DRAFT: Noise Assessment Technical Report
Proposed Lotus Ranch Development
City of El Centro, California

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Chapter 1. Summary

This noise impact assessment was prepared to evaluate community noise impacts associated with the proposed Lotus Ranch development in El Centro, California. This analysis evaluates noise impacts to the surrounding community caused by the Lotus Ranch development, as well as impacts to the Lotus Ranch development caused by existing aircraft sources. The key findings of this study are as follows:

- Construction of new homes and buildings within the Lotus Ranch development would not cause any noise impacts at existing homes outside the development. However, construction of new homes within the development could cause temporary noise impacts at other newly-occupied homes within the development, within roughly 150 feet of each new construction site.
- Traffic directly related to the Lotus Ranch development would not increase traffic volumes on local streets outside the development enough to cause noise impacts to existing homes.
- Cumulative traffic (including the Lotus Ranch development and reasonably foreseeable developments) would cause high traffic volumes on La Brucherie Road, and would cause traffic noise levels as high as 66 dBA CNEL at the first row of the proposed Lotus Ranch development's homes facing the road. That noise level is considered "Normally Unacceptable" according to the city's noise compatibility matrix. A noise barrier wall is recommended along La Brucherie Road to mitigate the noise impact.
- Existing and future traffic noise from Interstate-8 adjacent to the Lotus Ranch development would cause noise levels as high as78 dBA CNEL at the rows of homes closest to the freeway. Therefore, a noise barrier wall is recommended to reduce the impacts of freeway noise.

Chapter 2. Introduction

2.1. Purpose of Study

The purpose of this study is to evaluate the potential air quality impacts and mitigation measures of the proposed Lotus Ranch development project per the California Environmental Quality Act (CEQA) requirements. Potential air quality impacts are analyzed for construction and operation of the proposed project. Mitigation measures for air quality are recommended where necessary.

2.2. Project Description

2.2.1. Proposed Development

The proposed Lotus Ranch would be constructed south of Interstate 8 in the City of El Centro (Figure N-1). The project area is bounded on the north by Interstate-8, on the east by La Brucherie Road, and on the south by an existing cattle feed lot and its supporting hay field.

The project area is currently under agricultural use, with the exception of two existing farm houses.

The proposed development would cover roughly 213 acres. It would provide 616 single-family housing units. An elementary school would be constructed at the east side of the project, near La Brucherie Road.

The project is planned for start construction in 2006. Construction is expected to be done over a four year period. Full buildout and full occupancy of the development is planned for the year 2010.

2.2.2. External Aircraft Noise Sources

Naval Air Facility El Centro (NAF El Centro) is roughly four miles west of the proposed development. Military aircraft routinely conduct training exercises over the western part of El Centro. The forecast aircraft noise levels at the project site are described in Section 6.3.

Chapter 3. Noise Concepts

Noise is generally defined as unwanted sound. Sound is technically described in terms of the loudness (amplitude) and frequency (pitch) of the sound. The standard unit of measurement for sound is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The "A-weighted scale," abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately three dBA (the threshold of hearing) to 140 dBA.

3.1. Definitions

Sound Pressure Levels and Decibels

The amplitude of a sound determines its loudness. Loudness of sound increases and decreases with increasing and decreasing amplitude. Sound-pressure amplitude is measured in units of micro-newtons per square meter (uN/m2), also called micro-pascals (uPa). One uPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. The pressure of a very loud sound may be 200 million uPa, or 10 million times the pressure of the weakest audible sound (20 uPa). Because expressing sound levels in terms of uPa would be cumbersome, sound pressure level (SPL) is used to describe in logarithmic units the ratio of actual sound pressures to a reference pressure squared. These units are called bels, named after Alexander Graham Bell. To provide finer resolution, a bel is divided into 10 decibels (dB).

A-Weighted Decibels

The A-scale weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels (dBA). In environmental noise studies, A-weighted SPLs are commonly referred to as noise levels. Table N-1 shows typical A-weighted noise levels.

Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following noise descriptor is commonly used in traffic noise analysis.

Equivalent Sound Level (Leq):

Leq represents an average of the sound energy occurring over a specified period. In effect, Leq is the steady-state sound level that in a stated period would contain the same acoustical energy as the time-varying sound that actually occurs during the same period. The 1-hour A-weighted

equivalent sound level (Leq[h]), is the energy average of the A-weighted sound levels occurring during a 1-hour period and is the basis for noise abatement criteria (NAC) used by Caltrans and the Federal Highway Administration (FHWA).

Community Noise Equivalent Level (CNEL)

CNEL is an average sound level during a 24-hour day. CNEL is a noise measurement scale, which accounts for noise source, distance, single event duration, single event occurrence, frequency, and time of day. Human reaction to sound between 7:00 PM and 10:00 PM is as if the sound were actually five decibels higher than if it occurred from 7:00 AM to 7:00 PM. From 10:00 PM to 7:00 AM, humans perceive sound as if it were ten dBA higher due to the lower background level. Hence, the CNEL is obtained by adding an additional five decibels to sound levels in the evening from 7:00 PM. to 10:00 PM, and ten dBA to sound levels in the night before 7:00 AM and after 10:00 PM. Because CNEL accounts for human sensitivity to sound, the CNEL 24-hour figure is always a higher number than the actual 24-hour average.

Maximum Noise Level

The maximum noise level (Lmax) is roughly equivalent to the loudest 1-second period during any specified time period. The Lmax is generally used to quantify short-term pass-by noise caused by traffic and railroad activity.

Percentile Noise Level (L_{nn})

The percentile noise level Lnn is the noise level exceeded for "nn" percent of a measurement period. For example, the L10 is a relatively loud noise level that is exceeded only 10 percent of the time, while the L90 is a relatively quiet noise level exceeded 90 percent of the time.

3.2. Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. When two sounds of equal SPL are combined, they produce a combined SPL 3 dB greater than the original individual SPL. In other words, sound energy must be doubled to produce a 3-dB increase. If two sound levels differ by 10 dB or more, the combined SPL is equal to the higher SPL; the lower sound level would not increase the higher sound level.

3.3. Sound Propagation

When sound propagates over a distance, it changes in level and frequency content. The manner in which noise reduces with distance depends on the following factors.

Geometric Spreading: Sound from a small, localized source (i.e., a point source) radiates uniformly outward as it travels away from the source in a spherical pattern, resulting in an

attenuation (dropping off) rate of 6 dBA for each doubling of distance. For highways, where the movement of the vehicles on a roadway makes the source of the sound appear to emanate from a line (i.e., a line source) rather than a point, noise attenuates at a rate of 3 dBA per doubling of distance. This is because a line source results in cylindrical spreading rather than the spherical spreading that results from a point source.

Ground Absorption: The noise path between the highway and the observer is usually very close to the ground. Noise attenuation from ground absorption and reflective-wave canceling adds to the attenuation associated with geometric spreading. No excess ground attenuation is assumed for acoustically hard sites (i.e., those sites with a reflective surface), while acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface) are assumed to result in an attenuation rate of about 1.5 dBA per doubling of distance. When added to the geometric spreading, the excess ground attenuation results in an overall drop-off rate of about 4.5 dBA per doubling of distance for a line source and about 7.5 dBA per doubling of distance for a point source.

Shielding by Natural or Human-Made Features: A large object or barrier (i.e., hills, dense woods, buildings, and walls) in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver, depending on the size of the object and the frequency content of the noise source. A barrier that breaks the line of sight between a source and a receiver will typically result in at least 5 dB of noise reduction. A taller barrier may provide as much as 20 dB of noise reduction.

3.4. Perception of Noise Increases

People generally perceive a 10 dBA increase in a noise source as a doubling of loudness. For example, an average person would perceive a 70 dBA sound level as being twice as loud as a 60 dBA sound. People generally cannot detect differences of 1 to 2 dBA between noise levels of a similar nature (e.g., an increase in traffic noise compared to existing traffic noise). However, under ideal listening conditions, some people can detect differences of 2 or 3 dBA. Most people under normal listening conditions would probably perceive a 5 dBA change in sounds of a similar nature. Note that when the new sound is of a different nature than the background sound (e.g., backup alarms compared to quiet residential sounds), most people can detect changes as low as 1 dBA.

3.5. El Centro Noise Regulations and Noise Guidance

Noise requirements in the City of El Centro are specified by the Noise Element of the City's General Plan, and by the City's noise ordinance.

3.5.1. Noise Element of General Plan

The Noise element sets goals and policies to minimize noise impacts within the City. Key goals and policies that affect the noise analysis for the proposed development include:

- The City adopted the Noise/Land Use Compatibility Matrix developed by the State. Figure N-2 shows the compatibility matrix. The matrix specifies the following compatibility zones: Zone A, Normally Acceptable; Zone B, Conditionally Acceptable; Zone C, Normally Unacceptable; Zone D, Clearly Unacceptable.
- The City requires all new residential construction to include noise insulation to provide an indoor noise level of 45 dBA CNEL in accordance with the Title 24 California Noise Insulation Standards. The Title 24 standard applies when the forecast exterior noise level exceeds the Zone B compatibility threshold of 60 dBA CNEL.
- Masonry noise walls are required for new dwelling units along the property lines adjacent to any operational railroad right-of-way.

3.5.2. El Centro City Noise Ordinance

The City noise ordinance (Chapter 17.1 Noise Abatement and Control) specifies allowable daytime and nighttime noise limits for noise caused by commercial and industrial operations. The allowable noise limits at the receiving property boundary are listed in Table N-2. These noise limits do not apply to noise generated by vehicles on public roads. However, they do apply to trucks and buses operating in private property (e.g., trucks at commercial loading areas)

The City ordinance specifies allowable noise levels at residential receiving property generated by construction activity. Construction operations cannot cause noise levels to exceed 75 dBA (1-hour Leq) for more than 8 hours per day.

3.6. Noise Impact Significance Criteria

3.6.1. Construction

Pursuant to the City of El Centro Municipal Code Section 17.1-8, a significant construction noise impact would occur if noise levels exceed 75 dBA at the receiving property line during construction of the proposed project. This noise limit would apply to existing homes outside the proposed development, and it would apply in the future for newly-occupied homes within the development being impacted by construction of additional homes.

3.6.2. Operation

The Noise Element of the City of El Centro General Plan specifies acceptable noise levels for various land use categories. The ranges of acceptable noise levels are shown in Figure N-2. Community noise levels are expressed as the CNEL.

Traffic noise along public streets would be the most significant noise source associated with long-term operation of the proposed development. Traffic noise could impact new homes within the proposed development, and could impact existing homes along public streets serving the proposed development. Based on the thresholds taken from the City of El Centro Noise Element of the General Plan, the proposed project would have a significant impact if caused traffic noise to exceed the following levels:

- New homes within the proposed development would be impacted if future traffic noise exceeded the Zone B "Conditionally Acceptable" level of 60 dBA CNEL (Figure N-2). In that case, the Specific Plan noise insulation requirement (all new homes must include noise insulation to maintain an indoor noise level less than 45 dBA CNEL) would be adequate to mitigate noise.
- New homes within the proposed development would be impacted if future traffic noise exceeded the "Normally Unacceptable" level of 70 dBA (Figure N-2). In that case, traffic noise abatement measures (e.g., noise walls) would be warranted.
- Existing homes outside the proposed development would be impacted if traffic caused noise increases at the receiving property line as follows:
    - The future traffic noise level exceeds the "Conditionally Acceptable " level of 60 dBA CNEL, and the project-related noise increase ("With Project" noise level minus "No-Build" noise level) exceeds 5 dBA CNEL.
    - The future traffic noise level exceeds the "Normally Unacceptable " level of 70 dBA CNEL, and the project-related noise increase ("With Project" noise level minus "No-Build" noise level) exceeds 3 dBA CNEL.

Chapter 4. Noise Modeling Methods

The predominant noise source for the proposed project, as with most urbanized areas, is vehicular traffic. According to the project traffic study prepared by Linscott, Law and Greenspan, Engineers (LLG), the proposed project is forecast to increase traffic levels on existing streets. Commuters living in the proposed development would travel on existing City arterials, and would increase peak-hour and daily traffic along those arterials. Thus, the proposed development would increase noise levels at new and existing homes along the arterials serving the development. The local arterials evaluated for this noise analysis are shown in Figure N-1. The forecast traffic volumes directly related to the Lotus Ranch development are listed in Table N-3 (LLG, 2005).

Traffic noise impacts were evaluated for two phases of the project: direct traffic noise caused by vehicles directly related to the Lotus Ranch development (assumed to be fully occupied by 2010); and cumulative traffic noise caused by the Lotus Ranch development and all other foreseeable local projects planned to be constructed by 2010.

Utilizing Federal Highway Administration (FHWA) RD77108 noise calculation formulas, predicted traffic volumes were used to estimate CNEL traffic noise impacts along arterials serving the project vicinity, for the existing conditions and both "With Project" and "Existing" scenarios. Calculation spreadsheets used to estimate CNEL traffic noise levels are shown in Appendix A. The future noise levels were compared to the significance levels described previously.

Chapter 5. Existing Noise Setting

5.1. Baseline Noise Measurements

Most of the land included in the proposed development is currently used for agriculture. The existing noise environment of the project area is affected by the following general noise sources:

· Vehicles along public roads (including Interstate-8) near the proposed project

· Railroad traffic along the Union Pacific rail line

· Aircraft overflights, especially military aircraft from Naval Air Facility El Centro.

Baseline noise readings were taken around the proposed site on October 31, 2005. The measurements were taken using a Larson Davis Model 700 sound level monitor set for A-weighting and "slow" response. Each noise reading was taken for 10 minutes during mid-morning to define the general nature of key noise events. Weather conditions were well suited for noise monitoring: warm weather with calm winds. Table N-4 summarizes the measurements.

5.2. Noise-Sensitive Receptors

Land uses that are considered sensitive to noise impacts are referred to as “sensitive receptors.” Noise sensitive receptors consist of, but are not limited to residences, schools, libraries, hospitals, and other care facilities.

The land on which the proposed development would be constructed is currently used for agriculture, with few existing buildings. Upon completion of the proposed project, the new residential dwellings within the project site would be considered new noise-sensitive receptors.

Noise-sensitive receptors outside the proposed development include existing residential areas and schools along the existing public roads that would be used by new commuters traveling to and from the proposed development. There are existing residential areas along the following roadways that were identified as future transportation links for the proposed project (Figure N-1):

- La Brucherie Road
- Wake Avenue
- Ross Road

- Ocotillo Avenue
- McCabe Road
- State Route 86

5.3. Existing Noise from Vehicular Traffic

Traffic along existing roadways is the predominant noise source in the project vicinity. Existing and future traffic volumes along key arterial roadways were forecast by the City's traffic consultant (LLG, 2005). Using the forecast traffic volumes and the Federal Highway Administration (FHWA) RD-77-108 noise calculation formulas, CNEL traffic noise levels were calculated for sensitive receptors adjacent to the existing street segments where the proposed project would eventually generate the most vehicular trips. Table N-5 lists the modeled traffic noise levels for existing conditions. The estimated noise levels were estimated for the first row of homes closest to the roadway. Homes farther than the first row would be shielded by the first row of homes, and experience much lower traffic noise levels.

5.4. Existing Noise from Military Aircraft Operations

The northwestern portion of the City is affected by military aircraft operating out of NAF El Centro, but military aircraft do not cause unacceptably high noise levels at the project site. According to the facility's Air Installation Compatibility Use Zone (AICUZ) Study the existing aircraft noise levels at the proposed development are less than 60 dBA CNBEL (NAF El Centro, 1997). The current noise levels are within the "Normally Compatible" category according to the City's Land Use Compatibility matrix (Figure N-2). The City requires all new homes to be constructed incorporating noise insulation methods specified by the California Title 24 building code requirements. Those noise insulation requirements would provide a suitable indoor noise environment with respect to aircraft overflights.

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Chapter 6. Noise Impact Analysis

6.1. Construction Noise

Construction of the proposed project would result in temporary increases in ambient noise levels in the project area on an intermittent basis. The increase in noise could result in temporary annoyance to residences immediately adjacent to the construction site. Noise levels would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers (e.g., existing buildings between the construction site and the noise receiver).

Construction activities require the use of numerous noise generating equipment, such as jackhammers, pneumatic impact equipment, saws, and tractors. Typical noise levels from various types of equipment that used for residential construction are listed in Table N-6. The table shows noise levels at distances of 50 and 100 feet from the construction noise source.

Whereas Table N-6 shows the noise level of each equipment, the noise levels shown in Table N-7 take into account the likelihood that more than one piece of construction equipment would be in operation at the same time and lists the typical overall noise levels that would be expected for each phase of construction. These noise levels are based on surveys conducted by the USEPA in the early 1970's. Since 1970, regulations have been enforced to improve noise generated by certain types of construction equipment to meet worker noise exposure standards. However, many older pieces of equipment are still in use. Thus, the construction phase noise levels indicated in Table N-7 represent worst-case conditions. As the table shows, the highest noise levels are expected to occur during the grading/excavation and finishing phases of construction.

As listed in Table N-7 the estimated construction noise levels at a distance of 100 feet exceed the 75 dBA Leq significance level, but noise levels at a distance of 200 feet would be less than the significance level. The projected construction noise level would likely cause localized and temporary noise impacts during some phases of construction, at distances within 100 to 200 feet of the construction site. Construction activity within the proposed development would not impact existing homes outside the development (all of which are more than 100 feet away). However, some newly-occupied new homes within the proposed development could be impacted by construction of other new homes within the development.

6.2. Operational Traffic Noise Impacts

6.2.1. Project-Related Traffic Noise Impacts

The predominant noise source for the proposed project, as with most urbanized areas, is vehicular traffic. According to the project traffic study prepared by Linscott, Law and Greenspan, Engineers, the proposed project is forecast to increase traffic levels on existing streets. Commuters living in the proposed development would travel on existing City arterials, and would increase peak-hour and daily traffic along those arterials. Thus, the proposed development would increase noise levels at new and existing homes along the arterials serving the development. The local arterials evaluated for this noise analysis are shown in Figure N-1. The existing traffic volumes and forecast future traffic volumes are listed in Table N-3.

As listed in Table N-5 the existing traffic noise at the Lotus Development homes closest to Interstate-8 are modeled at 79 dBA CNEL. The noise level is well into the "Clearly Unacceptable" noise compatibility category. Therefore, considerable noise abatement would be required to reduce noise levels at the first several rows of homes closest to the freeway.

Traffic noise impacts were evaluated for two phases of the project: direct traffic noise caused by vehicles directly related to the Lotus Ranch development (assumed to be fully occupied by 2010); and cumulative traffic noise caused by the Lotus Ranch development and all other foreseeable local projects planned for construction by 2010. Utilizing Federal Highway Administration (FHWA) RD77108 noise calculation formulas, predicted traffic volumes were used to estimate CNEL traffic noise impacts along arterials serving the project vicinity, for the existing conditions and both "With Project" and "Existing" scenarios. The future project-related noise increases (With Project minus Existing) were compared to the significance levels described previously.

Table N-8 shows the modeled traffic noise increases after full occupancy of the development (expected t occur in 2010). The first row of new homes adjacent to the major arterial adjacent to the development (La Brucherie Road) would be exposed to the highest traffic noise levels. However, the predicted nose level at those homes is only 60 dBA CNEL, which is the upper end of the "Normally Acceptable" noise criterion. In those cases, constructing those homes with noise insulation as required by California Title 24 would prevent any significant noise impacts.

Project-related traffic along City arterials would cause noise levels to increase at many existing residential neighborhoods, but the modeled noise increases are less than significant. As listed in Table N-9 the project-related noise increase (With Project minus Existing) would generally be between 1 dBA to 2 dBA CNEL. None of the modeled increases would exceed the significance levels. Thus, traffic noise impacts at existing homes outside the proposed development directly caused by project-related traffic would be less than significant.

6.2.2. Cumulative Traffic Noise Impacts

Traffic noise impacts caused by traffic directly related to Lotus Ranch would be less than significant. However, as listed in Table N-3 regional traffic volume increases caused by other

foreseeable developments would far outweigh traffic volumes directly related t Lotus Ranch. Therefore, cumulative noise impacts would be significant at some locations. As listed in Table N-9 cumulative traffic noise levels along La Brucherie Road are forecast to be 66 dBA CNEL. That cumulative noise level is 6 dBA higher than the 60 dBA CNEL level forecast based solely on traffic directly related to Lotus Ranch (Table N-8). Based on the noise compatibility criteria (Figure N-2) that large noise increase triggers a significant noise impact for Lotus Ranch homes along La Brucherie Road. Mitigation measures to address this noise impact are described in Section 7.2.

6.2.3. Noise Impacts to Proposed School

The proposed elementary school would be along La Brucherie Road. Although detailed construction drawings for the school were not reviewed for this assessment, preliminary site plans indicate classrooms would be more than 300 feet from La Brucherie Road. At that distance the cumulative noise level would be less than 65 dBA CNEL, which would be defined as "Conditionally Acceptable" according to the noise compatibility criteria (Figure N-2). Assuming the school classrooms would be constructed with California Title 24 sound insulation, that traffic noise level would be less than significant.

6.3. Military Aircraft Noise Impacts

Military aircraft operating from NAF El Centro would be clearly audible to people standing outside, but the long-term CNEL noise levels caused by aircraft operations would not pose a significant noise impact. The predicted outdoor noise levels within the proposed development are less than 60 dBA CNEL (NAF El Centro, 1997). According to the City's noise compatibility matrix that noise level is considered "Normally Acceptable". Because all new residential dwelling in the City are required to install noise insulation according to California Title 24 standards, interior noise levels within the proposed development would not be significantly impacted by military aircraft operations.

6.4. Noise from Commercial Operations

The proposed Lotus Ranch development would not include commercial and light manufacturing zoning. The closest industrial facility is the existing cattle feed lot its supporting hay fields adjacent to the proposed development. The cattle feed lot operations are roughly 2,000 feet south of the closest proposed residential lots. It is unlikely the cattle feed lot operations would generate noise emissions loud enough to cause ambient noise levels at the proposed Lotus Ranch development to exceed the County noise ordinance limits.

Chapter 7. Significant Impacts and Mitigation Measures

7.1. Significant Noise Impacts

7.1.1. Construction

Noise Impact N1 Temporary, localized significant impacts are anticipated during construction of the proposed project. This temporary impact would occur when construction of new facilities is done within 150 feet of other newly-occupied homes within the proposed development. Construction within the proposed development would not significantly impact existing homes outside the development because they would be more than 150 feet from any project-related construction sites.

7.1.2. Operational

Noise Impact N2 Traffic noise levels at the first row of homes closest to Interstate-8 would be 78 dBA CNEL, thereby triggering the "Clearly Unacceptable" noise compatibility criterion. Noise levels would have to be reduced by 3 dBA CNEL to comply with the "Normally Unacceptable" category, and reduced by 8 dBA CNEL to comply with the "Conditionally Acceptable" category.

Noise Impact N3 Traffic noise levels at the homes facing La Brucherie Road would be subject to noise levels of 60 dBA CNEL immediately following full occupancy of the Lotus Ranch development, and up to 66 dBA CNEL of cumulative noise level if all foreseeable future developments were constructed. That large noise increase caused by cumulative traffic volumes triggers a significant noise impact for Lotus Ranch homes facing La Brucherie Road.

7.2. Noise Mitigation Measures

7.2.1. Construction Phase

Noise Mitigation N1 A Construction contracts shall specify that all construction equipment shall be equipped with mufflers and other suitable noise attenuation devices.

Noise Mitigation N1 B All existing residential units located within 200 feet of the construction site shall be sent a notice regarding the construction schedule of the proposed project. Signs, legible at a distance of 50 feet shall also be posted at the construction site. All notices and the signs shall indicate the dates and duration of construction activities, as well as provide a telephone number where residents can inquire about the construction process and register complaints.

7.2.2. Operational Phase

Noise Mitigation N2, Interstate-8 Noise Barrier Before completion of the homes closest to Interstate-8, the developer should be required to construct a noise barrier to shield the homes from freeway noise. The noise wall should be designed to provide at least 8 dBA of noise reduction at the first row of homes. That noise barrier would reduce freeway noise levels at the homes nearest Interstate-8 to the "Conditionally Acceptable" noise compatibility category. The City-wide requirement to meet the Title 24 construction standards for indoor noise would then be adequate to provide a suitable noise environment inside the homes.

Noise Mitigation N3, La Brucherie Road Noise Barrier The first row of homes facing La Brucherie Road would be impacted by cumulative noise impacts. City-wide requirement to meet the Title 24 construction standards for indoor noise would be adequate to provide a suitable noise environment inside the homes. In addition, the developer should be required to install a noise barrier along La Brucherie Road, to reduce noise levels for outdoor uses at those homes. The noise barrier should be designed to provide at least 6 dBA noise reduction in the yards of the homes facing La Brucherie Road.

7.3. Impacts After Mitigation

7.3.1. Construction Noise

The City noise ordinance prohibits construction activity that would cause noise levels to exceed 75 dBA Leq for more than 8 hours in a day at any neighboring residential property. However, the ordinance allows daytime construction to exceed 75 dBA Leq for less than 8 hours in a day. Thus, daytime construction could cause temporary, localized noise impacts to homes within 200 feet of the construction site.

7.3.2. Operational Noise

Mitigation measure N2 (noise barrier along Interstate-8, combined with Title 24 indoor noise abatement) would reduce noise levels to the "Conditionally Acceptable" category. Regardless, outdoor activity at the homes closest to Interstate-8 would be impacted by freeway noise.

Mitigation measure N3 (noise barrier along La Brucherie Road) would eliminate significant noise impacts at all homes near the road.

Chapter 8. References

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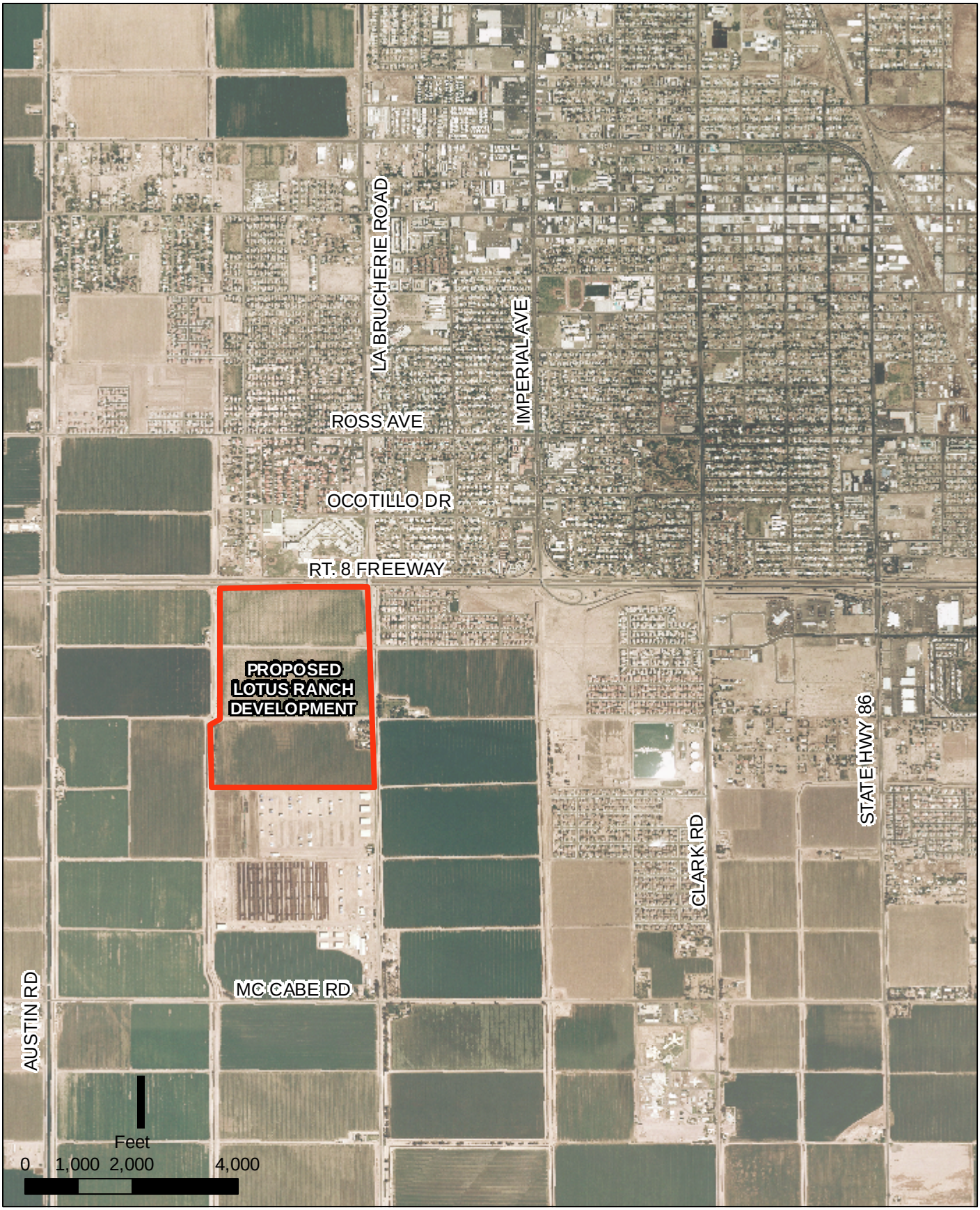
Figures



SOURCE: Image: NAIP 2006

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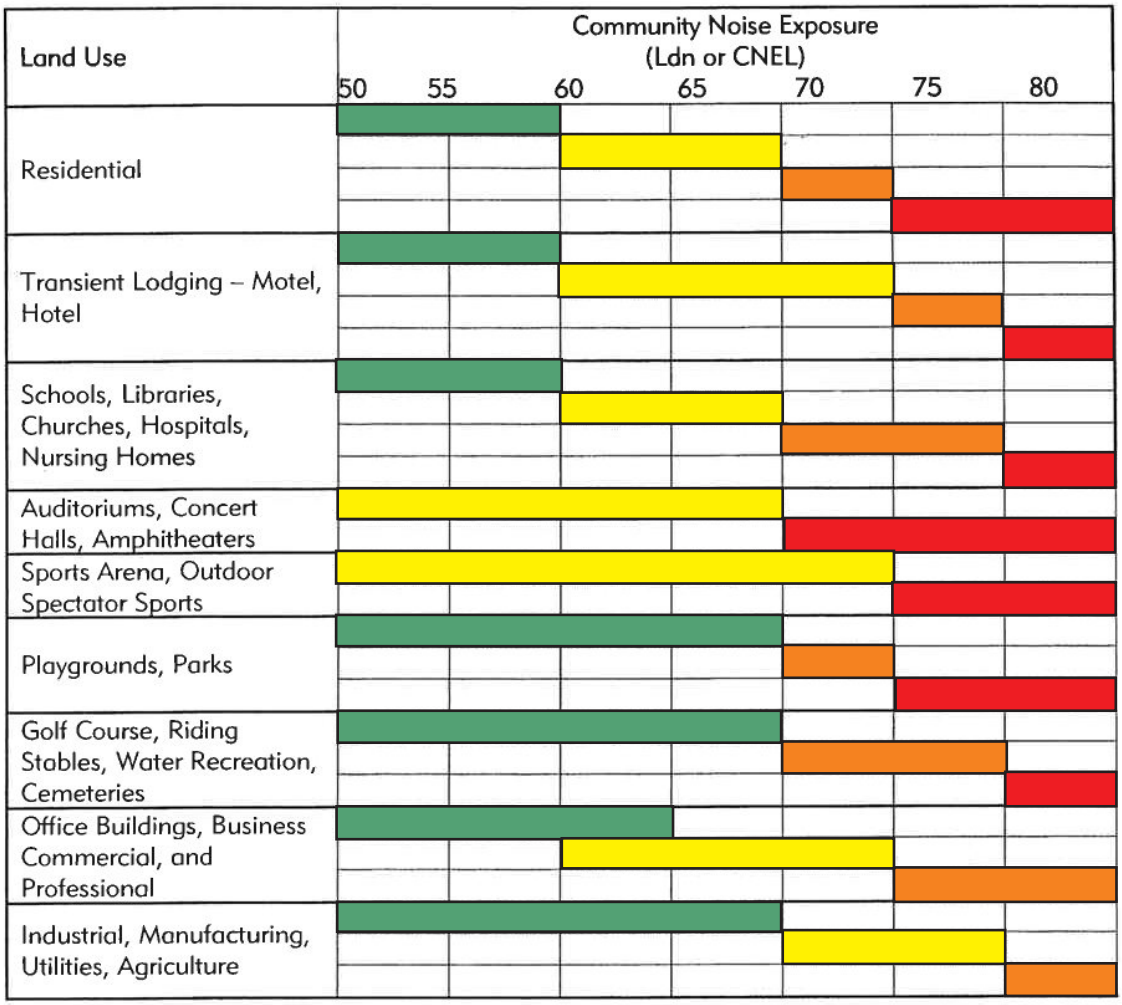
Roadways Used for Noise Modeling
Figure N-1



Source: Modified by CBA from 1998 State of California General Plan Guidelines.

ZONE A - Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved meet conventional Title 24 construction standards. No special noise insulation requirements.

ZONE B - Conditionally Acceptable: New construction or development shall be undertaken only after a detailed noise analysis is made and noise reduction measures are identified and included in the project design.

Zone C- Normally Unacceptable: New construction or development is discouraged. If new construction is proposed, a detailed analysis is required, noise reduction measures must be identified, and noise insulation features included in the design.

ZONE D- Clearly Unacceptable: New construction or development clearly should not be undertaken.

Source: El Centro General Plan

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El Centro Noise/ Land Use Compatibility Matrix Figure N-2

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Tables

Table N-1. Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock band concert
Jet fly-over at 300 meters (1000 feet)		
	100	
Gas lawn mower at 1 meter (3 feet)		
	90	
Diesel truck at 15 meters (50 feet) at 80 kph (50 mph)		Food blender at 1 meter (3 feet)
	80	Garbage disposal at 1 meter (3 feet)
Noisy urban area, daytime		
Gas lawn mower, 30 meters (100 feet)	70	Vacuum cleaner at 3 meters (10 feet)
Commercial area		Normal speech at 1 meter (3 feet)
Heavy traffic at 90 meters (300 feet)	60	
		Large business office
Quiet urban daytime	50	Dishwasher next room
Quiet urban nighttime	40	Theater, large conference room (background)
Quiet suburban nighttime		
	30	Library
Quiet rural nighttime		Bedroom at night
	20	
		Broadcast/recording studio
	10	
Lowest threshold of human hearing	0	Lowest threshold of human hearing

Source: Caltrans 1998b.

Table N-2. Allowable Noise Levels Generated by Commercial and Industrial Activity

Receiving Property Zone	Daytime Limit (1-hour Leq)	Nighttime Limit (1-hour Leq)
Single-family residential	50	45
Multiple family residential	55	50
Commercial	60	55
Manufacturing	75	70

Table N-3. Traffic Volumes Used for Noise Modeling

Roadway	Segment	Average Daily Traffic (vehicles/day)			Traffic Speed, mph	Distance to Closest Homes, feet	Land Use Outside Lotus Ranch	Land Use for Lotus Ranch
		2006 Existing	Design Year Incl Project	2010 Incl. Project and Cumulative				
Ross Road	Austin-La Brucherie	4,300	4,850	9,350	35	60	Residential	N/A
Ocotillo Drive	La Brucherie - Imperial	3,000	4,520	4,720	35	60	Residential	N/A
Interstate 8 Freeway	Imperial Avenue	19,600	21,560	23,520	65	320	Freeway buffer zone	Freeway buffer and Residential
Wake Avenue	Clark - SR 86	3,600	4,320	16,920	35	60	Residential	N/A
McCabe Road	Austin-La Brucherie	1,700	2,420	3,550	35	60	Agricultural	N/A
"	La Brucherie-Clark	3,300	3,580	8,280	35	60	Agricultural/Residential	N/A
"	Clark-SR 86	2,200	2,530	9,630	35	60	Agricultural	N/A
La Brucherie Rd.	McCabe - Interstate 8	3,000	4,200	17,100	35	60	Agricultural/Commercial	Residential
"	I-8 to Ocotillo Dr	7,700	11,160	24,260	35	100	Residential	N/A
"	N. of Ross Road	11,300	12,580	18,380	35	60	Residential	N/A
SR 86	Wake Ave. - Interstate 8	20,500	21,110	40,810	45	60	Agricultural/Commercial	N/A

Table N-4. Baseline Noise Measurements

Monitoring Location	Noise Level, dBA		Observed Noise Events
	Leq	Lmax	
SLM-1. Agricultural fields, 70 feet east of La Brucherie Street. 15-minute reading, 11:20 am.	62	76	Truck pass-by = 71 - 76 dBA Car pass-by = 68-71 dBA
SLM-2. Within the proposed development, south of Interstate-8. 15-minute reading, 1:00 pm.	68	79	Freeway noise Truck pass-by = 71-75 dBA

Table N-5. Existing Traffic Noise Levels

Roadway	Segment	Land Use for Existing Parcels Outside Lotus Ranch	Land Use for Lotus Ranch Parcels	Existing CNEL, dBA	Existing Noise Impact at Lotus Ranch?
Ross Road	Austin-La Brucherie	Residential	N/A	60	N/A
Ocotillo Drive	La Brucherie - Imperial	Residential	N/A	58	N/A
Interstate 8 Freeway	Imperial Avenue	Freeway buffer zone	Freeway buffer and Residential	78	Significant Impact. Requires considerable noise abatement, noise barriers plus Title 24 Building Insulation
Wake Avenue	Clark - SR 86	Residential	N/A	59	N/A
McCabe Road	Austin-La Brucherie	Agricultural	N/A	56	N/A
"	La Brucherie-Clark	Agricultural/Residential	N/A	59	N/A
"	Clark-SR 86	Agricultural	N/A	57	N/A
La Brucherie Rd.	McCabe - Interstate 8	Agricultural/Commercial	Residential	58	No Impact
"	I-8 to Ocotillo Dr	Residential	N/A	60	N/A
"	N. of Ross Road	Residential	N/A	64	N/A
SR 86	Wake Ave. - Interstate 8	Agricultural/Commercial	N/A	79	N/A

Table N-6. Maximum Noise Levels of Common Construction Machines

Equipment Type	Noise Level at 50 Feet (Leq, dBA)	Noise Level at 100 Feet (Leq, dBA)
Scraper	81	75
Roller	74	68
Street Paver	82	76
Backhoe	76	70
Street Compressor	76	70
Front-end Loader	76	70
Street Cleaner	70	64
Idling Haul Truck	60	54
Cement Mixer	81	75

Source: Thalheimer 2000.

Table N-7. Typical Outdoor Construction Noise Levels

Construction Phase	Noise Level (Leq, dBA)			
	At 50 feet	At 50 Feet with Mufflers	At 100 feet	At 200 feet
Ground Clearing	84	82	76	70
Grading/Excavation	89	86	80	74
Foundations	78	77	71	65
Structural	85	83	76	70
Finishing	89	86	80	74

Source: EPA, 1971

Table N-8. Direct Impacts: Year 2010 Build Year, Existing and Lotus Ranch Development

		Land Use		CNEL		CNEL Increase	Noise Impact?	
Roadway	Segment	Existing Parcels Outside Lotus Ranch	Future Lotus Ranch Parcels	Existing	Build Year With Project	With Project Minus Existing	Existing Parcels Outside Lotus Ranch	Lotus Ranch Parcels
Ross Road	Austin-La Brucherie	Residential	N/A	60	61	1	No Impact	N/A
Ocotillo Drive	La Brucherie - Imperial	Residential	N/A	59	61	2	No Impact	N/A
Interstate 8 Freeway	Imperial Avenue	Freeway buffer zone	Freeway buffer and Residential	79	79	0	No Impact	Impact
Wake Avenue	Clark - SR 86	Residential	N/A	60	60	1	No Impact	N/A
McCabe Road	Austin-La Brucherie	Agricultural	N/A	56	58	2	No Impact	N/A
"	La Brucherie-Clark	Agricultural and Residential	N/A	59	60	0	No Impact	N/A
"	Clark-SR 86	Agricultural	N/A	57	58	1	No Impact	N/A
La Brucherie Rd.	McCabe - Interstate 8	Agricultural and Commercial	Residential	59	60	1	No Impact	Minor Impact (Title 24 Mitigation)
"	I-8 to Ocotillo Dr	Residential	N/A	61	62	2	No Impact	N/A
"	N. of Ross Road	Residential	N/A	65	65	0	No Impact	N/A
SR 86	Wake Ave -Interstate 8	Agricultural/Commercial	N/A	79	79	0	No Impact	N/A

Table N-9. Cumulative Impacts: Existing, Lotus Ranch Development Plus Foreseeable Future Projects

		Land Use		CNEL		CNEL Increase	Noise Impact?	
Roadway	Segment	Existing Parcels Outside Lotus Ranch	Future Lotus Ranch Parcels	Existing	Cumulative (Lotus Ranch Plus Non-Project)	With Project Minus Existing	Existing Parcels Outside Lotus Ranch	Lotus Ranch Parcels
Ross Road	Austin-La Brucherie	Residential	N/A	60	64	~~3~~4	No Impact	N/A
Ocotillo Drive	La Brucherie - Imperial	Residential	N/A	59	61	2	No Impact	N/A
Interstate 8 Freeway	Imperial Avenue	Freeway buffer zone	Freeway buffer and Residential	79	79	~~1~~0	No Impact	Impact
Wake Avenue	Clark - SR 86	Residential	N/A	60	66	~~7~~6	Impact	N/A
McCabe Road	Austin-La Brucherie	Agricultural	N/A	56	60	~~3~~4	No Impact	N/A
"	La Brucherie-Clark	Agricultural and Residential	N/A	59	63	4	No Impact	N/A
"	Clark-SR 86	Agricultural	N/A	57	64	~~6~~7	No Impact	N/A
La Brucherie Rd.	McCabe - Interstate 8	Agricultural and Commercial	Residential	59	66	~~8~~7	No Impact	Cumulative Impact
"	I-8 to Ocotillo Dr	Residential	N/A	61	66	5	No Impact	N/A
"	N. of Ross Road	Residential	N/A	65	67	2	No Impact	N/A
SR 86	Wake Ave. - Interstate 8	Agricultural/Commercial	N/A	79	82	3	No Impact	N/A

Appendix A
CNEL Noise Calculation Spreadsheets

Traffic Volumes Used for Noise Modeling

Roadway	Segment	Average Daily Traffic (vehicles/day)			Traffic Speed, mph	Distance to Closest Homes, feet	Land Use Outside Lotus Ranch	Land Use for Lotus Ranch
		2006 Existing	Design Year Incl Project	2010 Incl. Project and Cumulative				
Ross Road	Austin-La Brucherie	4,300	4,850	9,350	35	60	Residential	N/A
Ocotillo Drive	La Brucherie - Imperial	3,000	4,520	4,720	35	60	Residential	N/A
Interstate 8 Freeway	Imperial Avenue	19,600	21,560	23,520	65	320	Freeway buffer zone	Freeway buffer and Residential
Wake Avenue	Clark - SR 86	3,600	4,320	16,920	35	60	Residential	N/A
McCabe Road	Austin-La Brucherie	1,700	2,420	3,550	35	60	Agricultural	N/A
"	La Brucherie-Clark	3,300	3,580	8,280	35	60	Agricultural/Residential	N/A
"	Clark-SR 86	2,200	2,530	9,630	35	60	Agricultural	N/A
La Brucherie Rd.	McCabe - Interstate 8	3,000	4,200	17,100	35	60	Agricultural/Commercial	Residential
"	I-8 to Ocotillo Dr	7,700	11,160	24,260	35	100	Residential	N/A
"	N. of Ross Road	11,300	12,580	18,380	35	60	Residential	N/A
SR 86	Wake Ave. - Interstate 8	20,500	21,110	40,810	45	60	Agricultural/Commercial	N/A

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Data source for Interstate-8 AADT at Imperial Ave

http://www.dot.ca.gov/hq/traffops/saferesr/trafdata/2004all/r007-10i.htm

80,200 92,830 176,520

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Table CNEL-1 EXISTING NOISE LEVELS, LOTUS RANCH

			Vehicle Speed						Mix										Attenuation	Distance	CNEL at	Distance to CNEL Noise Contour		
										Day			Eve			Night			Coefficient	to Receiver	Receiver			
Roadway	From:	Daily Traffic Volumes	Auto mph	k/h	MT mph	k/h	HT mph	k/h	Mix	A	MT	HT	A	MT	HT	A	MT	HT	(10 hard/15 soft)	(feet)		70 Ldn	65 Ldn	60 Ldn
Ross Road	Austin-La Brucherie	4,300	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	60.4	6.6	20.8	65.6
Ocotillo Drive	La Brucherie - Imperial	3,000	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	58.8	4.6	14.5	45.8
Interstate 8 Freeway	Imperial Avenue	19,600	65	105	65	105	65	105	3	56.32	104.59	56.32	35.00	65.00	35.00	56.32	104.59	56.32	15	320	78.6	1204.4	2594.8	5590.3
Wake Avenue	Clark - SR 86	3,600	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	59.6	5.5	17.4	55.0
McCabe Road	Austin-La Brucherie	1,700	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	56.4	2.6	8.2	26.0
"	La Brucherie-Clark	3,300	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	59.2	5.0	15.9	50.4
"	Clark-SR 86	2,200	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	57.5	3.4	10.6	33.6
La Brucherie Rd.	McCabe - Interstate 8	3,000	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	58.8	4.6	14.5	45.8
"	I-8 to Ocotillo Dr	7,700	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	100	60.7	11.8	37.2	117.5
"	N. of Ross Road	11,300	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	64.6	17.3	54.6	172.5
SR 86	Wake Ave. - Interstate 8	20,500	45	72.4	45	72	45	72	2	56.32	72.41	0.01	35.00	45.00	0.01	56.32	72.41	0.01	10	60	79.2	494.8	1564.8	4948.4

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Table CNEL-2. BUILD YEAR, EXISTING PLUS PROJECT, LOTUS RANCH

			Vehicle Speed							Mix									Attenuation	Distance	CNEL at	Distance to CNEL Noise Contour		
										Day			Eve			Night			Coefficient	to Receiver	Receiver			
Roadway	From:	Daily Traffic Volumes	Auto mph	k/h	MT mph	k/h	HT mph	k/h	Mix	A	MT	HT	A	MT	HT	A	MT	HT	(10 hard/15 soft)	(feet)		70 Ldn	65 Ldn	60 Ldn
Ross Road	Austin-La Brucherie	4,850	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	60.9	7.4	23.4	74.0
Ocotillo Drive	La Brucherie - Imperial	4,520	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	60.6	6.9	21.8	69.0
Interstate 8 Freeway	Imperial Avenue	21,560	65	105	65	105	65	105	3	56.32	104.59	56.32	35.00	65.00	35.00	56.32	104.59	56.32	15	320	79.0	1283.4	2765.0	5957.1
Wake Avenue	Clark - SR 86	4,320	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	60.4	6.6	20.9	66.0
McCabe Road	Austin-La Brucherie	2,420	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	57.9	3.7	11.7	36.9
"	La Brucherie-Clark	3,580	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	59.6	5.5	17.3	54.7
"	Clark-SR 86	2,530	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	58.1	3.9	12.2	38.6
La Brucherie Rd.	McCabe - Interstate 8	4,200	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	60.3	6.4	20.3	64.1
"	I-8 to Ocotillo Dr	11,160	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	100	62.3	17.0	53.9	170.4
"	N. of Ross Road	12,580	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	65.1	19.2	60.7	192.0
SR 86	Wake Ave. - Interstate 8	21,110	45	72.4	45	72	45	72	2	56.32	72.41	0.01	35.00	45.00	0.01	56.32	72.41	0.01	10	60	79.3	509.6	1611.4	5095.6

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Table CNEL-3. 2010 CUMULATIVE, EXISTING PLUS PROJECT PLUS CUMULATIVE NON-PROJECT, LOTUS RANCH

			Vehicle Speed						Mix											CNEL at			
										Day			Eve			Night			Attenuation	Distance	Receiver	Distance to CNEL Noise Contour		
		Daily	Auto		MT		HT												Coefficient	to Receiver				
Roadway	From:	Traffic Volumes	mph	k/h	mph	k/h	mph	k/h	Mix	A	MT	HT	A	MT	HT	A	MT	HT	(10 hard/15 soft)	(feet)		70 Ldn	65 Ldn	60 Ldn
Ross Road	Austin-La Brucherie	9,350	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	63.8	14.3	45.1	142.7
Ocotillo Drive	La Brucherie - Imperial	4,720	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	60.8	7.2	22.8	72.1
Interstate 8 Freeway	Imperial Avenue	23,520	65	105	65	105	65	105	3	56.32	104.59	56.32	35.00	65.00	35.00	56.32	104.59	56.32	15	320	79.4	1360.1	2930.2	6312.8
Wake Avenue	Clark - SR 86	16,920	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	66.3	25.8	81.7	258.3
McCabe Road	Austin-La Brucherie	3,550	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	59.6	5.4	17.1	54.2
"	La Brucherie-Clark	8,280	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	63.2	12.6	40.0	126.4
"	Clark-SR 86	9,630	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	63.9	14.7	46.5	147.0
La Brucherie Rd.	McCabe - Interstate 8	17,100	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	66.4	26.1	82.6	261.1
"	I-8 to Ocotillo Dr	24,260	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	100	65.7	37.0	117.1	370.4
"	N. of Ross Road	18,380	35	56.3	35	56	35	56	1	75.51	1.56	0.64	12.57	0.09	0.02	9.34	0.19	0.08	10	60	66.7	28.1	88.7	280.6
SR 86	Wake Ave. - Interstate 8	40,810	45	72.4	45	72	45	72	2	56.32	72.41	0.01	35.00	45.00	0.01	56.32	72.41	0.01	10	60	82.2	985.1	3115.1	9850.9

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Jones & Stokes

Technical Memorandum

Date: October 23, 2006

To: Michael Slavick, Jones & Stokes, San Diego

From: Jim Wilder, Jones & Stokes, Bellevue, WA

Subject: Noise Addendum for Noise Analysis
Lotus Ranch Development, El Centro, CA

Forecast ADT traffic volumes for the proposed Lotus Ranch development have been updated, but the changes are minor enough that revision of Jones & Stokes' November 2005 noise analysis report is not warranted. The rationale for that finding is provided below.

Jones & Stokes' Noise Assessment Technical Report for the Lotus Development project was submitted in November 2005 based on forecast ADT traffic data provided in the Linscott Law & Greenspan (LLG) traffic report also dated November 2005. Since that time the applicant has revised their proposed land use within the development, and in May 2006 LLG released a revised traffic report. The forecast ADTs along the analyzed roadways generally increased by a few percent, but in limited cases the forecast ADT's decreased.

The increases and decreases in the forecast ADTs are minor, and do not affect the conclusions of Jones & Stokes' November 2005 noise report. Table N-3 (Addendum) shows the range of the revised ADT values and estimates how much each ADT revision affects the calculated traffic noise level. In most cases the calculated noise level changes by less than 1 dBA CNEL.

Table 4.6-6 (Revised) shows how the revisions to LLG's ADT forecasts affect the summary table presented in the December 2005 Draft EIR. The minor revisions do not alter any findings, conclusion, or recommended noise mitigation.

11820 Northup Way, Suite E300 • Bellevue, WA 98005-1946 • tel. 425 822.1077 • fax 425 822.1079
www.jonesandstokes.com

Table N-3 Addendum. Revised ADT Traffic Forecasts Based on LLG's May 2006 Revised Traffic Analysis Report

Roadway	Segment	Original ADT (vehicles/day) Used for November 2005 Analysis			Revised ADT (vehicles/day) From LLG 2006 Traffic Impact Analysis			Percent Change in Revised ADT			CNEL Change (dBA) Based On Revised ADT		
		2006 Existing	Design Year Incl Project	2010 Incl. Project and Cumul.	2006 Existing	Design Year Incl Project	2010 Incl. Project and Cumul.	2006 Existing	Design Year Incl Project	2010 Incl. Project and Cumul.	2006 Existing	Design Year Incl Project	2010 Incl. Project and Cumul.
Ross Road	Austin-La Brucherie	4,300	4,850	9,350	2,700	3,290	7,190	-37%	-32%	-23%	-2.0	-1.7	-1.1
Ocotillo Drive	La Brucherie - Imperial	3,000	4,520	4,720	3,000	4,540	4,740	0%	0.4%	0.4%	0.0	0.0	0.0
Wake Avenue	Clark - SR 86	3,600	4,320	16,920	3,600	4,310	17,310	0%	-0.2%	2%	0.0	0.0	0.1
McCabe Road	Austin-La Brucherie	1,700	2,420	3,550	1,700	2,470	3,900	0%	2%	10%	0.0	0.1	0.4
"	La Brucherie-Clark	3,300	3,580	8,280	3,300	3,600	8,800	0%	1%	6%	0.0	0.0	0.3
"	Clark-SR 86	2,200	2,530	9,630	2,200	2,550	10,510	0%	1%	9%	0.0	0.0	0.4
La Brucherie Rd.	McCabe to I-8	3,000	4,200	17,100	3,000	4,240	17,310	0%	1%	1%	0.0	0.0	0.1
"	I-8 to Ocotillo Dr	7,700	11,160	24,260	7,700	11,250	24,350	0%	1%	0.4%	0.0	0.0	0.0
"	N. of Ross Road	11,300	12,580	18,380	11,300	12,600	18,400	0%	0.2%	0.1%	0.0	0.0	0.0
SR 86	Wake Ave. .to I-8	20,500	21,110	40,810	20,500	21,090	42,140	0%	-0.1%	3%	0.0	0.0	0.1

Highlighted row represents roadway segment adjacent to proposed homes within the Project

Table 4.6-6 (Addendum) Project Impacts to Roadway Noise Levels

Roadway Segment	Existing Land Use	Existing CNEL (2010)	Existing + Project	Project-Related Increase
Ross Road				
--Austin – La Brucherie	Residential	~~60~~ 58	~~61~~ 59	1
Ocotillo Drive				
--La Brucherie – Imperial	Residential	59	61	2
I-8				
--Imperial-xx	Freeway buffer zone	*79*	*79*	*0*
Wake Avenue				
--Clark Road – SR-86	Residential	60	60	0
McCabe Road				
--Austin – La Brucherie	Agricultural	56	58	2
--La Brucherie – Clark	Agricultural/Residential	59	60	1
--Clark – SR-86	Agricultural	57	58	1
La Brucherie Road				
--McCabe – I-8	Agricultural/Commercial	58	60	2
--I-8 to Ocotillo	Residential	61	62	1
--North of Ross Road	Residential	65	65	0
SR-86				
--Wake – I-8	Agricultural/Commercial	*79*	*79*	*0*