3.5 Noise

The analysis of noise impacts was prepared with the technical assistance of Illingworth & Rodkin, Inc. (I&R), acoustic and air quality consultants. The applicant had a noise analysis prepared for the project, and this report was used, when appropriate and its findings confirmed, in preparing this section.

A. Setting

This report presents the results of the environmental noise assessment performed for the Harris Quarry Expansion project in Mendocino County, California. The project would allow the extraction of rock from expansion of an existing hillside quarry and the construction of an asphalt processing facility and concrete plant. The setting section presents the fundamentals of environmental noise, provides a discussion of policies and standards applicable to the project, and presents a discussion of the existing noise environment at sensitive receivers in the site vicinity. The impacts and mitigation measures section provides a discussion of potential noise impacts including generation of sensitive receivers to noise levels in excess of standards established in the local general plan and noise ordinance, generation of excessive groundborne vibration, potential permanent increases in noise resulting from the operation of the project, and the potential for temporary noise increases as a result of project construction activities. Mitigation measures are then presented to reduce significant noise impacts to a less-than-significant level.

1. Fundamentals of Environmental Noise

Noise is defined as unwanted sound. Airborne sound is a rapid fluctuation of air pressure above and below atmospheric pressure. Sound levels are usually measured and expressed in decibels (dB) with 0 dB corresponding roughly to the threshold of hearing. Decibels and other technical terms are defined in Table 3.5-1.

Most of the sounds which we hear in the environment do not consist of a single frequency, but rather a broad band of frequencies, with each frequency differing in sound level. The intensities of each frequency add together to generate a sound. The method commonly used to quantify environmental sounds consists of evaluating all of the frequencies of a sound in accordance with a weighting that reflects the facts that human hearing is less sensitive at low frequencies and extreme high frequencies than in the frequency mid-range. This is called "A" weighting, and the decibel level so measured is called the A-weighted sound level (dBA). In practice, the level of a sound source is conveniently measured using a sound level meter that includes an electrical filter corresponding to the A-weighting curve. Typical A-weighted levels measured in the environment and in industry are shown in Table 3.5-2 for different types of noise.

Although the A-weighted noise level may adequately indicate the level of environmental noise at any instant in time, community noise levels vary continuously. Most environmental noise includes a conglomeration of noise from distant sources which create a relatively steady background noise in which no particular source is identifiable. To describe the time-varying character of environmental noise, the statistical noise

descriptors, L_{01}, L_{10}, L_{50}, and L_{90}, are commonly used. They are the A-weighted noise levels equaled or exceeded during 1%, 10%, 50%, and 90% of a stated time period. A single number descriptor called the L_{eq} is also widely used. The L_{eq} is the average A-weighted noise level during a stated period of time.

In determining the daily level of environmental noise, it is important to account for the difference in response of people to daytime and nighttime noises. During the nighttime, exterior background noises are generally lower than the daytime levels. However, most household noise also decreases at night and exterior noise becomes very noticeable. Further, most people sleep at night and are very sensitive to noise intrusion. To account for human sensitivity to nighttime noise levels, a descriptor, L_{dn} (day/night average sound level), was developed. The L_{dn} divides the 24-hour day into the daytime of 7:00 AM to 10:00 PM and the nighttime of 10:00 PM to 7:00 AM. The nighttime noise level is weighted 10 dB higher than the daytime noise level. The Community Noise Equivalent Level (CNEL) is another 24-hour average which includes both an evening and nighttime weighting.

2. Regulatory Background

The State of California and Mendocino County establish guidelines, regulations, and policies designed to limit noise exposure at noise sensitive land uses. Appendix G of the State CEQA Guidelines, the Mendocino County Noise Element of the General Plan, the Mendocino County Surface Mining and Reclamation Zoning Ordinance, and the Mendocino County Zoning Code present the following:

State CEQA Guidelines. The California Environmental Quality Act (CEQA) includes qualitative guidelines for determining significance of adverse environmental noise impacts. A project will typically have a significant impact if it would;

a. Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies.

b. Expose people to or generate excessive groundborne vibration or groundborne noise levels.

c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.

d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

e. For projects within an area covered by an airport land use plan or within two miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity of a private airstrip, expose people residing or working in the project area to excessive aircraft noise levels.

Table 3.5-1
Definitions of Acoustical Terms Used in This Report

Term	Definitions
Decibel, dB	A unit describing, the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure. The reference pressure for air is 20.
Sound Pressure Level	Sound pressure is the sound force per unit area, usually expressed in micro Pascals (or 20 micro Newtons per square meter), where 1 Pascal is the pressure resulting from a force of 1 Newton exerted over an area of 1 square meter. The sound pressure level is expressed in decibels as 20 times the logarithm to the base 10 of the ratio between the pressures exerted by the sound to a reference sound pressure (e.g., 20 micro Pascals). Sound pressure level is the quantity that is directly measured by a sound level meter.
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure. Normal human hearing is between 20 Hz and 20,000 Hz. Infrasonic sound are below 20 Hz and Ultrasonic sounds are above 20,000 Hz.
A-Weighted Sound Level, dBA	The sound pressure level in decibels as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise.
Equivalent Noise Level, Leq	The average A-weighted noise level during the measurement period.
L_{max}, L_{min}	The maximum and minimum A-weighted noise level during the measurement period.
L_{01}, L_{10}, L_{50}, L_{90}	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time during the measurement period.
Day/Night Noise Level, L_{dn} or DNL	The average A-weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10:00 pm and 7:00 am.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels in the evening from 7:00 pm to 10:00 pm and after addition of 10 decibels to sound levels measured in the night between 10:00 pm and 7:00 am.
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise at a given location.
Intrusive	That noise which intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.

Table 3.5-2
Typical Noise Levels in the Environment

Common Outdoor Noise Source	Noise Level (dBA)	Common Indoor Noise Source
	120 dBA	
Jet fly-over at 300 meters		Rock concert
	110 dBA	
Pile driver at 20 meters	100 dBA	
		Night club with live music
	90 dBA	
Large truck pass by at 15 meters		
	80 dBA	Noisy restaurant
Freeway at 30 meters		Garbage disposal at 1 meter
Gas lawn mower at 30 meters	70 dBA	Vacuum cleaner at 3 meters
Commercial/Urban area daytime		Normal speech at 1 meter
Suburban expressway at 90 meters	60 dBA	
Suburban daytime		Active office environment
	50 dBA	
Urban area nighttime		Quiet office environment
	40 dBA	
Suburban nighttime		
Quiet rural areas	30 dBA	Library
		Quiet bedroom at night
Wilderness area	20 dBA	
Most quiet remote areas	10 dBA	Quiet recording studio
Threshold of human hearing	0 dBA	Threshold of human hearing

CEQA does not define what noise level increase would be considered substantial. Typically, project-generated noise level increases of 3 dBA L_{dn} or greater would be considered significant where exterior noise levels would exceed the normally acceptable noise level standard (60 dBA L_{dn}). Where noise levels would remain at or below the normally acceptable noise level standard with the project, noise level increases of 5 dBA L_{dn} or greater would be considered significant.

Checklist items (a), (b), (c), and (d) are relevant to the proposed project. The project is not located in the vicinity of a public airport or private airstrip (the use of the CDF heliport is so infrequent that it would not adversely affect workers on the site) and would not expose people working at the site to excessive aircraft noise. Checklist items (e) and (f) are not carried forward for further analysis.

Mendocino County Noise Element of the General Plan. The Mendocino County General Plan Chapter VI Noise Element (adopted 12/9/91) sets forth goals and policies related to noise and land use compatibility. Policy 2 states, "Existing land uses shall be protected from the intrusion of new noise, protection will take various forms and may include zoning controls, requiring buffer strips around new uses or other appropriate treatment."

The Noise Element references the United States Environmental Protection Agency and proposes exterior noise limits for different land uses. In the residential "rural suburban" category, the noise standards would be 50 dBA daytime (7:00 AM to 7:00 PM), 45 dBA evening (7:00 PM to 10:00 PM), and 40 dBA nighttime (10:00 PM to 7:00 AM). In the residential "suburban" category, the noise standards are 5 dBA higher than the "rural suburban" category. "Urban" noise standards are 10 dBA higher than the "rural suburban" category. The General Plan also includes a preferred sound level of 50 dBA L_{dn} for residential land uses.

Mendocino County Surface Mining and Reclamation Zoning Ordinance. Chapter 22.16, Section 22.16.070 establishes exterior noise limit standards for surface mining activities: In addition to meeting the minimum acceptable surface mining and reclamation practices in the Act and policy guidelines, each surface mining operation requiring a permit shall be conducted and designed to meet the following operational standards. Conditions may be imposed on mining permits to ensure compliance with minimum acceptable practices and standards.

Subsection (J) Noise levels created by the operation as measured at the nearest residence other than that of the mine owner or operator shall not exceed the following:

(1) Sixty-five (65) dB(A) for a cumulative period more than thirty (30) minutes in any hour;
(2) Seventy (70) dB(A) for a cumulative period more than twelve (12) minutes in any hour;
(3) Seventy-five (75) dB(A) for a cumulative period more than three (3) minutes in any hour;
(4) Eighty (80) dB(A) for a cumulative period more than one (1) minute in any hour;

(5) Eighty-five (85) dB(A) at any moment.
(6) More stringent noise standards may be required as permit conditions when particular local circumstances warrant additional protection of potentially affected residences.

Any noise control measures prescribed by the lead agency as a condition of a permit shall in no manner be interpreted as to preclude the application to the surface mining site of future noise control measures adopted by the County subsequent to the granting of the permit.

Mendocino County Inland Zoning Code. Title 20, Division 1 presents exterior noise limit standards as summarized in Table 3.5-3, below:

TABLE 3.5-3
Exterior Noise Limit Standards

Receiving Land Use Category[3],[4]	**Time Period**	**Noise Level Standards (dBA)**[1],[2]	
		Rural/Suburban	**Urban/Highways**[5]
One and Two Family Residential	10:00 p.m. - 7:00 a.m. 7:00 a.m. - 10:00 p.m.	40 50	50 60
Multifamily Public Spaces	10:00 p.m. - 7:00 a.m. 7:00 a.m. - 10:00 p.m.	45 50	55 60
Limited Commercial Some Multifamily	10:00 p.m. - 7:00 a.m. 7:00 a.m. - 10:00 p.m.	55 60	
Commercial	10:00 p.m. - 7:00 a.m. 7:00 a.m. - 10:00 p.m.	60 65	
Light Industrial Heavy Industrial	Any time Any time	70 75	

Adjustments to Noise Level Standard		
Duration		
L50	30 minutes per hour	Standard
L25	15 minutes per hour	Standard + 5 dB
L0	Maximum permissible level	Standard + 20 dB
Character	Tone, whine, screech, hum, or impulsive, hammering, riveting, or music or speech	**Standard + 5 dB**
Ambient Level[1]	Existing ambient L50, L25 Existing ambient L0	Standard + 5dB Existing maximum

Interpretive Footnotes:
(1) When an acoustical study demonstrates that ambient levels exceed the noise standard, then the ambient levels become the standard.
(2) Higher noise levels may be permitted for temporary, short-term or intermittent activities when no sensitive or residential uses will be affected.
(3) County staff shall recommend which receiving land use category applies to a particular project, based on the mix of uses and community noise levels. Industrial noise limits intended to be applied at the boundary of industrial zones, rather than within industrial areas.
(4) The "rural/suburban" standard should be applied adjacent to noise sensitive uses such as hospitals or convalescence homes.
(5) "Highways" apply to roads and highways where average daily traffic (ADT) exceeds 10,000.
(Ord. No. 4017 (part), adopted 1998)

3. Existing Noise Environment

Harris Quarry is located west of Highway 101 and south of Black Bart Drive. The site of the proposed asphalt and concrete plants is located immediately south of Black Bart Drive (County Road No. 370) about 2,000 feet west of Highway 101. Surrounding land uses to the east include transportation corridors (i.e., Highway 101 and the Northwest Pacific Railroad) and open space. To the west of the quarry is undeveloped land owned by the applicant and rural residential development. The nearest residence to the west is about 1.4 miles west of the quarry. The nearest residence to the processing facility site is about one mile to the west. To the south is undeveloped open space belonging to the Church of the Golden Rule. The Church's compound (off Ridgewood Road) is located about one mile south of the quarry. A mobile home park (Golden Rule Mobile Village) is located about 1.75 miles south of the quarry. Commercial development including a motel and a restaurant are located to the north of the quarry site and northeast of the processing facility site. This development is as near as 1,000 feet of the processing site. North of the processing facility site (and west of the highway commercial area) is open space land owned by the applicant. Further north and northwest are rural residential properties; the property boundary of the nearest rural residential property is about 3,000 feet north of the processing facility site, with the nearest home located approximately one mile away.

A noise monitoring survey was made by Illingworth & Rodkin, Inc. to quantify ambient noise levels at receivers near the quarry and to document noise levels generated by activities and equipment at the existing quarry. Noise measurements were made in October 2006. A combination of unattended long-term noise measurements and attended short-term noise measurements were made to document existing noise levels representative of the nearest residential receivers (Figure 3.5-1).

The first long-term noise measurement was made along Blackhawk Drive at a site with an uninterrupted view of the proposed asphalt and concrete plants. Noise measurement location LT-1 was selected to best represent noise conditions at the proposed residential receivers to the northwest. Noise levels were measured from the afternoon of Wednesday, October 25, 2006 to the afternoon of Thursday, October 26, 2006. The day-night average noise level at this location was 52 dBA Ldn. The median noise level (L50) generally ranged from 30 to 40 dBA during the day and night. Data collected at Site LT-1 are depicted in Figure 3.5-2.

The second long-term noise measurement was made at the motel north of Harris Quarry. Noise measurement location LT-2 was selected to represent ambient noise levels at commercial/residential properties near Highway 101. The day-night average noise level at this location was 58 dBA Ldn. The median noise level (L50) generally ranged from 50 to 55 dBA during the day and from 46 to 50 dBA during the night. Data collected at Site LT-2 are depicted in Figure 3.5-3.

Two short-term noise measurements were made south of the existing quarry at residential receivers located on the Church of the Golden Rule property to represent typical daytime background noise levels (L90). The first short-term site was at the north end of the developed property near “Seabiscuit’s Barn”. The second short-term measurement site was at the north end of the mobile home park. Measured background

Figure 3.5-1: Noise Measurement Locations

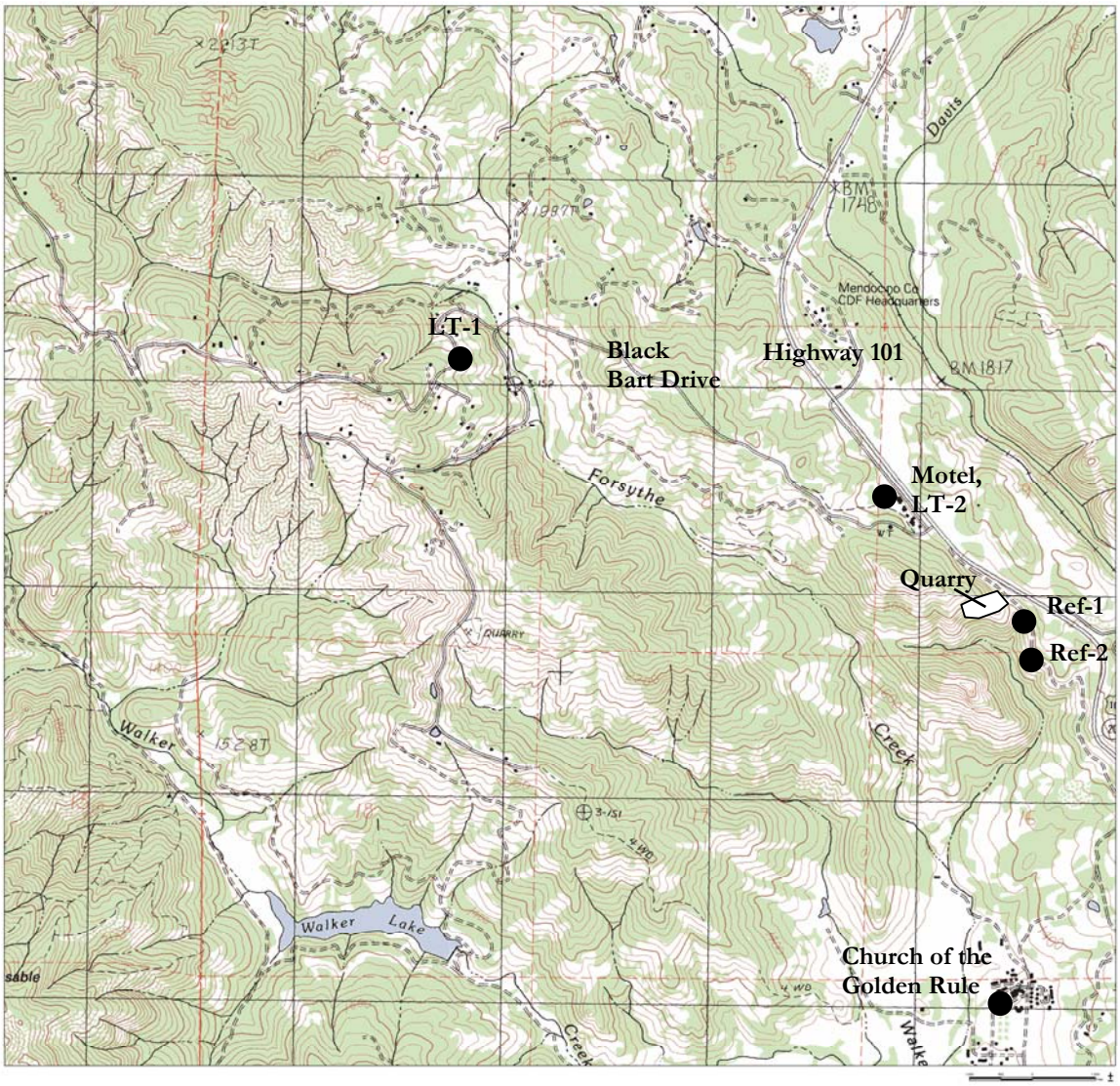


Figure 3.5-2

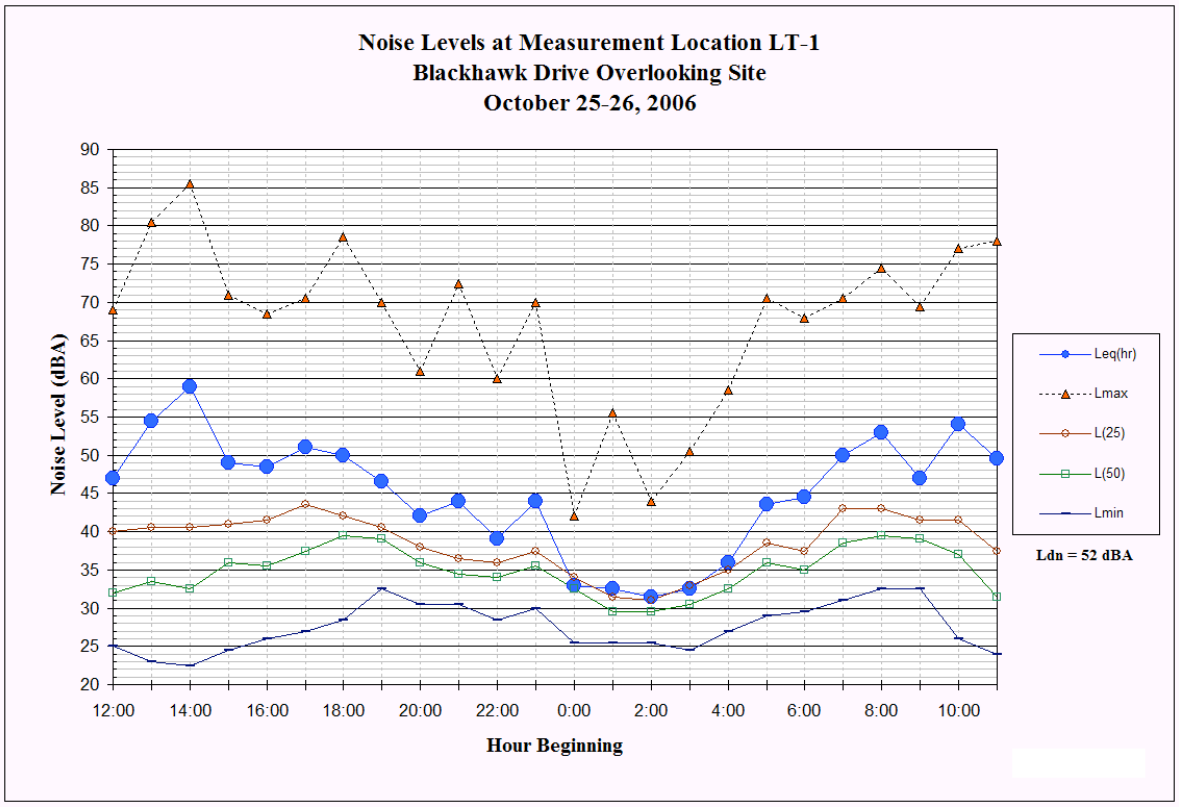
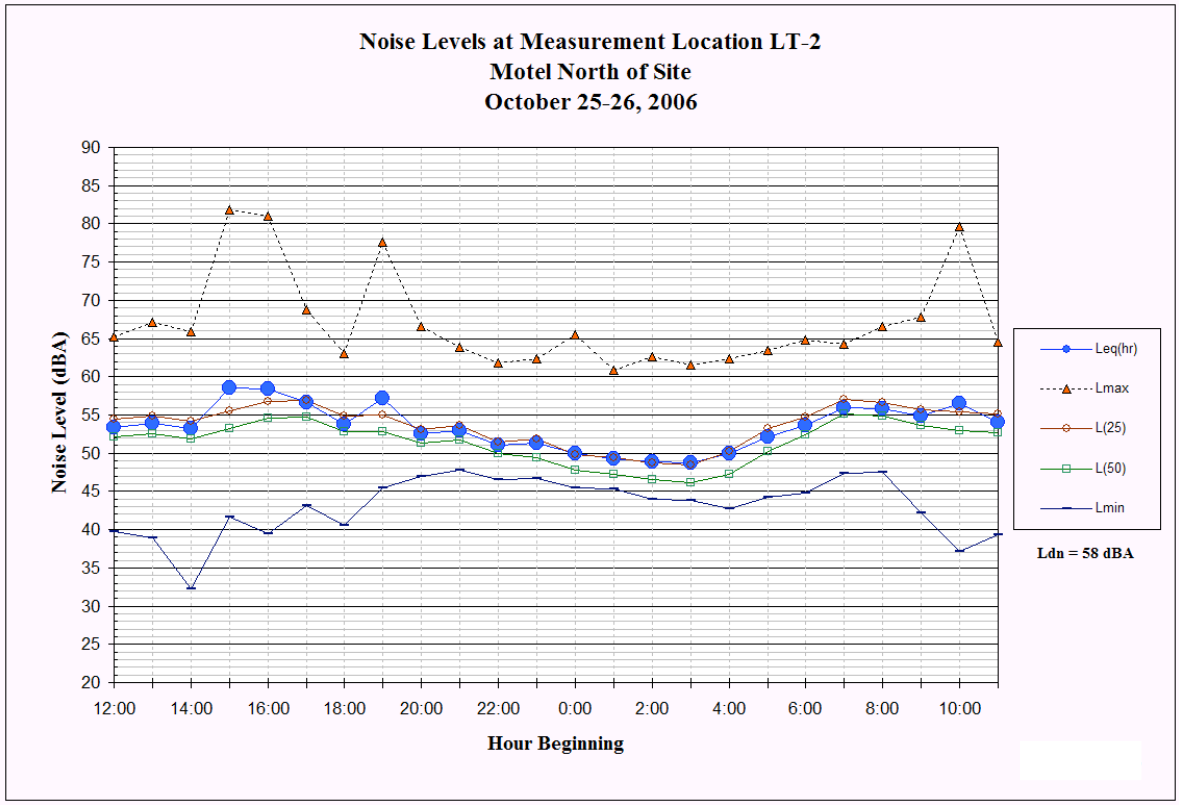


Figure 3.5-3



noise levels were low and ranged from about 31-34 dBA between 12:00 p.m. and 12:20 p.m. The noise environments at the selected measurement positions were predominantly the result of distant traffic noise and the sounds of nature. Quarry noises were difficult to distinguish from Highway 101 traffic noise.

A series of noise measurements were also made to document noise levels generated by activities and equipment at the existing quarry. The data are summarized in Table 3.5-4. Major sources of noise at the quarry include the processing equipment and mobile equipment. Processing equipment includes crushers, screens, conveyors, and a generator. Mobile equipment includes two loaders, an excavator, bulldozer and bobcat. Trucks move the aggregate. Noise measurements were made at various locations to characterize the noise of the different sources.

TABLE 3.5 4
NOISE LEVELS AT THE EXISTING QUARRY MEASURED OCTOBER 25, 2006

	Noise Level (dBA)	
Source and Distance	**Average**	**L_{max}**
Primary and secondary crushers at 100 feet	81	82
Loader and truck at 150 feet loading small aggregate	73	82
Excavator at Quarry Pit and truck at 130 feet	71	73
Loader driving by at 15 feet	86	89
Loader and truck at 65 feet	83	93
Overall processing plant noise level at		
375 feet to south	65	67
940 feet to south*	53	58

* The measurement included some excess attenuation from an existing berm around the floor of the processing area.

B. Potential Impacts and Mitigation Measures

1. Criteria Used for Determining Impact Significance

Appendix G of the State CEQA Guidelines provides that a project would have a significant noise impact if it would:

3.5a Expose people to or generate noise levels in excess of standards established in the local general plan, noise ordinance, or applicable standards of other agencies.

3.5b Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. A substantial permanent noise increase would occur if the project would increase existing noise levels at sensitive land uses by 5 dBA L_{dn} or greater in noise environments where noise levels would remain less than 60 dBA L_{dn}, or 3 dBA L_{dn} or greater, with a future noise level of 60 dBA L_{dn} or greater.

The noise level limits in the Mendocino County Inland Zoning Code are more restrictive than the limits in the Surface Mining and Reclamation Zoning Ordinance. The following noise limits from the Zoning Code are used as significance criteria for project operations.

Receiver	A-Weighted Noise Level (dBA)					
	Daytime			Nighttime		
	L_{50}	L_{25}	L_{max}	L_{50}	L_{25}	L_{max}
Rural Residential	50	55	70	40	45	60
Motel	60	65	80	55	60	75

3.5c Result in a temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. A substantial temporary noise level increase would occur where noise from construction activities exceeds 60 dBA L_{eq} and the ambient noise environment by at least 5 dBA L_{eq} at noise-sensitive uses in the project vicinity for a period of more than one year.

3.5d For projects within an area covered by an airport land use plan or within two miles of a public airport or public use airport when such an airport land use plan has not been adopted, or within the vicinity of a private airstrip, expose people residing or working in the project site to excessive aircraft noise levels.

3.5e Expose people to or generate excessive groundborne vibration or groundborne noise levels.

2. Project Impacts

The project is not within an area covered by an airport land use plan or a public airport (Criterion 3.5d).

Noise Impacts on Residential Land Uses

Impact 3.5-A The project would generate noise that might affect residents living in the area.

Noise impacts that could potentially result from the operation of the proposed project were initially assessed in a report prepared for the applicant by Sound Solutions.[89] An independent assessment of the noise impacts was prepared for this EIR by Illingworth & Rodkin, Inc. (I&R). The following discussion summarizes the noise assessment for this EIR. Where appropriate, comparisons are made between the findings in the noise studies.

[89] Noise Impacts and Mitigation in Connection with the Proposal to Add Operations to the Harris Quarry, Mendocino County, California, prepared by T.A. Barneby, Ph.D., Sound Solutions Acoustical Consulting Services, for Jason McConnell, Northern Aggregates, September 7, 2005.

The project would allow extraction of rock from expansion of the existing hillside quarry and construction and operation of an asphalt processing plant and concrete plant. The current yearly extraction limit is 75,000 cubic yards from the site. The project includes an annual permitted volume of 200,000 cubic yards per year. Quarry expansion would occur in three phases. In Phase 1, the mining would expand to the north and west while maintaining the current elevation of the quarry floor (elevation 1,850 feet). Mining includes initial blasting of the rock. The quarry face is then benched with a series of vertical and horizontal planes as the material is removed. Phase 2 would lower the quarry floor to elevation 1,750 feet, resulting in deepening the excavation on all sides of the quarry including additional excavation along the south side of the site. Phase 3 will lower the quarry floor to an elevation of 1,650 feet. As the quarry operations move north, the crushers, screens, conveyors, and other processing facilities would also be relocated to the north to be near the working phase of the quarry. Access roads would be extended to the quarry floor as the floor is lowered in later phases. At the conclusion of Phase 3, the site would be demobilized. All equipment and structures would be removed. All exposed areas would be reclaimed.

Equipment used for quarrying would not increase. However, as existing equipment wears out, it would be replaced by newer equipment. The only new addition to the quarry plant equipment would be a wash screen that is currently located in Willits.

The quarry currently operates from 7:00 AM to 4:00 PM, the concrete plant in Willits operates from 5:00 AM to 4:00 PM. The quarry can open at any time day or night, any day of the week, when there are emergency situations, typically per the request of Caltrans or the Mendocino County Department of Transportation. Historically, this has happened 0 to 4 times per year. Proposed operations for the project moving forward are:

- Quarry operations, 6:00 AM to 5:00 PM
- Equipment running, 7:00 AM to 4:00 PM
- Concrete operations, 5:00 AM to 4:00 PM
- Equipment running, 5:00 AM to 10:00 AM
- Asphalt operations, 6:00 AM to 4:00 PM
- Equipment running, 6:00 AM to 2:00 PM

The operation of the new concrete and asphalt manufacturing facilities together would occur for a maximum of 10 hours in any 24-hour period. Currently, the aggregate crushing operation does not operate five days per week, every week of the summer. Though the applicant does not envision the quarry operating on Saturday except when a large Caltrans or County road project is occurring, the proposed project would allow Saturday operations for the quarry and the processing facilities. In addition, a large highway paving project could also involve extensive night work anticipated to be a maximum of about 100 nights.

A computer model was used to calculate noise levels for the proposed project. The model, SoundPlan Version V6.4, is a three-dimensional ray-tracing program, which takes into account the sources of noise, the frequency spectra, and the topography of the area. For the quarry area, existing noise measurement data presented in the Setting Section was input into the model. The data was then propagated out to the positions

designated Reference 1 and Reference 2 and compared to measured levels. The source noise levels for the concrete plant were taken from measured data presented in the Sound Solutions report previously referenced. Sound Solutions conducted noise measurements at the Willits facility. This equipment would be relocated to the site, so this is believed to be the best available data. The data are consistent with measurements at other concrete plants, which have been studied by I&R. The composite noise level for all operations at the concrete plant is 74 dBA Leq. The Sound Solution study also established a source noise level for the asphalt plant including trucks at 72 dBA Leq. Based on other recent data for similar asphalt plants, I&R utilized a source noise level of 73 dBA Leq.

Figure 3.5-4 shows the output from the Sound Plan noise model for the existing quarrying and aggregate crushing and screening operations. At Location Ref-1, the modeled noise level was 65 dBA matching the measured noise level shown in Table 3.5-4. At Ref-2, the modeled noise level was 53 dBA matching the measured noise level shown in Table 3.5-4. The model is, therefore, calibrated and considered accurate for noise projections.

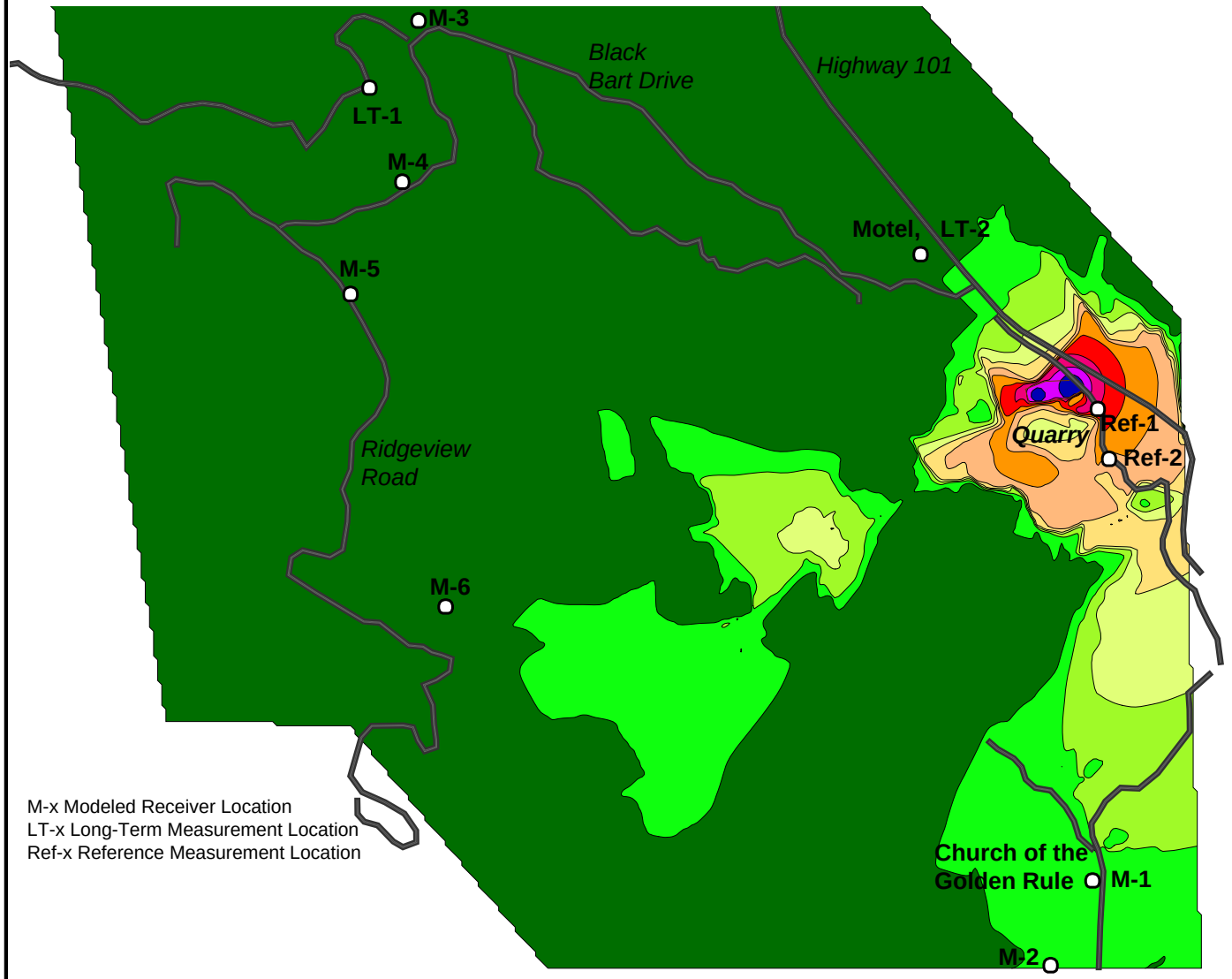
Projected noise contours from the future quarry operations in Phase 1 are shown on Figure 3.5-5. During Phase 1, the quarry floor would be located at an elevation of 1,850 feet. In subsequent phases, the crushing, screening, and ancillary processing equipment at that location, would be located at lower elevations as the quarry floor is excavated. At these lower quarry floor elevations, the noise from these sources would be less than in Phase 1 because of the additional shielding that would be provided by the rims of earth and rock surrounding the quarry floor. The analysis of Phase 1 noise levels is a worst case analysis of potential impacts; the noise sources at the proposed asphalt/concrete processing area have been included in this analysis.

The noise contours show the hourly average noise level represented by the Leq noise descriptor. The Leq (the average noise level during the measurement period) is always equal to or higher than the median (L50) noise level. Therefore, for comparison to County noise ordinance standards, the Leq is a conservative descriptor. It is typically 0 to 3 dBA higher than the L50. The Leq is the building block for the Ldn (the day/night average noise level), which is used to test whether or not there would be a substantial increase in overall noise levels as will be discussed later.

The results of the modeling are compared to the allowable noise limits and summarized in Table 3.5-5. The County noise limits also regulate the noise level exceeded 25 percent of the time and the Lmax level during any hour. Data presented in the Sound Solutions report, I&R noise measurement data for the quarry, and data from other plants, demonstrate that the L25 noise level is typically 1 to 3 dBA higher than the L50 noise level, and the Lmax noise level is typically 10 dBA or less greater than the median noise level. For these reasons, the L50 noise descriptor is the most restrictive and conservative assessor of noise impacts. Projected noise levels would be below the most restrictive County noise limits, the nighttime noise limits for the median (L50) noise descriptor.

Truck traffic on the access road between the new project entrance off Highway 101 and the asphalt/concrete plant area was separately modeled to determine its effect on the

Figure 3.5-4: Existing Quarry Noise - Noise Contours



Leq Noise Level dBA

	< 30
30 <=	< 35
35 <=	< 40
40 <=	< 45
45 <=	< 50
50 <=	< 55
55 <=	< 60
60 <=	< 65
65 <=	< 70
70 <=	< 75
75 <=	

Signs and symbols

Receiver Location

Roadway

Length Scale, Feet

0 500 1000 2000 3000 feet

N

Date July 3, 2007

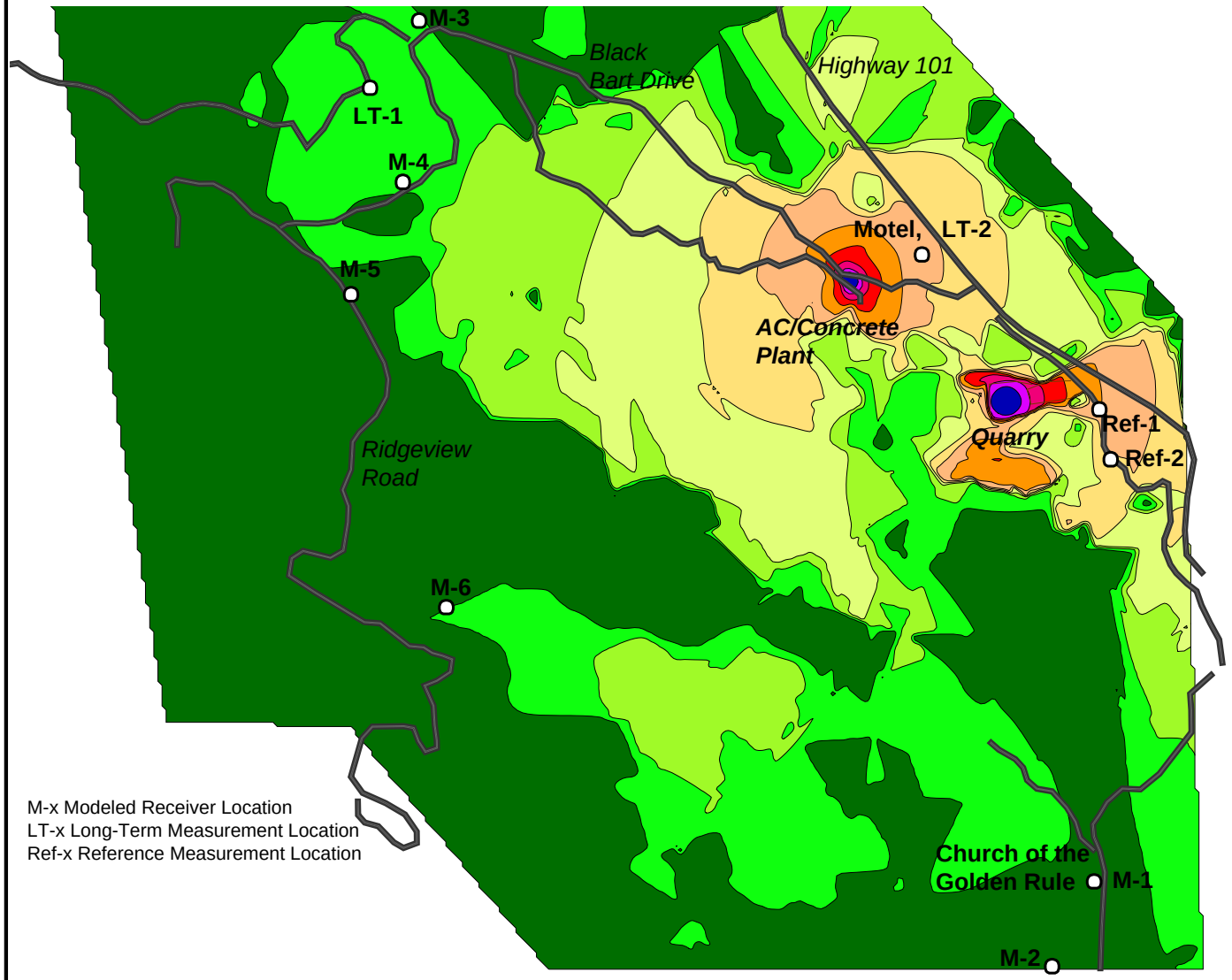
M-x Modeled Receiver Location
LT-x Long-Term Measurement Location
Ref-x Reference Measurement Location

* Noise levels reflect the operation of all stationary and mobile equipment.
** Leq noise levels are indicated in the graphic. L50 noise levels would be equal to or lower than Leq noise leve

ILLINGWORTH & RODKIN, INC.
Acoustics • Air Quality

505 Petaluma Boulevard South
Petaluma, CA 94109
(707) 766-7700 - Phone
(707) 766-7790 - Fax

Figure 3.5-5: Future Quarry Noise, Phase 1 - Noise Contours



Leq Noise Level dBA

	< 30
30 <=	< 35
35 <=	< 40
40 <=	< 45
45 <=	< 50
50 <=	< 55
55 <=	< 60
60 <=	< 65
65 <=	< 70
70 <=	< 75
75 <=	

Signs and symbols

- Receiver Location
- Roadway

Length Scale, Feet

0 500 1000 2000 3000 feet

N

Date July 3, 2007

M-x Modeled Receiver Location
LT-x Long-Term Measurement Location
Ref-x Reference Measurement Location

* Noise levels reflect the operation of all stationary and mobile equipment.
** Leq noise levels are indicated in the graphic. L50 noise levels would be equal to or lower than Leq noise leve

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motel. It was determined through this modeling that the intermittent truck traffic would have no effect on modeled noise levels at any of the sensitive receiver locations. Truck traffic noise levels generated by trips along the proposed haul road were calculated with the Caltrans LEQV2 traffic noise model based on FHWA's Stamina/Optima traffic noise model.

Table 3.5-5
Future Quarry Noise – Phase 1 – Comparison to County Standards

	A-Weighted Noise Level (L_{eq}/L_{50})		
Receiver Location*	**Future Project**	**Impact Level (County Limit Nighttime/Daytime)**	**Impact Yes/No**
M1/M2 Church of the Golden Rule	29	40/50	No
LT-1 Blackhawk Drive	32	40/50	No
LT-2 Motel	52/53**	55/60	No
M3 Black Bart Drive	31	40/50	No
M4 Black Bart Drive	33	40/50	No
M5 Ridgewood Road	<20	40/50	No
M6 Baywood Way	29	40/50	No
Ref. 1***	54	N/A	N/A
Ref. 2***	49	N/A	N/A

* See Figure 3.5-3.
** Noise level of 53 dBA L_{eq-hr} includes truck traffic on the haul road.
*** Reference locations are shown for comparison purposes only. Impacts are not assessed at reference locations at the quarry.

Noise levels at the nearest sensitive receiver, the motel located approximately 300 feet away from the haul road at its closest point, were calculated to be 48 dBA Leq-hour assuming 18 heavy-duty trucks making a round trip between the quarry entrance and the concrete or asphalt batch plant.[90] The future noise level at the motel from all other onsite activities, particularly noise from the new asphalt concrete plants, are projected to be 52 dBA Leq. Using decibel addition, the incremental addition of the truck traffic noise to the other sources would cause a 1 dBA further increase in noise from the noise levels at the motel, so the hourly average noise level during the daytime or the nighttime at the motel resulting from all operations at the proposed project would be no more than 53 dBA Leq/L50. Project noise levels would be below the impact level and cause a less-than-significant impact.

The other question is whether or not noise from the proposed project would cause a substantial increase in noise levels at sensitive receivers in the project vicinity. A substantial increase would result if noise from the project caused noise level to increase by 3 dBA Ldn or more. The existing Ldn at residences located to the northwest represented by receiver LT-1 was measured and found to be 52 dBA Ldn. The existing Ldn is expected to range from about 50-55 dBA Ldn, depending upon the proximity of sensitive receivers to local roadways and the distance and shielding from Highway 101.

[90] Harris Quarry EIR Transportation Impact Analysis, Crane Transportation Group, March 29, 2007.

Using the future project-generated noise level shown in Table 3.5-5, the Ldn can be calculated using assumptions for the number of hours that the equipment runs during the daytime and the nighttime. Noise from the new processing plant is the only significant source of noise contributing to measured noise levels to the north and west. A worst case assumption would be that the plant operates its maximum 10-hour period in any 24-hour period during all of the nighttime hours (10:00 PM to 7:00 AM) and one daytime hour. The projected Ldn from quarry-generated noise would be less than 40 dBA. Because the projected noise level is more than 10 dBA below the existing ambient noise level, it would cause no change in the Ldn at these residences. This is not to say that certain residents would not be able to occasionally (depending on the weather and other sources of noise) hear operations at the processing facilities. The noise would sound similar to the noise of distant traffic. While the operations would at times be audible, the increase would not be significant as measured by the criteria used for assessing noise impacts. See the subsequent discussion in Section 3.10 about how this change, though not significant from a noise perspective, affects the character of the area.

At the Church of the Golden Rule, the projected future noise levels from quarry-generated noise are less than existing noise levels. This is because as the quarrying moves to the north and west, the processing equipment would move with it. There would, therefore, be additional shielding afforded to the developed areas at the Church of the Golden Rule. The reduction in total noise generation from the project during Phase 1 (and beyond) is calculated to be about 3-4 dBA at the Church of the Golden Rule.

At the motel, the existing measured noise level in the quietest area of the motel site was 58 dBA Ldn. This was at the rear of the motel shielded from vehicular traffic noise on Highway 101. Under normal daytime operations, noise levels generated by the project during Phases 1, 2 and 3, resulting primarily from activities at the asphalt/concrete plants, is calculated to be about 54 dBA Ldn at the motel. Noise levels would be calculated to increase about 1 dBA Ldn at the motel with the addition of noise generated by the proposed project. This is not a substantial increase. On an annual average basis, the increase would be less. If the concrete and asphalt plants operated continuously all night long 100 nights per year, the Ldn resulting from plant-generated noise is calculated to be 59 dBA Ldn, 1 dBA Ldn above the existing noise level. Plant generated noise occurring at night plus existing ambient noise levels would result in overall noise levels ranging from 61 to 62 dBA Ldn, about 3-4 dBA Ldn above ambient conditions. On an annual average basis, the increase would be about 1 dBA Ldn. The increase would not be considered substantial and would cause a ***less than significant impact***, and no mitigation is required.

Blasting Impacts

Impact 3.5-B The project would generate noise and vibration from quarry blasting.

Rock is loosened from the quarry face by usually blasting three times per year, though some years they blast as many as six times, and some years they do no blasting. They do not blast in the winter due to moisture conditions, and generally do the blasting in the spring. Blasting generates airborne noise and groundborne vibration. The current schedule for blasting is market dependent and normally occurs prior to running low on materials. With the project, blasting would continue to occur on an infrequent basis based on the demand for material. Noise and vibration levels generated by blasting would be expected to be similar to existing conditions. The nearest residential unit in the commercial area on Highway 101 north of Black Bart Drive is over 1,000 feet from the quarry site while residences to the west and south are over a mile distant. While residents may be able to hear the blasting, it occurs so infrequently that it is not considered a significant noise impact. The distance is sufficient that the vibration effects are insignificant. If blasting were limited to six times a year, any change in noise effects would not be substantial. Blasting that occurred more frequently could adversely affect neighbors, and this would be a ***potentially significant impact***.

Mitigation Measures

3.5-B.1 Blasting shall be done as needed, but no more than six times per year.

Impact Significance After Mitigation

Given the distance to where the nearest sensitive receivers are located from the quarry and the required infrequent scheduling of blasting, the project would result in a ***less than significant impact***, and no mitigation is required.

Traffic-Generated Noise

Impact 3.5-C Project-generated traffic noise could increase ambient traffic noise levels along roadways serving the project site.

The traffic noise impact evaluation is based on information set forth in the Harris Quarry Transportation Impact Analysis[91]. The project would generate a minor increase in traffic volumes along Highway 101 south of the site and would result in a decrease in trips along Highway 101 north of the project site. The project would not generate vehicle trips along Black Bart Drive. Project generated traffic would not measurably increase existing traffic noise levels (less than 1 dBA L_{dn}) at sensitive receivers along roadways serving the site. The project would cause a ***less than significant*** off-site traffic noise impact, and no mitigation is required.

[91] Harris Quarry EIR Transportation Impact Analysis, Crane Transportation Group, March 29, 2007.

Construction Noise

Impact 3.5-D Existing noise-sensitive land uses could be exposed to construction noise levels in excess of the significance thresholds.

Noise impacts resulting from construction depend on the noise generated by various pieces of construction equipment, the timing and duration of noise generating activities, and the distance between construction noise sources and noise sensitive receptors. Construction noise impacts primarily occur when construction activities occur during noise-sensitive times of the day (early morning, evening, or nighttime hours), the construction occurs in areas immediately adjoining noise sensitive land uses, or when construction noise lasts over extended periods of time. Where noise from construction activities exceeds 60 dBA Leq and exceeds the ambient noise environment by at least 5 dBA Leq at noise-sensitive uses in the project vicinity for a duration of one year or more, the impact would be considered significant.

Construction activities generate considerable amounts of noise. Construction-related noise levels are normally highest during the construction of project infrastructure. The infrastructure phase of construction requires heavy equipment that generates the highest noise levels. Typical hourly average construction generated noise levels are about 77 dBA to 89 dBA measured at a distance of 50 feet from the center of the site during busy construction periods. There would be variations in construction noise levels on a day-to-day basis depending on the specific activities occurring at the site.

The majority of noise would occur during construction of the haul road between the quarry entrance and the asphalt and concrete plants, and during the construction of the asphalt and concrete plant pads. Construction activities along the haul road would occur closest to existing sensitive receivers (approximately 300 feet away). Construction noise levels are calculated to range from 61 to 73 dBA Leq at the motel when roadway construction occurs at it's nearest point from these receivers. Construction noise levels could exceed 60 dBA Leq and the ambient noise environment by 5 dBA Leq when construction occurs within approximately 1,400 feet of the noise-sensitive receivers assuming no additional attenuation as a result of intervening shielding provided by topography. Construction of the haul road and of the graded pads is anticipated to last less than one construction season. Project construction activities would not generate noise levels exceeding 60 dBA Leq and the ambient by 5 dBA or more for a period greater than one year and this is a ***less than significant impact*****,** and no mitigation is required.

3. Cumulative Impacts

Impact 3.5-E The project plus cumulative increases in traffic could adversely affect residents living along Highway 101.

Traffic on Highway 101 will increase as a result of projected growth in the area. Future noise levels along Highway 101 are anticipated to increase by about 2 dBA Ldn. The

project's contribution to the anticipated noise level increases would be about 0.1 dBA Ldn. The project would not make a cumulatively considerable contribution to future noise levels and the cumulative impact is ***less than significant***, and no mitigation is required.