9	65.1	66.5	58.4	57.6	64.6	64.8	58.3
8:40:00 PM	61.0	65.3	66.6	58.4	57.2	64.9	64.9	57.9
8:50:00 PM	60.3	65.3	66.9	58.3	57.6	64.2	64.6	57.7
9:00:00 PM	60.6				58.3	64.7	64.9	
9:10:00 PM	61.0				56.9	64.9	64.3	
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9:50:00 PM	60.1				56.4	64.8	63.5	
10:00:00 PM	59.6				55.2	65.2	62.6	
10:10:00 PM	59.5				56.0	65.2	62.7	
10:20:00 PM	59.7				56.2	65.2	62.6	
10:30:00 PM	59.2				55.6	64.6	62.5	
10:40:00 PM	59.1				55.5	64.1	61.8	
10:50:00 PM	58.4				55.6	62.7	62.6	
11:00:00 PM	58.9				53.7	62.4	62.6	

11:10:00 PM	58.6	54.3	62.7	62.3
11:20:00 PM	57.7	53.8	62.0	62.6
11:30:00 PM	57.8	54.0	61.3	62.7
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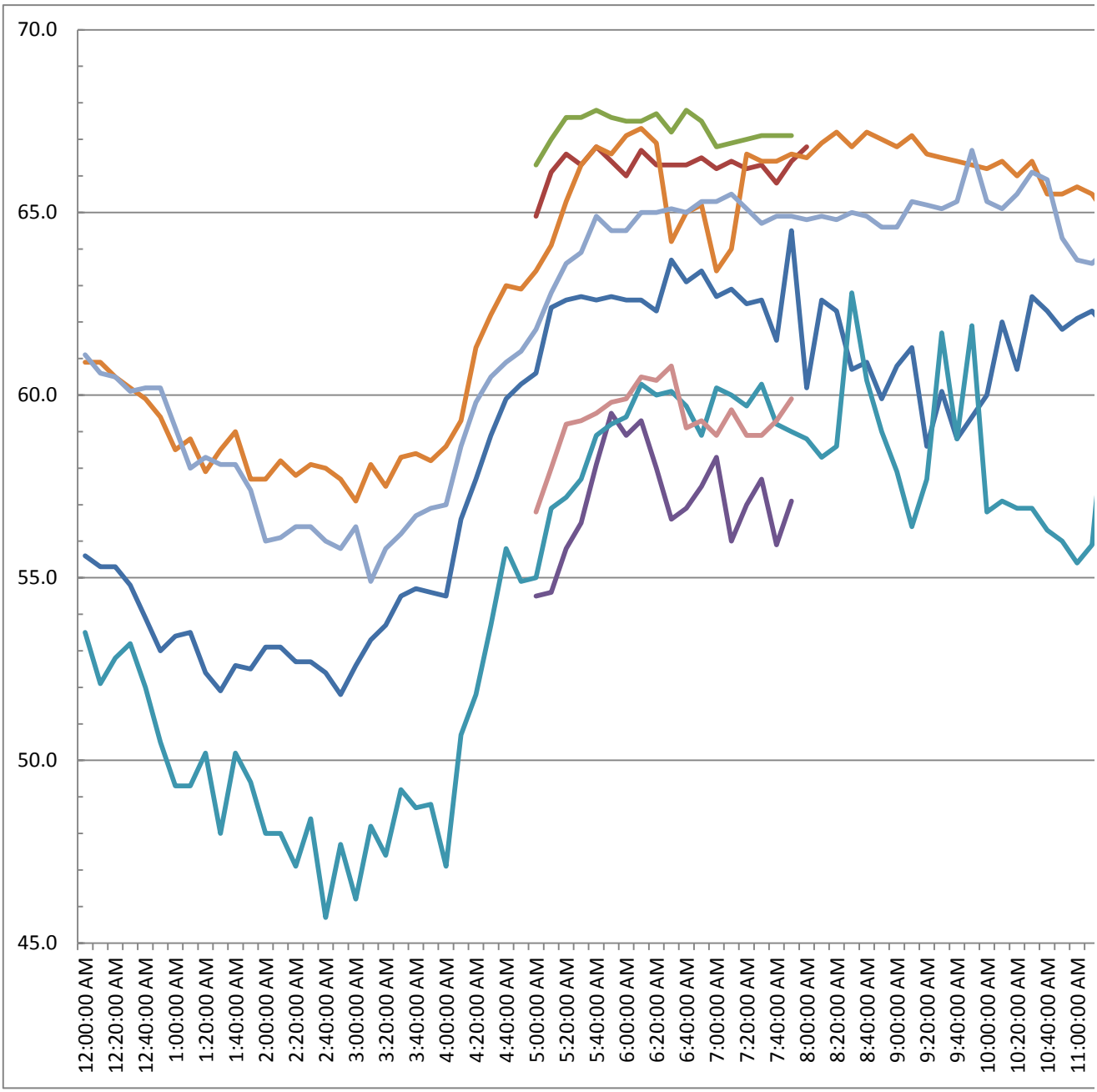
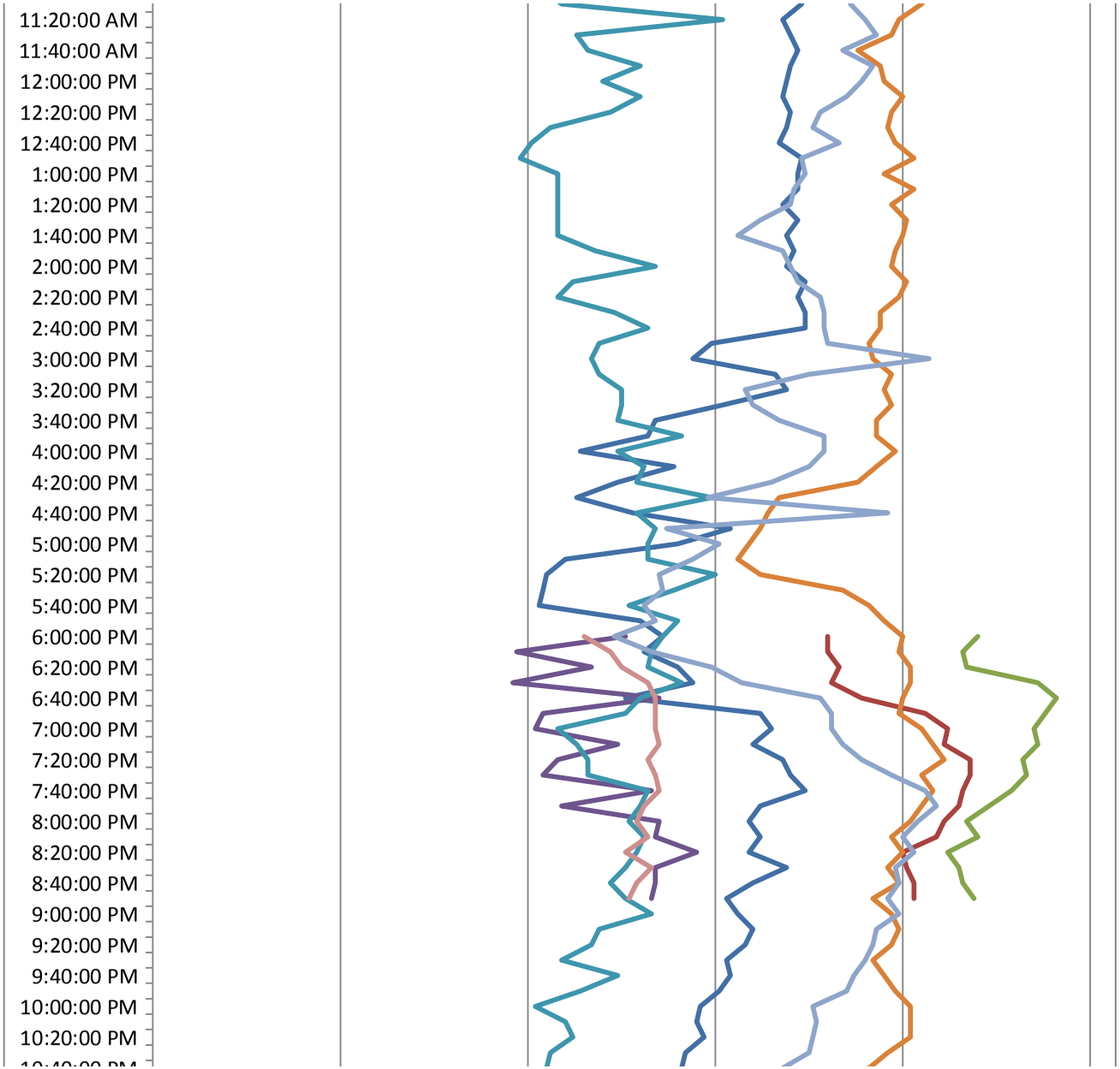
11:50:00 PM	56.1	53.7	61.3	61.6

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Wisteria
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