NOISE IMPACT ANALYSIS

AMENDMENT NO. 2 TO RP2006-01

CITY OF LAKE ELSINORE, CALIFORNIA

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NOISE SETTING

BACKGROUND

Sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. Noise is generally defined as unwanted sound. Sound is characterized by various parameters which describe the rate of oscillation of sound waves, the distance between successive troughs or crests, the speed of propagation, and the pressure level or energy content of a given sound wave. In particular, the sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The unit of sound pressure ratioed to the faintest sound detectable by a keen human ear is called a decibel (dB).

Because sound or noise can vary in intensity by over one million times within the range of human hearing, a logarithmic loudness scale similar to the Richter scale used for earthquake magnitude is used to keep sound intensity numbers at a convenient and manageable level. Since the human ear is not equally sensitive to all sound frequencies within the entire spectrum, noise levels at maximum human sensitivity are factored more heavily into sound descriptions in a process called "A-weighting," written as dB(A). Any further reference to decibels in this report written as "dB" should be understood to be A-weighted values.

Time variations in noise exposure are typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called Leq), or, alternately, as a statistical description of the sound pressure level that is exceeded over some fraction of a given observation period. Finally, because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, State law requires that, for planning purposes, an artificial dB increment be added to quiet time noise levels in a 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL).

BASELINE NOISE LEVELS

The project area is located on the northeast corner of Nichols Road and the northbound I-15 Freeway. The majority of the project area is physically removed from any noise-sensitive land uses, which creates a substantial buffer for the dissipation of any possible noise impacts. Within this buffer irregular terrain further shields any off-site uses. However, the eastern and southern limits of the proposed expansion area may begin to substantially reduce the protective distance buffer during planned future mining operations. Assuming that mining activities could extend to the very edge of the proposed disturbance limits, such activities might encroach as close as slightly over 400 feet to the closest home to the southeast and as close as slightly over 600 feet to the closest high school classroom to the south. The distribution of possible locations of noise impact from the closest point of new proposed on-site aggregate mining operations includes the following:

Receiving Land Use	Distance	Direction
Arco and AM/PM Market	2600 ft	SW
Temescal Canyon High School Classroom	610 ft	S
Wood Mesa Road Residence	414 ft	SE

Except in close proximity to I-15 and to on-site aggregate extraction and processing operations, background noise levels throughout the area are very low. Limited baseline noise measurements were made in order to document existing baseline levels in the area. These help to serve as a basis for projecting future noise exposure from the project upon the surrounding community. A short-term on-site noise measurement was conducted mid-day on July 21, 2014 at two locations. Measurements were made at the far SW and SE corners of the fence line surrounding the existing aggregate operations. Noise levels near the freeway were continuous and loud. Along Nichols Road east of the freeway, levels were sporadic and quiet except from a few passing cars.

Project Site Short-Term Noise Measurements (dB[A])

Site	Time	Leq	Lmax	Lmin	L_{01}	L_{08}	L_{25}	L_{50}
SW	11:20-11:35	68	74	58	72	70	68	67
SE	11:40-11:50	53	66	40	60	56	46	42

Monitoring experience has shown that 24-hour weighted CNELs are typically 2-3 dB higher than the mid-afternoon Leq readings shown above. This would translate into CNEL's of over 70 dB near the freeway, but rapidly dropping off eastward along Nichols Road to the mid-50 dB CNEL range as soon as the set-back from the freeway is increased and the direct line-of-sight view is destroyed by irregular terrain. As noted below, the preferred City of Lake Elsinore noise exposure for maximally sensitive land uses is 60 dB CNEL. At the semi-rural land uses east of the freeway, this noise exposure goal is readily met. There are no noise/land use compatibility standards for either agricultural or extractive industries such that their siting near a freeway is not a constraint.

CITY OF LAKE ELSINORE NOISE STANDARDS

As shown in Table 1, the City of Lake Elsinore has adopted noise/land use compatibility standards in its General Plan Noise Element. CNEL-based standards are used to make land use decisions as to the suitability of a given site for its intended use. They apply to those noise sources not amenable to local control such as on road traffic, aircraft, trains, etc. There are no existing or proposed on site uses that would require detailed consideration of any CNEL-based exterior noise siting standards. Project-related noise issues would center more on noise from on-site operations possibly impacting off-site receivers rather than from site suitability to the ambient noise environment.

The City's noise standards for non-transportation sources are articulated in the Noise Ordinance. Noise from one land use crossing the property line of an adjacent property are regulated in Chapter 17.176 (Noise Control) of the City of Lake Elsinore's Zoning Code (Title 17 of the Lake Elsinore Municipal Code). Chapter 17.176 establishes base ambient noise levels for receiving land uses that apply according to the land use category and time. These standards are shown in Table 2.

The noise standards are expressed in terms of a mean (50^{th} percentile) noise level, which is the noise level allowed for up to 30 minutes. Some short-term noise levels may exceed the 50^{th} percentile standard, up to a maximum of 20 dB above the allowable mean. A mean noise level of 50 dBA (50^{th} percentile, or "L_{50}") by day and 40 dBA L_{50} for residential areas at night is the standard applicable at the nearest existing homes. The existing aggregate mining and processing operations are permitted a 65 dBA L_{50} at any off-site commercial use by day and 60 dBA L_{50} at night.

However, when these noise levels are already exceeded by ambient noise levels, then the ambient level becomes the standard, adjusted upward in 5 dB increments. The L_{50} measurement at the SE corner of the quarry property was 42 dBA for a daytime reading and likely would be even lower at night. No adjustment of the ordinance standard would be indicated by these readings. At the nearest commercial property, freeway traffic noise already exceeded the L_{50} daytime noise ordinance standard (and likely at night as well) such that an adjustment of the compliance threshold would be justified based upon background freeway traffic noise conditions.

Table 1
City of Lake Elsinore Land Use Compatibility Matrix

Land Use Categories		Community Noise Equivalent Level dBA CNEL						
Categories	**Uses**		**<55**	**60**	**65**	**70**	**75**	**80>**
RESIDENTIAL	*Single Family, Duplex, Multiple Family*	A	A	B	B	C	D	D
RESIDENTIAL	Mobile Home	A	A	B	C	C	D	D
COMMERCIAL Regional, District	Hotel, Motel, Transient Lodging	A	A	B	B	C	C	D
COMMERCIAL Regional, Village District, Special	Commercial Retail, Bank, Restaurant, Movie Theatre	A	A	A	A	B	B	C
COMMERCIAL, INDUSTRIAL INSTITUTIONAL	Office Building, Research and Development, Professional Offices, City Office Building	A	A	A	B	B	C	D
COMMERCIAL Recreation INSTITUTIONAL Civic Center	Amphitheater, Concert Hall Auditorium, Meeting Hall	B	B	C	C	D	D	D
COMMERCIAL *Recreation*	Children's Amusement Park, Miniature Golf Course, Go-cart Track, Equestrian Center, Sports Club	A	A	A	B	B	D	D
COMMERCIAL *General, Special* INDUSTRIAL, INSTITUTIONAL	Automobile Service Station, Auto Dealership, Manufacturing, Warehousing, Wholesale, Utilities	A	A	A	A	B	B	B
INSTITUTIONAL *General*	Hospital, Church, Library, Schools Classroom	A	A	B	C	C	D	D
OPEN SPACE	Parks	A	A	A	B	C	D	D
OPEN SPACE	Golf Course, Cemetaries, Nature Centers Wildlife Reserves, Wildlife Habitat	A	A	A	A	B	C	C
AGRICULTURE	Agriculture	A	A	A	A	A	A	A

Interpretation:

Zone A: Clearly Compatible	Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction without any special noise insulation requirements.
Zone B: Normally Compatible	New construction or development should be undertaken only after detailed analysis of the noise reduction requirements are made and needed noise insulation features in the design are determined. Conventional construction, with closed windows and fresh air supply systems or air conditioning, will normally suffice.
Zone C: Normally Incompatible	New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of noise reduction requirements must be made and needed noise insulation features included in the design.
Zone D: Clearly Incompatible	New construction or development should generally not be undertaken.

Table 2
Municipal Code Exterior Noise Limits

RECEIVING LAND USE	TIME	Noise level that may not be exceeded for more than a cumulative period of:				
		30 MIN/HR	**15 MIN/HR**	**5 MIN/HR**	**1 MIN/HR**	**ANYTIME**
Single-Family Residential	10:00 p.m. – 7:00 a.m.	40	45	50	55	60
	7:00 a.m. – 10:00 p.m.	50	55	60	65	70
Multiple Dwelling Residential	10:00 p.m. – 7:00 a.m.	45	50	65	70	65
	7:00 a.m. – 10:00 p.m.	50	55	60	65	70
Public Space Office	10:00 p.m. – 7:00 a.m.	55	60	65	70	75
	7:00 a.m. – 10:00 p.m.	60	65	70	75	80
General Commercial	10:00 p.m. – 7:00 a.m.	60	65	70	75	80
	7:00 a.m. – 10:00 p.m.	65	70	75	80	85
Light Industrial	Anytime	70	75	80	85	90
Heavy Industrial	Anytime	75	80	85	90	95

If the measured ambient level differs from that permissible within any of the noise limit categories above, the allowable noise exposure standard shall be adjusted upward in five dB increments for each category as appropriate to reflect said ambient noise level.

In the event the ambient noise level exceeds the fifth noise limit category, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

PROJECT IMPACTS

The Nichols Road Quarry is an existing permitted operation. The proposed entitlements include a 24-acre mining area expansion north and east of the currently approved mining area limits and a change in operating hours. The existing substantial distance buffer between on-site mining and off-site sensitive receivers may be reduced by the proposed action. In addition, some noise generation will be shifted from daytime to nocturnal periods from 4-7 a.m. and 10 p.m. to midnight. As noted in Table 2, the City's noise standard is much more stringent during these hours. Nocturnal operations would not affect the high school since there are no campus activities from 10 p.m. to 7 a.m., but could be audible at the closest homes to the southeast.

Project-related noise impacts may also derive from on-road traffic. The relationship between traffic and noise is logarithmic. It takes a large change in volumes to produce only a small change in decibels. The incremental noise impact from the increased quarry traffic will most likely be masked by the baseline condition, especially near the I-15, particularly since all site traffic travels toward I-15 with no trucks eastbound on Nichols Road.

Noise impacts from truck intensive activities are very time sensitive. Any truck on a public street from 10 p.m. to 7 a.m. is the noise equivalent of 10 trucks in a CNEL calculation. Although the proposed action would only add 140 truckloads of material per day to the roadway system, the perceived traffic noise impact could be substantially magnified by the artificial weighting penalty if much of the "new" truck traffic were to occur at night.

STANDARDS OF SIGNIFICANCE

Noise constraints for the proposed project include:

a. Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Noise levels exceeding the City of Lake Elsinore Noise Ordinance would be considered significant. The allowable stationary noise exposure at the nearest residence is 50 dBA from 7 a.m. to 10 p.m., and 40 dBA L_{50} from 10 p.m. – 7 a.m. Because ambient levels exceed the commercial Noise Standards near the freeway, the exterior commercial noise significance thresholds used for this project are 70 dBA L_{50} daytime and 65 dBA L_{50} nighttime.

b. A substantial temporary or periodic increase in ambient traffic noise levels in the project vicinity above levels existing without the project.

c. Construction activity noise levels exceeding City of Lake Elsinore performance standards.

"Substantially" is not defined in any guidelines. The accuracy of sound level meters and of sound propagation computer models is no better than ±1 dB. This is below the human loudness

difference discrimination level even under ideal laboratory conditions. Most people cannot distinguish a change in the noise environment that differs by less than 3 dB between the pre- and post-project exposure if the change occurs under ambient conditions. For the purposes of this analysis, an increase of +3 dB which creates or worsens an area of noise/land use incompatibility would be considered a potentially significant degradation of noise quality due to truck traffic.

Construction noise is typically governed by ordinance limits on allowable times of equipment operations. Whereas most California jurisdictions exempt construction activity noise from numerical (decibel-based) performance standards, Lake Elsinore has adopted specific standards as a function of land use, time of day, and duration of the activity. Construction noise impacts therefore will be less-than-significant if they comply with the applicable ordinance limits. In the Lake Elsinore Municipal Code at Chapter 17.176, construction noise is restricted from 7:00 p.m. to 7:00 a.m. weekdays and at any time on Sundays or holidays when it creates a noise disturbance across a residential or commercial property line. Section 17.176 regulates construction activity noise levels as follows:

B. Noise Restrictions at Affected Structures. When technically and economically feasible, the contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings will not exceed those levels listed in the following schedule:

1. At Residential Structures.

a. Mobile Equipment. Maximum noise levels for non-scheduled, intermittent, and short-term operation (less than 10 days) of mobile equipment:

	Single-family Residential (dBA)	**Multi-family Residential (dBA)**	**Semi-residential/ Commercial (dBA)**
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m.	75	80	85
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays.	60	65	70

b. Stationary Equipment Maximum noise level for repetitively scheduled and relatively long-term operation (period of 10 days or more) of stationary equipment:

	Single-family Residential (dBA)	**Multi-family Residential (dBA)**	**Semi-residential/ Commercial (dBA)**
Daily, except Sundays and legal holidays, 7:00 a.m. to	60	65	70

8:00 p.m.			
Daily, 8:00 p.m. to 7:00 a.m. and all day Sunday and legal holidays.	50	55	60

2. At Business Structures.

    a. Mobile equipment. Maximum noise levels for non-scheduled, intermittent, short-term operation of mobile equipment: Daily, including Sunday and legal holidays, all hours: maximum of 85 dBA.

The proposed action will entail negligible construction of any physical facilities. The proposed project represents a physical expansion of the permitted mining area and a requested increase in the allowed hours of operation of some activities. Any minor mining area improvements would be performed by the mining equipment in conjunction with normal day-to-day operations. No construction activity noise impacts would occur.

PROJECT-RELATED VEHICULAR NOISE IMPACTS

Long-term noise concerns from the projected increase of trucking from the project site were addressed using the California specific vehicle noise curves (CALVENO) in the federal roadway noise model (the FHWA Highway Traffic Noise Prediction Model, FHWA-RD-77-108). This model calculates the Leq noise level for a particular reference set of input conditions, and then makes a series of adjustments for site-specific traffic volumes, distances, speeds, or noise barriers. This analysis utilized data from the traffic report prepared for this project.

Existing trucking to/from the project site occurs mainly from 7 a.m. to 5 p.m. (Urban Crossroads, Traffic Impact Analysis). As a worst-case, both existing truck traffic of 260 trips per day and the possible increase to 400 trips per day were assumed to occur between 4 a.m. and midnight. Because every truck from 4 a.m. to 7 a.m. and 10 p.m. to midnight is the noise equivalent of 10 trucks in the CNEL calculation, this worst-case assumption increases the project traffic noise contribution by +2 dB for existing conditions.

Traffic noise is measured using a CNEL metric. CNEL by definition is an annual average. On rare occasion during a nocturnal hauling events, truck traffic noise may be higher than average. Conversely, the assumption of 5,000 tons per day of hauling will consume the allowed annual production tonnage in far less than 365 days per year of hauling. Any isolated noise "spike" during a rare nocturnal haul event will be smoothed out by many days of near-zero truck noise in the annual average CNEL calculation.

Background traffic noise was calculated for no-project conditions, and the truck noise increment was then superimposed upon the background. Table 3 provides the noise impact resulting from project implementation in 2016. The largest project related noise impacts are on Nichols Road between Driveway 1 and the freeway, and on the I-15 ramps. The worst-case impacts are +2 dB CNEL at 50 feet from the roadway centerline, and are less than the +3 dB CNEL significance threshold. In addition there are no sensitive uses adjacent to any truck noise impacted uses.

These locations also have a very substantial freeway background noise that will mask any project truck noise increase.

As shown in Table 4, by 2035, with an increase in area-wide traffic, particularly on the on-and off-ramps, the project contribution is reduced. In 2035 the largest impact is the +2 dB CNEL at 50 feet from centerline again on Nichols Road adjacent to the project site. All other project related noise impacts are diluted to less than +0.5 dB CNEL at all segments analyzed. Project related traffic noise increases are not considered significant. As previously noted, a number of days with essentially zero truck noise will more than balance rare nocturnal haul events that would be allowed from midnight to 4 a.m. in calculating the annual average CNEL.

Table 3
Traffic Noise Impact Analysis, Year = 2016
(dBA CNEL at 50 feet from centerline)

Roadway Segment		Background Traffic	Project Only	Background with Project	Project Contribution
Nichols Rd/	E of I-15	69	66	71	+2
I-15/	N of Nichols NB On-Ramp	83	65	83	negligible
	NB On Ramp-SB Off Ramp	83	-	83	negligible
	S of Nichols Rd Off-Ramp	83	66	83	negligible
Nichols Rd Ramps/	I-15 NB On-Ramp	65	62	67	+2
	I-15 NB Off-Ramp	66	63	68	+2
	I-15 SB Off-Ramp	66	62	68	+2
	I-15 SB On-Ramp	67	63	68	+1
Nichols Rd/	W of I-15	69	57	69	negligible

Table 4
Traffic Noise Impact Analysis, Future Conditions, Year = 2035
(dBA CNEL at 50 feet from centerline)

Roadway Segment		Background Traffic	Project Only	Background with Project	Project Contribution
Nichols Rd/	E of I-15	69	66	71	+2
I-15/	N of Nichols NB On-Ramp	85	65	85	negligible
	NB On Ramp-SB Off Ramp	85	-	85	negligible
	S of Nichols Rd Off-Ramp	85	66	85	negligible
Nichols Rd Ramps/	I-15 NB On-Ramp	74	62	74	negligible
	I-15 NB Off-Ramp	74	63	74	negligible
	I-15 SB Off-Ramp	75	62	75	negligible
	I-15 SB On-Ramp	74	63	74	negligible
Nichols Rd/	W of I-15	76	57	76	negligible

PROJECT OPERATIONAL NOISE IMPACT

Aggregate extraction and processing activities have highly variable noise levels that makes it difficult to compare them to the most stringent, semi-continuous (50^{th} percentile) standards. In particular, extraction is characterized by a very loud boom during blasting with variable intermediate periods of dozing or loading or waiting for repositioning equipment.

Aggregate processing involving screening or crushing is a more steady state noise source. However, the creation of finished materials stockpiles that grow, shrink or get relocated around the processing equipment again create problems in establishing one fixed reference noise value for the activity. The observed reference noise level for an aggregate processing plant is 85 dB (L_{50}) at 50 feet under semi-direct line of sight conditions.

Mining is an intermittent noise generating activity such that its L_{50} level is lower. Single events such as blasting noise are not included in the L_{50} and the number of blast events is not expected to change with the proposed action. Mining equipment is semi-mobile and operates under variable power settings. The primary rock mining mobile sources are a dozer, loaders and haul trucks. Noise dispersion calculations presume a "point source" of noise generation. Only a finite amount of equipment can operate in sufficient proximity to each other to constitute a point source. For purposes of analysis, one dozer, one loader and one haul truck were assumed to constitute a single source of mining noise.

The FHWA Roadway Noise Construction Model (2006) is an excellent source of carefully documented heavy equipment noise. Table 1 of the model user's guide lists the reference noise

level for 57 pieces of equipment and the usage factor (UF) associated with each type. The model equation for calculating the 50th percentile noise level is as follows:

$$L_{50} \leq \text{Leq} = \text{Ref Lvl} + 10 \log (\text{UF}/100)$$

The listed usage factor for dozers, loaders and trucks is 40%. The reference level and associated L_{50} for the primary mining equipment is as follows at 50 feet from the source:

Dozer = 82 dB – 4 dB (UF) = 78 dB
Loader = 79 dB – 4 dB (UF) = 75 dB
Truck = 76 dB – 4 dB (UF) = 72 dB
Combined three sources: = 80 dB

Note: The model calculates the Leq metric (not L_{50}) which is typically several dB higher than the L_{50}. The use of Leq is a worst-case assumption.

The reference noise levels were allowed to decay during source to receiver propagation through spreading losses, atmospheric absorption or possible terrain obstruction to perform an operational noise impact analysis from:

a. Physical expansion of the mining area to the north and east
b. Pre-7 a.m. aggregate processing when noise limits are substantially more stringent.

Table 5 summarizes the noise effects of mining area expansion and change in the hours of operation. Commercial uses west of the various activities will be unaffected by project operations relative to noise. Inclusion of freeway background noise as an additional masking agent will further increase the margin of safety. However, the reduction in the buffer distance between the expanded mining area and the closest homes to the east may cause the City of Lake Elsinore noise ordinance standards to be exceeded if mining activities are conducted as close as 414 feet to the nearest home under direct line-of-sight conditions. The noise standards at the nearest commercial use and at the nearest school classroom will not be exceeded. These findings are based upon a worst-case assumption that mining would occur directly up to the proposed disturbance limit with no intervening terrain. Any interruption in the direct line-of-sight between source and receiver would achieve the 7 dB of reduction needed to meet the daytime residential noise standard. Meeting the nocturnal residential standard can only be achieved by maintaining an adequate distance separation to achieve sufficient spreading losses to meet the more stringent nocturnal standard. Meeting the residential standard will require the following measures:

- Retaining a noise propagation wall by benched mining working west to east with the top of wall 15 feet taller than the mining bench and blocking the line-of-sight to the closest homes, and
- Mining outside the zone of nocturnal noise impact during noise sensitive hours.

The distance avoidance during noise sensitive hours is mathematically expressed by:

Nocturnal: INV LOG [1.7 + (REF-40-ABS/25)-TSF]

Where: 1.7 – inverse log (50 feet)
REF = reference noise level at 50 feet
ABS = atmospheric absorption factor = 0 at or near field and =1 at <2,000 feet
TSF = terrain screening factor = 10
25 = rough terrain dispersion coefficient

Application of the above equations shows the following for expanded mining operations:

Nocturnal mining avoidance distance = 725 feet with screened mining, and
= 1,820 feet with unscreened mining

Table 5
Operational Activity Noise Impacts (dBA L_{50} at locations shown)

Receiver Location	Ref Level	Distance	Terrain	Absorption	Residual
Commercial Use West/					
Aggregate Plant	85	-43	0	-1	41
Mining Expansion	80	-46	0	-3	31
Total					41
Residences ESE/					
Aggregate Plant	85	-45	0	-5	35
Mining Expansion	80	-23	0	-0	57
Total					57
School Classroom					
Aggregate Plant	85	45	0	-5	35
Mining Expansion	80	27	0	0	53
Total					53

Commercial Land Use Standard (pre-7 a.m.) = 60 dB, (post – 7 a.m.) = 65 dB
Residential Land Use Standard (pre-7 a.m.) = 40 dB, (post – 7 a.m.) = 50 dB
School Land Use Standard (no school pre-7 a.m.) = 40 dB, (post – 7 a.m.) = 60 dB

Figure 1 shows the mining activities constraint for any mining activities before 7 a.m. or after 10 p.m. if there is a direct source-receiver line-of-sight.

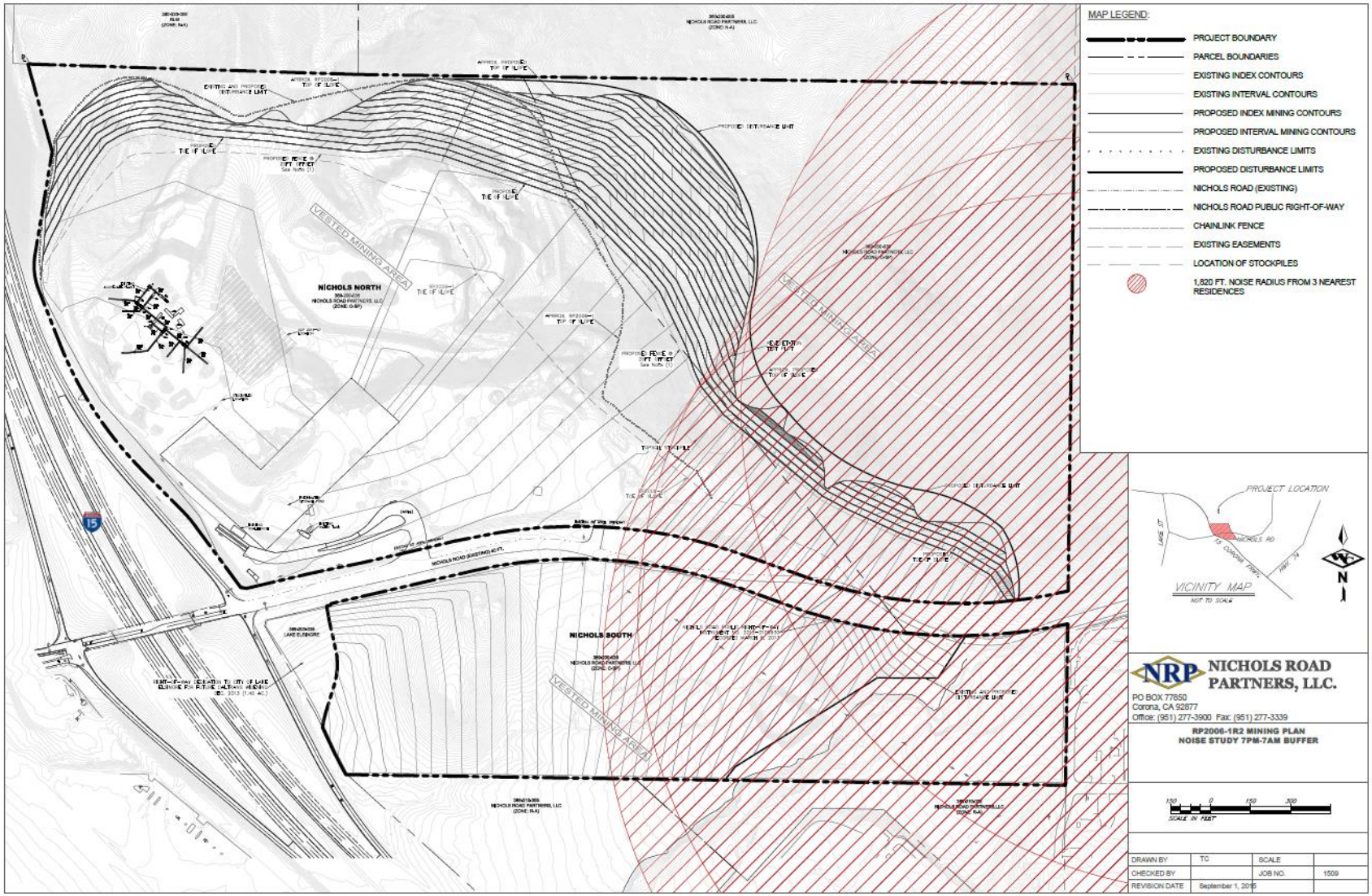
BLASTING NOISE/VIBRATION

Blasting to loosen hard-rock deposits will continue on the same frequency as for current operations. The location of blasting will move north or east-ward in response to the expansion of the permitted mining area. As the area of blasting expands in the future, the separation distance to the school campus to the south and the closest homes to the southeast may decrease. Blasting noise is a single event phenomenon that can vary with the charge weight and any intervening physical terrain. The amount of charge weight is limited by federal regulations as a function of the distance between the blast site and the nearest protected structure unless seismic monitoring is conducted during the blast event to verify that excessive vibration has not been created. For a distance separation of "D" feet, in the range of 300-5,000 feet, the following blasting standards apply:

With seismic monitoring 1.00 inch/sec peak particle velocity
With no seismic monitoring, allowable charge weight (lbs) $< (D/55)^2$

Because charge weight may be variable as a function of separation distance, and aggregate mining blasting is commonly performed into a stair-stepped hillside partially blocking the air blast wave, there is no way to generalize the sound intensity. Blasting is an existing condition and charge weights will presumably decrease if activities move closer to existing homes for vibration protection. Blasting noise levels will likely not be substantially greater at off-site sensitive uses, particularly since the blasting frequency will remain unchanged.

Figure 1
Nocturnal Mining Activity Exclusion Zone
(if line-of-sight conditions exist)



NOISE IMPACT SUMMARY

No significant daytime noise impact from project-related activities is expected if a terrain barrier is maintained between mining activities and the nearest homes. Off-site truck haul noise impacts will be imperceptible, even for any occasional nocturnal operations for off-site sensitive receivers. Standard control measures shall apply to trucking operations:

- All trucks accessing or exiting the site shall be equipped with mufflers that comply with the California Vehicle Code, and,
- All loaded trucks shall head west-bound on Nichols Road except for an actual delivery or an emergency

Construction activity disturbance is expected to have a less than significant impact because negligible facilities will be constructed as part of the proposed project. In addition, the following standard conditions will apply:

- Construction activity for any physical structures for the proposed project shall be limited between the hours of 7:00 a.m. and 7:00 p.m., Monday through Saturday only and excluding legal holidays.
- All construction equipment, fixed or mobile, shall be equipped with properly operating and maintained mufflers, to the satisfaction of the City's Public Works or Building Inspector.

The following measures would apply in order to meet residential noise standards:

- Bench mining would be conducted that maintains a 15-foot high headwall between the extraction area and any off-site residence to the east.
- Mining within 725 feet of any residence would be restricted to 7 a.m. to 10 p.m. if the direct line-of-sight to any off-site residence from mining activities is blocked, or to within 1,820 feet if a direct line-of-sight exists.