VII. NOISE ELEMENT

Noise has long been accepted as a byproduct of urbanization and is considered a potential environmental hazard. Excessive and/or sustained noise can contribute to both temporary and permanent hearing loss, and may be associated with increased fatigue, stress, annoyance, anxiety, and other psychological reactions in humans. For the various elements of the society to coexist, noise levels need to be controlled and minimized to limit exposure to residential communities and noise-sensitive land uses. The control of noise, therefore, is an essential component in creating a safe, compatible, and productive environment.

A. PURPOSE OF THE NOISE ELEMENT

The purpose of the Noise Element is to limit the exposure of the community to excessive noise levels. Local governments must "analyze and quantify" noise levels and the extent of noise exposure through actual measurement or the use of noise modeling. Technical data relating to mobile and point sources must be collected and synthesized into a set of noise control policies and programs that "minimizes the exposure of community residents to excessive noise." Noise-level contours must be mapped, and the conclusions of the element used as a basis for land use decisions. The Noise Element must be used to guide decisions concerning land use and the location of new roads and transit facilities because these are common sources of excessive noise levels. The Noise Background Report provides much of these technical data, and includes generalized estimates of distances to noise contours for typical traffic volumes on County roadways.

The most common sources of environmental noise in San Bernardino County are associated with roads, airports, railroad operations, and industrial activities. The facilities are used to transport residents, consumer products and provide basic infrastructure for the community by creating jobs and economic stability. In many areas of the County, noise-sensitive land uses such as residences, schools, churches and parks exist in proximity to these major noise sources.

1. RELATIONSHIP TO OTHER ELEMENTS OF THE GENERAL PLAN

The Noise Element is closely related to the Circulation and Land Use Elements. Transit thoroughfares, such as freeways, arterial highways, and railways, generate the majority of noise within the County and influence the type and intensity of development within a given area. Likewise, land uses sensitive to noise are to be considered when determining land use patterns and planned mitigation measures related to noise impacts. The location and amount of such noise generators and

receptors are also important considerations in the Open Space Element, which addresses such issues as public parks and open space buffers.

2. INPUT FROM PUBLIC PARTICIPATION PROGRAM

As part of the County's General Plan Update process, community meetings were held at several locations within the County to gather informative data and input from residents. Questions were posed to the attendees regarding the growth and development in their community, to inquire about their concerns and about what could be done to address their concerns. Noise was mentioned in several of the community meetings as being an issue of concern. Additionally, concern was expressed by citizens and staff regarding the efficacy of the noise complaint process and enforcement of noise regulations.

3. SUMMARY OF EXISTING CONDITIONS

The Noise Background Report describes the existing noise environment in the subareas of San Bernardino County. It also reviews the roles of the state and federal governments in regulating noise from specific sources. The County regulates noise from sources that are not pre-empted by state or federal jurisdiction. Such sources include project construction activities; stationary sources, such as fans, pumps, compressors or other mechanical equipment; or mobile sources operating on private property. Section 83.01.080 of the County's Development Code sets forth performance standards for affected (receiving) land uses from stationary and mobile sources, during daytime (7 AM to 10 PM) and nighttime (10 PM to 7 AM) periods. Exemptions from these standards include motor vehicles not under the control of the industrial use, emergency equipment, vehicles and devices, and temporary construction and repair or demolition activities taking place between the hours of 7 AM and 7 PM Monday through Saturday, excluding federal holidays.

4. SOURCES OF NOISE IN SAN BERNARDINO COUNTY

The County has promulgated and implemented noise policies and requirements for land development and construction projects by requiring these projects to provide specific noise analyses and implement any necessary measures to reduce noise to an acceptable level.

Circulation and transportation systems (roadways, airports and railroads) are the most significant noise-producing activities within the County, and subject some areas to unacceptable levels. Point sources, such as industrial, mining and recreational sites, also produce noise levels of concern. Some key problem areas

are wrecking yards, rock crushing, racetracks, snow and water ski areas, outdoor concerts, shooting facilities, and similar recreation facilities. Additional problems are off-road vehicles, snowmobiles, and the operation of specialized equipment.

Traffic Noise: The level of noise associated with roadways will vary with total traffic volume, vehicular speed, the relative numbers of trucks and cars in the traffic volumes, the roadway cross-section and geometric design, and the local topography. Typically, the greater the vehicle speed and truck percentage, the greater the level of noise emission from the transportation facility. Refer to the Noise Background Report for more information on traffic noise in San Bernardino County.

Rail Noise*:* Railroad activity, including heavy rail locomotives and railcars, also constitutes a major but less widespread element of the noise environment in the County. The passage of trains results in considerable noise impacts on adjacent lands, although the elevated noise levels are periodic and of relatively short duration. Railroad tracks within the County are used for passenger transportation and delivery of freight. Refer to the Noise Background Report for more information on rail noise in San Bernardino County.

Aircraft Noise: Aircraft noise generates occasional, but intrusive noise levels for the occupants of property adjacent to airports and/or under the flight patterns of aircraft using airports. The federal and state governments regulate aircraft noise. Refer to the Noise Background Report for more information on aircraft noise in San Bernardino County.

Industrial Noise: Industrial noise sources exist but do not materially affect noise-sensitive land uses within the unincorporated areas of the County. Refer to the Noise Background Report for more information on industrial noise in San Bernardino County.

5. CONCLUSION

The unincorporated portions of the County represent the full range of community noise environments from very quiet rural to moderately noisy suburban to noisy urban. Noise patterns in the County are generally consistent with published data regarding the intensity of development/type of land use and the expected levels of environmental noise.

B. COUNTYWIDE GOALS AND POLICIES OF THE NOISE ELEMENT

GOAL N 1.	**The County will abate and avoid excessive noise exposures through noise mitigation measures incorporated into the design of new noise-generating and new noise-sensitive land uses, while protecting areas within the County where the present noise environment is within acceptable limits.**

POLICIES

N 1.1 Designate areas within San Bernardino County as "noise impacted" if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Chapter 83.01 of the Development Code.

N 1.2 Ensure that new development of residential or other noise-sensitive land uses is not permitted in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to the standards of Noise-sensitive land uses include residential uses, schools, hospitals, nursing homes, places of worship and libraries.

N 1.3 When industrial, commercial, or other land uses, including locally regulated noise sources, are proposed for areas containing noise-sensitive land uses, noise levels generated by the proposed use will not exceed the performance standards of Table N-2 within outdoor activity areas. If outdoor activity areas have not yet been determined, noise levels shall not exceed the performance standards listed in Chapter 83.01 of the Development Code at the boundary of areas planned or zoned for residential or other noise-sensitive land uses.

Programs

1. Require an acoustical analysis prior to approval of proposed development of new residential or other noise-sensitive land uses in a noise-impacted area or a new noise generating use in an area that could affect existing noise-sensitive land uses. The appropriate time for requiring an acoustical analysis is during the environmental review process so that noise mitigation may be an integral part of the project design. The acoustical analysis shall:

    a. Be the responsibility of the applicant.

b. Be prepared by a qualified person experienced in the fields of environmental noise assessment and architectural acoustics.

c. Include representative noise level measurements with sufficient sampling periods and locations to adequately describe local conditions;

d. Include estimated noise levels in terms of the descriptors shown in Figures II-8 and II-9 of the Noise Background Report for existing and projected future (20 years hence) conditions, with a comparison made to the adopted policies of the Noise Element.

e. Include recommendations for appropriate mitigation to achieve compliance with the adopted policies and standards of the Noise Element. Where the noise source in question consists of intermittent single events, the report must address the effects of maximum noise levels in sleeping rooms in terms of possible sleep disturbance.

f. Include estimates of noise exposure after the prescribed mitigation measures have been implemented. If compliance with the adopted standards and policies of the Noise Element will not be achieved, acoustical information to support a statement of overriding considerations for the project must be provided.

2. Develop and employ procedures to ensure that requirements imposed pursuant to the finding of an acoustical analysis are implemented as part of the project review and building permit processes.

N 1.4 Enforce the state noise insulation standards (California Administrative Code, Title 24) and Chapter 35 of the California Building Code (CBC)[6].

[6] Title 24 requires that an acoustical analysis be prepared for all new developments of multi-family dwellings, condominiums, hotels, and motels proposed for areas within the 60 dB Ldn (or CNEL) contour of a major noise source for the purpose of documenting that an acceptable interior noise level of 45 dB Ldn (or CNEL) or below will be achieved with the windows and doors closed. UBC Chapter 35 requires that common wall and floor/ceiling assemblies within multi-family dwellings comply with minimum standards for the transmission of airborne sound and structure-borne impact noise.

N 1.5 Limit truck traffic in residential and commercial areas to designated truck routes; limit construction, delivery, and through-truck traffic to designated routes; and distribute maps of approved truck routes to County traffic officers.

N 1.6 Enforce the hourly noise-level performance standards for stationary and other locally regulated sources, such as industrial, recreational, and construction activities as well as mechanical and electrical equipment.

Programs

1. Develop and implement a noise ordinance that will:

    a. Be consistent with this element of the General Plan.

    b. Include the development standards provided in this element in the Development Code.

N 1.7 Prevent incompatible land uses, by reason of excessive noise levels, from occurring in the future.

Programs

1. Examine the existing and projected future noise environment when considering amendments to the circulation system.

2. Periodically review and update the Noise Element to ensure that noise exposure information and specific policies are consistent with changing conditions within the County and with noise control regulations enacted after the adoption of this element.

3. Provide sufficient noise exposure information so that existing and potential noise impacts will be identified and addressed in the project review processes.

4. Compile and publish a list of standardized noise mitigation measures.

GOAL N 2.	**The County will strive to preserve and maintain the quiet environment of mountain, desert and other rural areas.**

POLICIES

N 2.1 The County will require appropriate and feasible on-site noise attenuating measures that may include noise walls, enclosure of noise-generating equipment, site planning to locate noise sources away from sensitive receptors, and other comparable features.

N 2.2 The County will continue to work aggressively with federal agencies, including the branches of the military, the U.S. Forest Service, BLM, and other agencies to identify and work cooperatively to reduce potential conflicts arising from noise generated on federal lands and facilities affecting nearby land uses in unincorporated County areas.

C. VALLEY REGION GOALS AND POLICIES OF THE NOISE ELEMENT

NONE SPECIFIC TO THE VALLEY REGION.

D. MOUNTAIN REGION GOALS AND POLICIES OF THE NOISE ELEMENT

GOAL M/N 1.	**The County will strive to preserve and maintain the quiet environment of the Mountain Region.**

POLICIES

M/N 1.1 Encourage and support strict enforcement of vehicle code regulations to reduce vehicular noise in the mountain communities.

M/N 1.2 Encourage responsible agencies to post signs near forest access roads which explain the acceptable vehicular noise levels for vehicles using those roads.

E. DESERT REGION GOALS AND POLICIES OF THE NOISE ELEMENT

NONE SPECIFIC TO THE DESERT REGION.

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San Bernardino County Code of Ordinances

DIVISION 3: COUNTYWIDE DEVELOPMENT STANDARDS

CHAPTER 83.01: GENERAL PERFORMANCE STANDARDS

§ 83.01.080 Noise.

This Section establishes standards concerning acceptable noise levels for both noise-sensitive land uses and for noise-generating land uses.

(a) *Noise Measurement.* Noise shall be measured:

(1) At the property line of the nearest site that is occupied by, and/or zoned or designated to allow the development of noise-sensitive land uses;

(2) With a sound level meter that meets the standards of the American National Standards Institute (ANSI § SI4 1979, Type 1 or Type 2);

(3) Using the "A" weighted sound pressure level scale in decibels (ref. pressure = 20 micronewtons per meter squared). The unit of measure shall be designated as dB(A).

(b) *Noise Impacted Areas.* Areas within the County shall be designated as "noise-impacted" if exposed to existing or projected future exterior noise levels from mobile or stationary sources exceeding the standards listed in Subdivision (d) (Noise Standards for Stationary Noise Sources) and Subdivision (e) (Noise Standards for Adjacent Mobile Noise Sources), below. New development of residential or other noise-sensitive land uses shall not be allowed in noise-impacted areas unless effective mitigation measures are incorporated into the project design to reduce noise levels to these standards. Noise-sensitive land uses shall include residential uses, schools, hospitals, nursing homes, religious institutions, libraries, and similar uses.

(c) *Noise Standards for Stationary Noise Sources.*

(1) *Noise Standards.* Table 83-2 (Noise Standards for Stationary Noise Sources) describes the noise standard for emanations from a stationary noise source, as it affects adjacent properties:

(2) Table 83-2

Noise Standards for Stationary Noise Sources

Affected Land Uses (Receiving Noise)	***7:00 a.m. - 10:00 p.m. Leq***	***10:00 p.m. - 7:00 a.m. Leq***
Residential	55 dB(A)	45 dB(A)
Professional Services	55 dB(A)	55 dB(A)
Other Commercial	60 dB(A)	60 dB(A)

Industrial	70 dB(A)	70 dB(A)
Leq = (Equivalent Energy Level). The sound level corresponding to a steady-state sound level containing the same total energy as a time-varying signal over a given sample period, typically one, eight or 24 hours.		
dB(A) = (A-weighted Sound Pressure Level). 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, placing greater emphasis on those frequencies within the sensitivity range of the human ear.		

Ldn = (Day-Night Noise Level). The average equivalent A-weighted sound level during a 24-hour day obtained by adding 10 decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way Ldn takes into account the lower tolerance of people for noise during nighttime periods.

(2) *Noise Limit Categories.* No person shall operate or cause to be operated a source of sound at a location or allow the creation of noise on property owned, leased, occupied, or otherwise controlled by the person, which causes the noise level, when measured on another property, either incorporated or unincorporated, to exceed any one of the following:

(A) The noise standard for the receiving land use as specified in Subdivision (b) (Noise-Impacted Areas), above, for a cumulative period of more than 30 minutes in any hour.

(B) The noise standard plus five dB(A) for a cumulative period of more than 15 minutes in any hour.

(C) The noise standard plus ten dB(A) for a cumulative period of more than five minutes in any hour.

(D) The noise standard plus 15 dB(A) for a cumulative period of more than one minute in any hour.

(E) The noise standard plus 20 dB(A) for any period of time.

(d) *Noise Standards for Adjacent Mobile Noise Sources.* Noise from mobile sources may affect adjacent properties adversely. When it does, the noise shall be mitigated for any new development to a level that shall not exceed the standards described in the following Table 83-3 (Noise Standards for Adjacent Mobile Noise Sources).

Table 83-3			
Noise Standards for Adjacent Mobile Noise Sources			
Land Use		***Ldn (or CNEL) dB(A)***	
Categories	***Uses***	***Interior*** (1)	***Exterior*** (2)

Residential	Single and multi-family, duplex, mobile homes	45	60[(3)]
Commercial	Hotel, motel, transient housing	45	60[(3)]
	Commercial retail, bank, restaurant	50	N/A
	Office building, research and development, professional offices	45	65
	Amphitheater, concert hall, auditorium, movie theater	45	N/A
Institutional/Public	Hospital, nursing home, school classroom, religious institution, library	45	65
Open Space	Park	N/A	65

Notes:

(1) The indoor environment shall exclude bathrooms, kitchens, toilets, closets and corridors.

(2) The outdoor environment shall be limited to:

- Hospital/office building patios
- Hotel and motel recreation areas
- Mobile home parks
- Multi-family private patios or balconies
- Park picnic areas
- Private yard of single-family dwellings
- School playgrounds

(3) An exterior noise level of up to 65 dB(A) (or CNEL) shall be

allowed provided exterior noise levels have been substantially mitigated through a reasonable application of the best available noise reduction technology, and interior noise exposure does not exceed 45 dB(A) (or CNEL) with windows and doors closed. Requiring that windows
and doors remain closed to achieve an acceptable interior noise level shall necessitate the use of air conditioning or mechanical ventilation.
CNEL = (Community Noise Equivalent Level). The average equivalent A-weighted sound level during a 24-hour day, obtained after addition of approximately five decibels to sound levels in the evening from 7:00 p.m. to 10:00 p.m. and ten decibels to sound levels in the night from 10:00 p.m. to 7:00 a.m.

(e) *Increases in Allowable Noise Levels.* If the measured ambient level exceeds any of the first four noise limit categories in Subdivision (d)(2), above, the allowable noise exposure standard shall be increased to reflect the ambient noise level. If the ambient noise level exceeds the fifth noise limit category in Subdivision (d)(2), above, the maximum allowable noise level under this category shall be increased to reflect the maximum ambient noise level.

(f) *Reductions in Allowable Noise Levels.* If the alleged offense consists entirely of impact noise or simple tone noise, each of the noise levels in Table 83-2 (Noise Standards for Stationary Noise Sources) shall be reduced by five dB(A).

(g) *Exempt Noise.* The following sources of noise shall be exempt from the regulations of this Section:

(1) Motor vehicles not under the control of the commercial or industrial use.

(2) Emergency equipment, vehicles, and devices.

(3) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

(h) *Noise Standards for Other Structures.* All other structures shall be sound attenuated against the combined input of all present and projected exterior noise to not exceed the criteria.

Table 83-4
Noise Standards for Other Structures

Typical Uses	*12-Hour Equivalent Sound Level (Interior) in dBA Ldn*
Educational, institutions, libraries, meeting facilities, etc.	45
General office, reception, etc.	50
Retail stores, restaurants, etc.	55
Other areas for manufacturing, assembly, testing, warehousing, etc.	65

In addition, the average of the maximum levels on the loudest of intrusive sounds occurring during a 24-hour period shall not exceed 65 dBA interior.

(Ord. 4011, passed - -2007; Am. Ord. 4245, passed - -2014)

§ 83.01.090 Vibration.

(a) *Vibration Standard.* No ground vibration shall be allowed that can be felt without the aid of instruments at or beyond the lot line, nor shall any vibration be allowed which produces a particle velocity greater than or equal to two-tenths inches per second measured at or beyond the lot line.

(b) *Vibration Measurement.* Vibration velocity shall be measured with a seismograph or other instrument capable of measuring and recording displacement and frequency, particle velocity, or acceleration. Readings shall be made at points of maximum vibration along any lot line next to a parcel within a residential, commercial and industrial land use zoning district.

(c) *Exempt Vibrations.* The following sources of vibration shall be exempt from the regulations of this Section.

(1) Motor vehicles not under the control of the subject use.

(2) Temporary construction, maintenance, repair, or demolition activities between 7:00 a.m. and 7:00 p.m., except Sundays and Federal holidays.

(Ord. 4011, passed - -2007)

CHAPTER 82.18: NOISE HAZARD (NH) OVERLAY

Section

§ 82.18.010 Purpose.

The Noise Hazard (NH) Overlay established by §§ 82.01.020 (Land Use Plan and Land Use Zoning Districts) and 82.01.030 (Overlays) is created to provide greater public safety by establishing land use review procedures and requirements for land uses in areas with identified high noise levels.

(Ord. 4011, passed - -2007)

§ 82.18.020 Location Requirements.

The NH Overlay may be applied to those areas where the Average Day-Night Sound Level (Ldn) is 65 decibels, 65 dBA or greater.

(Ord. 4011, passed - -2007)

§ 82.18.030 Development Standards.

When a land use application or development permit is proposed within the NH Overlay, the following standards shall apply with respect to residential uses:

(a) *Acoustical Report Required.* Noise levels shall be identified. An acoustical report shall be performed to identify noise impact. Any recommendation for noise attenuation or other mitigation measures shall be incorporated into the design standards or conditions of approval as applicable.

(b) *Interior Noise Levels.* Interior noise levels in all single-family and multi-family residences and educational institutions shall not exceed 45 dBA Ldn emanating from sources outside of the residential building.

(c) *Exterior Noise Levels.* Exterior noise levels in all single-family residential land use areas and multi-family residential land use areas should not exceed 65 dBA Ldn. Exterior noise levels shall not exceed 70 dBA Ldn for any residential use areas. Ability to mitigate exterior noises to the levels of 65 dBA Ldn and

70 dBA Ldn shall be considered by the review authority when determining the actual Ldn level with which the land uses must comply.

(d) *Noise Mitigation Measures.* In areas where noise exceeds the noise standard, measures shall be taken to mitigate noise levels. An acoustical report identifying these mitigation measures shall be required and reviewed by the Environmental Health Services Division before issuance of any required development permits or approval of land use applications.

(Ord. 4011, passed - -2007)

Project Name

I-10 Existing (2014)

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)
1	I-10	Sierra Ave to Cedar Ave	200,000	65	125	Soft	8D	0%
2					#N/A	Soft		0%
3					#N/A	Soft		0%
4					#N/A	Soft		0%
5					#N/A	Soft		0%
6					#N/A	Soft		0%
7					#N/A	Soft		0%
8					#N/A	Soft		0%
9					#N/A	Soft		0%
10					#N/A	Soft		0%
11					#N/A	Soft		0%
12					#N/A	Soft		0%
13					#N/A	Soft		0%
14					#N/A	Soft		0%
15					#N/A	Soft		0%
16					#N/A	Soft		0%
17					#N/A	Soft		0%
18					#N/A	Soft		0%
19					#N/A	Soft		0%
20					#N/A	Soft		0%
21					#N/A	Soft		0%
22					#N/A	Soft		0%
23					#N/A	Soft		0%
24					#N/A	Soft		0%
25					#N/A	Soft		0%
26					#N/A	Soft		0%
27					#N/A	Soft		0%
28					#N/A	Soft		0%
29					#N/A	Soft		0%
30					54	Soft		0%

ANALYST
NJF

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

		73.6	75.55%
		13.6	13.96%
		10.22	10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Traf

Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Project Name

I-10 Existing (2014) CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

					DISTACE TO NOISE CONTOUR (FT.)		
#	ROADWAY	SEGMENT	TRAFIC VOLUMES	LEVEL AT 100 FT.	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	I-10	Sierra Ave to Cedar Ave	200,000	82.3	662	1425	3071
2	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
3	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
4	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
5	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
6	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
7	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
8	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
9	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
10	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
11	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
12	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
13	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
14	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
15	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
16	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
17	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
21	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
22	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
23	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
24	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
25	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
26	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
27	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
28	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
29	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
30	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: I-10 Existing (2014)
Roadway: I-10
Segment: Sierra Ave to Cedar Ave

Project: Project Name
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	######
SPEED (mph)	65
ROAD NEAR-FAR LN. DIST.	125
DISTANCE ROAD CL (ft)	100
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	12267	232	93	9067	171	69	2271	43	17
Speed in MPH	65	65	65	65	65	65	65	65	65
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	75.5	81.7	85.2	75.5	81.7	85.2	75.5	81.7	85.2
ADJUSTMENTS									
Flow	7.5	-9.8	-13.7	6.1	-11.1	-15.1	0.1	-17.1	-21.1
Distance	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0	-3.0
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	80.0	68.9	68.5	78.7	67.6	67.1	72.7	61.6	61.1
VEHICULAR NOISE	DAY=	80.6	Leq	EVENING=	79.3	Leq	NIGHT=	73.3	Leq

RESULTS						
NOISE LEVELS AT	100	FEET FROM CENTERLINE (dBA):			**Ldn=**	**81.7**
					CNEL=	**82.3**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**601**	**1295**	**2789**
			CNEL:	**662**	**1425**	**3071**

Valley Blvd SP

EXISTING NO PROJECT

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)
1	Valley Boulevard	Sierra Ave to Palmetto Ave	29,972	40	84	Soft	6D	**0%**
2	Valley Boulevard	Palmetto Ave to Alder Ave	20,594	40	48	Soft	4D	**0%**
3	Valley Boulevard	Alder Ave to Locust Ave	18,540	45	48	Soft	4D	**0%**
4	Valley Boulevard	Locust Ave to Cedar Ave	23,033	45	48	Soft	4D	**0%**
5	Valley Boulevard	Cedar Ave to Cactus Ave	12,467	40	48	Soft	4D	**0%**
6	Sierra Avenue	Slover Ave to I-10 ramps	49,975	50	84	Soft	6D	**0%**
7	Sierra Avenue	I-10 ramps to Valley Blvd	60,406	50	84	Soft	6D	**0%**
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	37,906	35	58	Soft	5D	**0%**
9	Alder Avenue	Valley Blvd to Marygold Ave	8,781	40	12	Soft	2U	**0%**
10	Alder Avenue	Marygold Ave to San Bernardino Ave	10,388	40	36	Soft	4U	**0%**
11	Locust Avenue	Valley Blvd to San Bernardino Ave	5,538	40	12	Soft	2U	**0%**
12	Cedar Avenue	Slover Ave to I-10 ramps	25,800	40	48	Soft	4D	**0%**
13	Cedar Avenue	I-10 ramps to Valley Blvd	41,531	40	84	Soft	6D	**0%**
14	Cedar Avenue	Valley Blvd to Bloomington Ave	30,206	40	84	Soft	6D	**0%**
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	22,863	40	48	Soft	4D	**0%**
16					#N/A	Soft		**0%**
17					#N/A	Soft		**0%**
18					#N/A	Soft		**0%**
19					#N/A	Soft		**0%**
20					#N/A	Soft		**0%**
21					#N/A	Soft		**0%**
22					#N/A	Soft		**0%**
23					#N/A	Soft		**0%**
24					#N/A	Soft		**0%**
25					#N/A	Soft		**0%**
26					#N/A	Soft		**0%**
27					#N/A	Soft		**0%**
28					#N/A	Soft		**0%**
29					#N/A	Soft		**0%**
30					54	Soft		**0%**

ANALYST
NJF

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

		73.6	75.55%
		13.6	13.96%
		10.22	10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Traf

Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Valley Blvd SP

EXISTING NO PROJECT CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

					DISTACE TO NOISE CONTOUR (FT.)		
#	ROADWAY	SEGMENT	TRAFIC VOLUMES	LEVEL AT 50 FT.	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Valley Boulevard	Sierra Ave to Palmetto Ave	29,972	75.5	117	251	541
2	Valley Boulevard	Palmetto Ave to Alder Ave	20,594	70.8	56	121	261
3	Valley Boulevard	Alder Ave to Locust Ave	18,540	71.6	64	137	296
4	Valley Boulevard	Locust Ave to Cedar Ave	23,033	72.5	74	159	342
5	Valley Boulevard	Cedar Ave to Cactus Ave	12,467	68.6	40	87	187
6	Sierra Avenue	Slover Ave to I-10 ramps	49,975	80.2	239	514	1108
7	Sierra Avenue	I-10 ramps to Valley Blvd	60,406	81.0	271	583	1257
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	37,906	72.5	73	158	340
9	Alder Avenue	Valley Blvd to Marygold Ave	8,781	66.3	28	61	131
10	Alder Avenue	Marygold Ave to San Bernardino Ave	10,388	67.4	33	72	155
11	Locust Avenue	Valley Blvd to San Bernardino Ave	5,538	64.2	21	45	96
12	Cedar Avenue	Slover Ave to I-10 ramps	25,800	71.7	65	141	303
13	Cedar Avenue	I-10 ramps to Valley Blvd	41,531	76.9	145	312	673
14	Cedar Avenue	Valley Blvd to Bloomington Ave	30,206	75.6	117	253	544
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	22,863	71.2	60	130	280
16	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
17	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
21	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
22	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
23	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
24	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
25	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
26	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
27	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
28	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
29	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
30	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: EXISTING NO PROJECT
Roadway: Valley Boulevard
Segment: Sierra Ave to Palmetto Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	29,972
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1838	35	14	1359	26	10	340	6	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.3	-15.9	-19.9	0.0	-17.2	-21.2	-6.0	-23.2	-27.2
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.6	64.3	65.2	71.2	63.0	63.8	65.2	56.9	57.8
VEHICULAR NOISE	DAY=	73.8	Leq	EVENING=	72.5	Leq	NIGHT=	66.5	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**74.9**
					CNEL=	**75.5**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**106**	**228**	**492**
			CNEL:	**117**	**251**	**541**

Scenario: EXISTING NO PROJECT
Roadway: Valley Boulevard
Segment: Palmetto Ave to Alder Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	20,594
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1263	24	10	934	18	7	234	4	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-0.3	-17.6	-21.5	-1.6	-18.9	-22.8	-7.6	-24.9	-28.8
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.8	59.5	60.4	66.5	58.2	59.1	60.5	52.2	53.1
VEHICULAR NOISE	DAY=	69.0	Leq	EVENING=	67.7	Leq	NIGHT=	61.7	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**70.1**
					CNEL=	**70.8**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**51**	**110**	**237**
			CNEL:	**56**	**121**	**261**

Scenario: EXISTING NO PROJECT
Roadway: Valley Boulevard
Segment: Alder Ave to Locust Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	18,540
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1137	21	9	840	16	6	211	4	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-1.3	-18.5	-22.5	-2.6	-19.8	-23.8	-8.6	-25.8	-29.8
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.8	59.9	60.4	67.5	58.5	59.1	61.5	52.5	53.1
VEHICULAR NOISE	DAY=	69.9	Leq	EVENING=	68.5	Leq	NIGHT=	62.5	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**71.0**
					CNEL=	**71.6**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**58**	**125**	**269**
			CNEL:	**64**	**137**	**296**

Scenario: EXISTING NO PROJECT
Roadway: Valley Boulevard
Segment: Locust Ave to Cedar Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	23,033
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1413	27	11	1044	20	8	262	5	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.3	-17.6	-21.5	-1.7	-18.9	-22.8	-7.7	-24.9	-28.9
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.8	60.8	61.4	68.4	59.5	60.0	62.4	53.5	54.0
VEHICULAR NOISE	DAY=	70.8	Leq	EVENING=	69.5	Leq	NIGHT=	63.5	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 71.9**
CNEL= 72.5

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**67**	**144**	**310**
	CNEL:	**74**	**159**	**342**

Scenario: EXISTING NO PROJECT
Roadway: Valley Boulevard
Segment: Cedar Ave to Cactus Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	12,467
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	765	14	6	565	11	4	142	3	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-2.5	-19.7	-23.7	-3.8	-21.0	-25.0	-9.8	-27.1	-31.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	65.6	57.3	58.2	64.3	56.0	56.9	58.3	50.0	50.9
VEHICULAR NOISE	DAY=	66.9	Leq	EVENING=	65.5	Leq	NIGHT=	59.5	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**68.0**
					CNEL=	**68.6**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**37**	**79**	**169**
			CNEL:	**40**	**87**	**187**

Scenario: EXISTING NO PROJECT
Roadway: Sierra Avenue
Segment: Slover Ave to I-10 ramps

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	49,975
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	3065	58	23	2266	43	17	567	11	4
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	2.6	-14.7	-18.6	1.3	-16.0	-19.9	-4.8	-22.0	-26.0
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	77.6	68.0	68.3	76.3	66.7	67.0	70.2	60.7	60.9
VEHICULAR NOISE	DAY=	78.5	Leq	EVENING=	77.1	Leq	NIGHT=	71.1	Leq

RESULTS					
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):		**Ldn=**	**79.6**
				CNEL=	**80.2**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**217**	**467**	**1006**
			CNEL:	**239**	**514**	**1108**

Scenario: EXISTING NO PROJECT
Roadway: Sierra Avenue
Segment: I-10 ramps to Valley Blvd

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	60,406
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	3705	70	28	2738	52	21	686	13	5
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	3.4	-13.8	-17.8	2.1	-15.2	-19.1	-3.9	-21.2	-25.1
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	78.4	68.8	69.1	77.1	67.5	67.8	71.1	61.5	61.8
VEHICULAR NOISE	DAY=	79.3	Leq	EVENING=	78.0	Leq	NIGHT=	72.0	Leq

RESULTS					
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):		**Ldn=**	**80.4**
				CNEL=	**81.0**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**246**	**530**	**1141**
			CNEL:	**271**	**583**	**1257**

Scenario: EXISTING NO PROJECT
Roadway: Sierra Avenue
Segment: Valley Blvd to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	37,906
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	58
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2325	44	18	1718	32	13	430	8	3
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	2.9	-14.3	-18.3	1.6	-15.6	-19.6	-4.4	-21.6	-25.6
Distance	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.3	61.7	63.0	67.9	60.4	61.7	61.9	54.4	55.7
VEHICULAR NOISE	DAY=	70.8	Leq	EVENING=	69.4	Leq	NIGHT=	63.4	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**71.9**
					CNEL=	**72.5**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**66**	**143**	**309**
			CNEL:	**73**	**158**	**340**

Scenario: EXISTING NO PROJECT
Roadway: Alder Avenue
Segment: Valley Blvd to Marygold Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	8,781
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	539	10	4	398	8	3	100	2	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-4.0	-21.3	-25.2	-5.3	-22.6	-26.5	-11.3	-28.6	-32.5
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.3	55.0	55.9	62.0	53.7	54.6	56.0	47.7	48.6
VEHICULAR NOISE	DAY=	64.5	Leq	EVENING=	63.2	Leq	NIGHT=	57.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 65.6**
CNEL= 66.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**26**	**55**	**119**
	CNEL:	**28**	**61**	**131**

Scenario: EXISTING NO PROJECT
Roadway: Alder Avenue
Segment: Marygold Ave to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	10,388
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	637	12	5	471	9	4	118	2	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-3.3	-20.5	-24.5	-4.6	-21.8	-25.8	-10.6	-27.8	-31.8
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.4	56.1	57.0	63.1	54.8	55.7	57.1	48.8	49.7
VEHICULAR NOISE	DAY=	65.7	Leq	EVENING=	64.4	Leq	NIGHT=	58.3	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**66.8**
					CNEL=	**67.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**30**	**65**	**141**
			CNEL:	**33**	**72**	**155**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING NO PROJECT
Roadway: Locust Avenue
Segment: Valley Blvd to San Bernardino Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	5,538
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	340	6	3	251	5	2	63	1	0
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-6.0	-23.3	-27.2	-7.3	-24.6	-28.5	-13.3	-30.6	-34.5
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	61.3	53.0	53.9	60.0	51.7	52.6	54.0	45.7	46.6
VEHICULAR NOISE	DAY=	62.5	Leq	EVENING=	61.2	Leq	NIGHT=	55.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 63.6** **CNEL= 64.2**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**19**	**40**	**87**
	CNEL:	**21**	**45**	**96**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING NO PROJECT
Roadway: Cedar Avenue
Segment: Slover Ave to I-10 ramps
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	25,800
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1582	30	12	1170	22	9	293	6	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	0.7	-16.6	-20.5	-0.6	-17.9	-21.8	-6.7	-23.9	-27.9
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.8	60.5	61.4	67.5	59.2	60.1	61.4	53.2	54.1
VEHICULAR NOISE	DAY=	70.0	Leq	EVENING=	68.7	Leq	NIGHT=	62.7	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**71.1**
			CNEL=	**71.7**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**59**	**128**	**275**
	CNEL:	**65**	**141**	**303**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING NO PROJECT
Roadway: Cedar Avenue
Segment: I-10 ramps to Valley Blvd
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	41,531
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2547	48	19	1883	36	14	472	9	4
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	2.7	-14.5	-18.5	1.4	-15.8	-19.8	-4.6	-21.8	-25.8
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	74.0	65.7	66.6	72.7	64.4	65.3	66.6	58.4	59.3
VEHICULAR NOISE	DAY=	75.2	Leq	EVENING=	73.9	Leq	NIGHT=	67.9	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**76.3**
			CNEL=	**76.9**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**132**	**284**	**611**
	CNEL:	**145**	**312**	**673**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING NO PROJECT
Roadway: Cedar Avenue
Segment: Valley Blvd to Bloomington Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	30,206
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1853	35	14	1369	26	10	343	6	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.4	-15.9	-19.8	0.0	-17.2	-21.2	-6.0	-23.2	-27.2
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.6	64.3	65.2	71.3	63.0	63.9	65.3	57.0	57.9
VEHICULAR NOISE	DAY=	73.8	Leq	EVENING=	72.5	Leq	NIGHT=	66.5	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 74.9**, **CNEL= 75.6**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**106**	**229**	**494**
	CNEL:	**117**	**253**	**544**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING NO PROJECT
Roadway: Cedar Avenue
Segment: Bloomington Ave to San Bernardin
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	22,863
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1402	26	11	1036	20	8	260	5	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	0.1	-17.1	-21.1	-1.2	-18.4	-22.4	-7.2	-24.4	-28.4
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.2	60.0	60.9	66.9	58.7	59.5	60.9	52.6	53.5
VEHICULAR NOISE	DAY=	69.5	Leq	EVENING=	68.2	Leq	NIGHT=	62.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.6** **CNEL= 71.2**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**55**	**118**	**254**
	CNEL:	**60**	**130**	**280**

Valley Blvd SP

EXISTING PLUS PROJECT

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)
1	Valley Boulevard	Sierra Ave to Palmetto Ave	33,679	40	84	Soft	6D	**0%**
2	Valley Boulevard	Palmetto Ave to Alder Ave	25,030	40	48	Soft	4D	**0%**
3	Valley Boulevard	Alder Ave to Locust Ave	24,287	45	48	Soft	4D	**0%**
4	Valley Boulevard	Locust Ave to Cedar Ave	28,276	45	48	Soft	4D	**0%**
5	Valley Boulevard	Cedar Ave to Cactus Ave	21,701	40	48	Soft	4D	**0%**
6	Sierra Avenue	Slover Ave to I-10 ramps	52,339	50	84	Soft	6D	**0%**
7	Sierra Avenue	I-10 ramps to Valley Blvd	62,946	50	84	Soft	6D	**0%**
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	42,911	35	58	Soft	5D	**0%**
9	Alder Avenue	Valley Blvd to Marygold Ave	12,390	40	12	Soft	2U	**0%**
10	Alder Avenue	Marygold Ave to San Bernardino Ave	12,073	40	36	Soft	4U	**0%**
11	Locust Avenue	Valley Blvd to San Bernardino Ave	10,357	40	12	Soft	2U	**0%**
12	Cedar Avenue	Slover Ave to I-10 ramps	29,709	40	48	Soft	4D	**0%**
13	Cedar Avenue	I-10 ramps to Valley Blvd	47,249	40	84	Soft	6D	**0%**
14	Cedar Avenue	Valley Blvd to Bloomington Ave	36,606	40	84	Soft	6D	**0%**
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	25,195	40	48	Soft	4D	**0%**
16					#N/A	Soft		**0%**
17					#N/A	Soft		**0%**
18					#N/A	Soft		**0%**
19					#N/A	Soft		**0%**
20					#N/A	Soft		**0%**
21					#N/A	Soft		**0%**
22					#N/A	Soft		**0%**
23					#N/A	Soft		**0%**
24					#N/A	Soft		**0%**
25					#N/A	Soft		**0%**
26					#N/A	Soft		**0%**
27					#N/A	Soft		**0%**
28					#N/A	Soft		**0%**
29					#N/A	Soft		**0%**
30					54	Soft		**0%**

ANALYST
NJF

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

		73.6	75.55%
		13.6	13.96%
		10.22	10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Traf

Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Valley Blvd SP

EXISTING PLUS PROJECT CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

					DISTACE TO NOISE CONTOUR (FT.)		
#	ROADWAY	SEGMENT	TRAFIC VOLUMES	LEVEL AT 50 FT.	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Valley Boulevard	Sierra Ave to Palmetto Ave	33,679	76.0	126	272	585
2	Valley Boulevard	Palmetto Ave to Alder Ave	25,030	71.6	64	138	297
3	Valley Boulevard	Alder Ave to Locust Ave	24,287	72.8	76	164	354
4	Valley Boulevard	Locust Ave to Cedar Ave	28,276	73.4	84	182	392
5	Valley Boulevard	Cedar Ave to Cactus Ave	21,701	71.0	58	125	270
6	Sierra Avenue	Slover Ave to I-10 ramps	52,339	80.4	246	530	1142
7	Sierra Avenue	I-10 ramps to Valley Blvd	62,946	81.2	278	600	1292
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	42,911	73.0	80	171	369
9	Alder Avenue	Valley Blvd to Marygold Ave	12,390	67.7	35	76	164
10	Alder Avenue	Marygold Ave to San Bernardino Ave	12,073	68.0	37	80	172
11	Locust Avenue	Valley Blvd to San Bernardino Ave	10,357	67.0	31	68	146
12	Cedar Avenue	Slover Ave to I-10 ramps	29,709	72.3	72	154	333
13	Cedar Avenue	I-10 ramps to Valley Blvd	47,249	77.5	158	340	733
14	Cedar Avenue	Valley Blvd to Bloomington Ave	36,606	76.4	133	287	619
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	25,195	71.6	64	138	298
16	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
17	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
21	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
22	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
23	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
24	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
25	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
26	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
27	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
28	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
29	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
30	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: EXISTING PLUS PROJECT
Roadway: Valley Boulevard
Segment: Sierra Ave to Palmetto Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	33,679
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2066	39	16	1527	29	12	382	7	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.8	-15.4	-19.4	0.5	-16.7	-20.7	-5.5	-22.7	-26.7
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	73.1	64.8	65.7	71.7	63.5	64.4	65.7	57.5	58.3
VEHICULAR NOISE	DAY=	74.3	Leq	EVENING=	73.0	Leq	NIGHT=	67.0	Leq

RESULTS					
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):		**Ldn=**	**75.4**
				CNEL=	**76.0**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**114**	**247**	**531**
			CNEL:	**126**	**272**	**585**

Scenario: EXISTING PLUS PROJECT
Roadway: Valley Boulevard
Segment: Palmetto Ave to Alder Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	25,030
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1535	29	12	1135	21	9	284	5	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	0.5	-16.7	-20.7	-0.8	-18.0	-22.0	-6.8	-24.0	-28.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.6	60.4	61.2	67.3	59.0	59.9	61.3	53.0	53.9
VEHICULAR NOISE	DAY=	69.9	Leq	EVENING=	68.6	Leq	NIGHT=	62.6	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**71.0**
					CNEL=	**71.6**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**58**	**125**	**270**
			CNEL:	**64**	**138**	**297**

Scenario: EXISTING PLUS PROJECT
Roadway: Valley Boulevard
Segment: Alder Ave to Locust Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	24,287
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1490	28	11	1101	21	8	276	5	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.1	-17.3	-21.3	-1.4	-18.7	-22.6	-7.4	-24.7	-28.6
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	70.0	61.0	61.6	68.7	59.7	60.3	62.7	53.7	54.3
VEHICULAR NOISE	DAY=	71.0	Leq	EVENING=	69.7	Leq	NIGHT=	63.7	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**72.1**
					CNEL=	**72.8**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**69**	**149**	**322**
			CNEL:	**76**	**164**	**354**

Scenario: EXISTING PLUS PROJECT
Roadway: Valley Boulevard
Segment: Locust Ave to Cedar Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	28,276
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1734	33	13	1282	24	10	321	6	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	0.6	-16.7	-20.6	-0.8	-18.0	-22.0	-6.8	-24.0	-28.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	70.6	61.7	62.2	69.3	60.4	60.9	63.3	54.4	54.9
VEHICULAR NOISE	DAY=	71.7	Leq	EVENING=	70.4	Leq	NIGHT=	64.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 72.8**
CNEL= 73.4

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**77**	**165**	**356**
	CNEL:	**84**	**182**	**392**

Scenario: EXISTING PLUS PROJECT
Roadway: Valley Boulevard
Segment: Cedar Ave to Cactus Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	21,701
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1331	25	10	984	19	7	246	5	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-0.1	-17.3	-21.3	-1.4	-18.6	-22.6	-7.4	-24.6	-28.6
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.0	59.7	60.6	66.7	58.4	59.3	60.7	52.4	53.3
VEHICULAR NOISE	DAY=	69.3	Leq	EVENING=	68.0	Leq	NIGHT=	61.9	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.4**
CNEL= 71.0

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**53**	**114**	**245**
	CNEL:	**58**	**125**	**270**

Scenario: EXISTING PLUS PROJECT
Roadway: Sierra Avenue
Segment: Slover Ave to I-10 ramps

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	52,339
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	3210	61	24	2373	45	18	594	11	5
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	2.8	-14.5	-18.4	1.5	-15.8	-19.7	-4.6	-21.8	-25.7
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	77.8	68.2	68.5	76.5	66.9	67.2	70.4	60.9	61.1
VEHICULAR NOISE	DAY=	78.7	Leq	EVENING=	77.3	Leq	NIGHT=	71.3	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**79.8**
					CNEL=	**80.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**224**	**482**	**1037**
			CNEL:	**246**	**530**	**1142**

Scenario: EXISTING PLUS PROJECT
Roadway: Sierra Avenue
Segment: I-10 ramps to Valley Blvd

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	62,946
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	3861	73	29	2854	54	22	715	14	5
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	3.6	-13.7	-17.6	2.3	-15.0	-18.9	-3.8	-21.0	-24.9
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	78.6	69.0	69.3	77.3	67.7	68.0	71.2	61.7	62.0
VEHICULAR NOISE	DAY=	79.5	Leq	EVENING=	78.1	Leq	NIGHT=	72.1	Leq

RESULTS					
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):		**Ldn=**	**80.6**
				CNEL=	**81.2**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**253**	**545**	**1173**
			CNEL:	**278**	**600**	**1292**

Scenario: EXISTING PLUS PROJECT
Roadway: Sierra Avenue
Segment: Valley Blvd to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	42,911
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	58
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2632	50	20	1945	37	15	487	9	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.5	-13.8	-17.7	2.1	-15.1	-19.1	-3.9	-21.1	-25.1
Distance	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.8	62.3	63.5	68.5	61.0	62.2	62.5	55.0	56.2
VEHICULAR NOISE	DAY=	71.3	Leq	EVENING=	70.0	Leq	NIGHT=	64.0	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**72.4**
					CNEL=	**73.0**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**72**	**156**	**335**
			CNEL:	**80**	**171**	**369**

Scenario: EXISTING PLUS PROJECT
Roadway: Alder Avenue
Segment: Valley Blvd to Marygold Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	12,390
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	760	14	6	562	11	4	141	3	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-2.5	-19.8	-23.7	-3.8	-21.1	-25.0	-9.8	-27.1	-31.0
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.8	56.5	57.4	63.5	55.2	56.1	57.5	49.2	50.1
VEHICULAR NOISE	DAY=	66.0	Leq	EVENING=	64.7	Leq	NIGHT=	58.7	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**67.1**
					CNEL=	**67.7**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**32**	**69**	**149**
			CNEL:	**35**	**76**	**164**

Scenario: EXISTING PLUS PROJECT
Roadway: Alder Avenue
Segment: Marygold Ave to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	12,073
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	740	14	6	547	10	4	137	3	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-2.6	-19.9	-23.8	-3.9	-21.2	-25.1	-10.0	-27.2	-31.2
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	65.1	56.8	57.7	63.8	55.5	56.4	57.8	49.5	50.4
VEHICULAR NOISE	DAY=	66.3	Leq	EVENING=	65.0	Leq	NIGHT=	59.0	Leq

RESULTS					
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):		**Ldn=**	**67.4**
				CNEL=	**68.0**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**34**	**72**	**156**
			CNEL:	**37**	**80**	**172**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING PLUS PROJECT
Roadway: Locust Avenue
Segment: Valley Blvd to San Bernardino Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	10,357
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	635	12	5	470	9	4	118	2	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-3.3	-20.5	-24.5	-4.6	-21.8	-25.8	-10.6	-27.9	-31.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.0	55.7	56.6	62.7	54.4	55.3	56.7	48.4	49.3
VEHICULAR NOISE	DAY=	65.2	Leq	EVENING=	63.9	Leq	NIGHT=	57.9	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 66.3** **CNEL= 67.0**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**29**	**61**	**132**
	CNEL:	**31**	**68**	**146**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING PLUS PROJECT
Roadway: Cedar Avenue
Segment: Slover Ave to I-10 ramps
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	29,709
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1822	34	14	1347	25	10	337	6	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.3	-16.0	-19.9	0.0	-17.3	-21.2	-6.0	-23.3	-27.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.4	61.1	62.0	68.1	59.8	60.7	62.1	53.8	54.7
VEHICULAR NOISE	DAY=	70.6	Leq	EVENING=	69.3	Leq	NIGHT=	63.3	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**71.7**
			CNEL=	**72.3**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**65**	**140**	**302**
	CNEL:	**72**	**154**	**333**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING PLUS PROJECT
Roadway: Cedar Avenue
Segment: I-10 ramps to Valley Blvd
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	47,249
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2898	55	22	2142	40	16	537	10	4
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	3.3	-13.9	-17.9	2.0	-15.3	-19.2	-4.0	-21.3	-25.2
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	74.5	66.2	67.1	73.2	64.9	65.8	67.2	58.9	59.8
VEHICULAR NOISE	DAY=	75.8	Leq	EVENING=	74.5	Leq	NIGHT=	68.4	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**76.9**
			CNEL=	**77.5**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**143**	**309**	**666**
	CNEL:	**158**	**340**	**733**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING PLUS PROJECT
Roadway: Cedar Avenue
Segment: Valley Blvd to Bloomington Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	36,606
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2245	42	17	1659	31	13	416	8	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	2.2	-15.1	-19.0	0.9	-16.4	-20.3	-5.1	-22.4	-26.3
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	73.4	65.1	66.0	72.1	63.8	64.7	66.1	57.8	58.7
VEHICULAR NOISE	DAY=	74.7	Leq	EVENING=	73.4	Leq	NIGHT=	67.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 75.8** **CNEL= 76.4**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**121**	**261**	**562**
	CNEL:	**133**	**287**	**619**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: EXISTING PLUS PROJECT
Roadway: Cedar Avenue
Segment: Bloomington Ave to San Bernardin(
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	25,195
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1545	29	12	1142	22	9	286	5	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	0.6	-16.7	-20.6	-0.7	-18.0	-21.9	-6.8	-24.0	-28.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.7	60.4	61.3	67.4	59.1	60.0	61.3	53.1	54.0
VEHICULAR NOISE	DAY=	69.9	Leq	EVENING=	68.6	Leq	NIGHT=	62.6	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 71.0** **CNEL= 71.6**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**58**	**126**	**271**
	CNEL:	**64**	**138**	**298**

Valley Blvd SP

2035 No Project

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)
1	Valley Boulevard	Sierra Ave to Palmetto Ave	28,753	40	84	Soft	6D	**0%**
2	Valley Boulevard	Palmetto Ave to Alder Ave	19,881	40	48	Soft	4D	**0%**
3	Valley Boulevard	Alder Ave to Locust Ave	22,187	45	48	Soft	4D	**0%**
4	Valley Boulevard	Locust Ave to Cedar Ave	24,366	45	48	Soft	4D	**0%**
5	Valley Boulevard	Cedar Ave to Cactus Ave	13,963	40	48	Soft	4D	**0%**
6	Sierra Avenue	Slover Ave to I-10 ramps	50,323	50	84	Soft	6D	**0%**
7	Sierra Avenue	I-10 ramps to Valley Blvd	68,910	50	84	Soft	6D	**0%**
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	41,485	35	58	Soft	5D	**0%**
9	Alder Avenue	Valley Blvd to Marygold Ave	11,061	40	12	Soft	2U	**0%**
10	Alder Avenue	Marygold Ave to San Bernardino Ave	15,550	40	36	Soft	4U	**0%**
11	Locust Avenue	Valley Blvd to San Bernardino Ave	4,154	40	12	Soft	2U	**0%**
12	Cedar Avenue	Slover Ave to I-10 ramps	30,301	40	48	Soft	4D	**0%**
13	Cedar Avenue	I-10 ramps to Valley Blvd	48,759	40	84	Soft	6D	**0%**
14	Cedar Avenue	Valley Blvd to Bloomington Ave	37,267	40	84	Soft	6D	**0%**
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	25,467	40	48	Soft	4D	**0%**
16					#N/A	Soft		**0%**
17					#N/A	Soft		**0%**
18					#N/A	Soft		**0%**
19					#N/A	Soft		**0%**
20					#N/A	Soft		**0%**
21					#N/A	Soft		**0%**
22					#N/A	Soft		**0%**
23					#N/A	Soft		**0%**
24					#N/A	Soft		**0%**
25					#N/A	Soft		**0%**
26					#N/A	Soft		**0%**
27					#N/A	Soft		**0%**
28					#N/A	Soft		**0%**
29					#N/A	Soft		**0%**
30					54	Soft		**0%**

ANALYST
NJF

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

		73.6	75.55%
		13.6	13.96%
		10.22	10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Traf

Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Valley Blvd SP
2035 No Project CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

					DISTACE TO NOISE CONTOUR (FT.)		
#	ROADWAY	SEGMENT	TRAFIC VOLUMES	LEVEL AT 50 FT.	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Valley Boulevard	Sierra Ave to Palmetto Ave	28,753	75.3	113	244	527
2	Valley Boulevard	Palmetto Ave to Alder Ave	19,881	70.6	55	118	255
3	Valley Boulevard	Alder Ave to Locust Ave	22,187	72.4	72	155	333
4	Valley Boulevard	Locust Ave to Cedar Ave	24,366	72.8	76	165	355
5	Valley Boulevard	Cedar Ave to Cactus Ave	13,963	69.1	43	93	201
6	Sierra Avenue	Slover Ave to I-10 ramps	50,323	80.2	240	516	1113
7	Sierra Avenue	I-10 ramps to Valley Blvd	68,910	81.6	296	637	1372
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	41,485	72.9	78	167	361
9	Alder Avenue	Valley Blvd to Marygold Ave	11,061	67.3	33	71	152
10	Alder Avenue	Marygold Ave to San Bernardino Ave	15,550	69.1	44	94	203
11	Locust Avenue	Valley Blvd to San Bernardino Ave	4,154	63.0	17	37	79
12	Cedar Avenue	Slover Ave to I-10 ramps	30,301	72.4	73	157	337
13	Cedar Avenue	I-10 ramps to Valley Blvd	48,759	77.6	161	348	749
14	Cedar Avenue	Valley Blvd to Bloomington Ave	37,267	76.5	135	291	626
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	25,467	71.7	65	139	300
16	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
17	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
21	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
22	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
23	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
24	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
25	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
26	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
27	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
28	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
29	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
30	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: 2035 No Project
Roadway: Valley Boulevard
Segment: Sierra Ave to Palmetto Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	28,753
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1764	33	13	1303	25	10	327	6	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.1	-16.1	-20.1	-0.2	-17.4	-21.4	-6.2	-23.4	-27.4
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.4	64.1	65.0	71.1	62.8	63.7	65.1	56.8	57.7
VEHICULAR NOISE	DAY=	73.6	Leq	EVENING=	72.3	Leq	NIGHT=	66.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 74.7**
CNEL= 75.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**103**	**222**	**478**
	CNEL:	**113**	**244**	**527**

Scenario: 2035 No Project
Roadway: Valley Boulevard
Segment: Palmetto Ave to Alder Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	19,881
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1219	23	9	901	17	7	226	4	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-0.5	-17.7	-21.7	-1.8	-19.0	-23.0	-7.8	-25.0	-29.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	67.6	59.4	60.2	66.3	58.0	58.9	60.3	52.0	52.9
VEHICULAR NOISE	DAY=	68.9	Leq	EVENING=	67.6	Leq	NIGHT=	61.6	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.0**
CNEL= 70.6

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**50**	**107**	**231**
	CNEL:	**55**	**118**	**255**

Scenario: 2035 No Project
Roadway: Valley Boulevard
Segment: Alder Ave to Locust Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	22,187
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1361	26	10	1006	19	8	252	5	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.5	-17.7	-21.7	-1.8	-19.1	-23.0	-7.8	-25.1	-29.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.6	60.6	61.2	68.3	59.3	59.9	62.3	53.3	53.9
VEHICULAR NOISE	DAY=	70.6	Leq	EVENING=	69.3	Leq	NIGHT=	63.3	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**71.7**
					CNEL=	**72.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**65**	**141**	**303**
			CNEL:	**72**	**155**	**333**

Scenario: 2035 No Project
Roadway: Valley Boulevard
Segment: Locust Ave to Cedar Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	24,366
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1494	28	11	1105	21	8	277	5	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	-0.1	-17.3	-21.3	-1.4	-18.6	-22.6	-7.4	-24.7	-28.6
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	70.0	61.0	61.6	68.7	59.7	60.3	62.7	53.7	54.3
VEHICULAR NOISE	DAY=	71.0	Leq	EVENING=	69.7	Leq	NIGHT=	63.7	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**72.1**
					CNEL=	**72.8**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**69**	**150**	**322**
			CNEL:	**76**	**165**	**355**

Scenario: 2035 No Project
Roadway: Valley Boulevard
Segment: Cedar Ave to Cactus Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	13,963
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	856	16	7	633	12	5	159	3	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-2.0	-19.2	-23.2	-3.3	-20.6	-24.5	-9.3	-26.6	-30.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	66.1	57.8	58.7	64.8	56.5	57.4	58.8	50.5	51.4
VEHICULAR NOISE	DAY=	67.3	Leq	EVENING=	66.0	Leq	NIGHT=	60.0	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 68.4**
CNEL= 69.1

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**39**	**85**	**183**
	CNEL:	**43**	**93**	**201**

Scenario: 2035 No Project
Roadway: Sierra Avenue
Segment: Slover Ave to I-10 ramps

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	50,323
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	3086	58	23	2281	43	17	571	11	4
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	2.6	-14.6	-18.6	1.3	-16.0	-19.9	-4.7	-22.0	-25.9
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	77.6	68.0	68.3	76.3	66.7	67.0	70.3	60.7	61.0
VEHICULAR NOISE	DAY=	78.5	Leq	EVENING=	77.2	Leq	NIGHT=	71.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 79.6**
CNEL= 80.2

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**218**	**469**	**1011**
	CNEL:	**240**	**516**	**1113**

Scenario: 2035 No Project
Roadway: Sierra Avenue
Segment: I-10 ramps to Valley Blvd

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	68,910
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	4226	80	32	3124	59	24	783	15	6
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	4.0	-13.3	-17.2	2.7	-14.6	-18.5	-3.4	-20.6	-24.6
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	79.0	69.4	69.7	77.6	68.1	68.4	71.6	62.1	62.3
VEHICULAR NOISE	DAY=	79.9	Leq	EVENING=	78.5	Leq	NIGHT=	72.5	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 80.9**
CNEL= 81.6

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**268**	**578**	**1246**
	CNEL:	**296**	**637**	**1372**

Scenario: 2035 No Project
Roadway: Sierra Avenue
Segment: Valley Blvd to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	41,485
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	58
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2544	48	19	1881	36	14	471	9	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.3	-13.9	-17.9	2.0	-15.2	-19.2	-4.0	-21.3	-25.2
Distance	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.6	62.1	63.4	68.3	60.8	62.1	62.3	54.8	56.1
VEHICULAR NOISE	DAY=	71.2	Leq	EVENING=	69.8	Leq	NIGHT=	63.8	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**72.2**
					CNEL=	**72.9**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**71**	**152**	**328**
			CNEL:	**78**	**167**	**361**

Scenario: 2035 No Project
Roadway: Alder Avenue
Segment: Valley Blvd to Marygold Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	11,061
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	678	13	5	501	9	4	126	2	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-3.0	-20.2	-24.2	-4.3	-21.6	-25.5	-10.3	-27.6	-31.5
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	64.3	56.0	56.9	63.0	54.7	55.6	57.0	48.7	49.6
VEHICULAR NOISE	DAY=	65.5	Leq	EVENING=	64.2	Leq	NIGHT=	58.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 66.6**
CNEL= 67.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**30**	**64**	**138**
	CNEL:	**33**	**71**	**152**

Scenario: 2035 No Project
Roadway: Alder Avenue
Segment: Marygold Ave to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	15,550
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	954	18	7	705	13	5	177	3	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-1.5	-18.8	-22.7	-2.8	-20.1	-24.0	-8.9	-26.1	-30.1
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	66.2	57.9	58.8	64.9	56.6	57.5	58.8	50.6	51.5
VEHICULAR NOISE	DAY=	67.4	Leq	EVENING=	66.1	Leq	NIGHT=	60.1	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 68.5**
CNEL= 69.1

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**40**	**86**	**185**
	CNEL:	**44**	**94**	**203**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 No Project
Roadway: Locust Avenue
Segment: Valley Blvd to San Bernardino Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	4,154
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	255	5	2	188	4	1	47	1	0
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-7.3	-24.5	-28.5	-8.6	-25.8	-29.8	-14.6	-31.8	-35.8
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	60.0	51.8	52.6	58.7	50.4	51.3	52.7	44.4	45.3
VEHICULAR NOISE	DAY=	61.3	Leq	EVENING=	60.0	Leq	NIGHT=	54.0	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 62.4** **CNEL= 63.0**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**16**	**33**	**72**
	CNEL:	**17**	**37**	**79**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 No Project
Roadway: Cedar Avenue
Segment: Slover Ave to I-10 ramps

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	30,301
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1858	35	14	1374	26	10	344	6	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.4	-15.9	-19.8	0.1	-17.2	-21.1	-6.0	-23.2	-27.2
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.5	61.2	62.1	68.2	59.9	60.8	62.1	53.9	54.8
VEHICULAR NOISE	DAY=	70.7	Leq	EVENING=	69.4	Leq	NIGHT=	63.4	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 71.8**, **CNEL= 72.4**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**66**	**142**	**306**
	CNEL:	**73**	**157**	**337**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 No Project
Roadway: Cedar Avenue
Segment: I-10 ramps to Valley Blvd

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	48,759
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2991	56	23	2210	42	17	554	10	4
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	3.4	-13.8	-17.8	2.1	-15.1	-19.1	-3.9	-21.1	-25.1
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	74.7	66.4	67.3	73.4	65.1	66.0	67.3	59.1	59.9
VEHICULAR NOISE	DAY=	75.9	Leq	EVENING=	74.6	Leq	NIGHT=	68.6	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 77.0** **CNEL= 77.6**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**147**	**316**	**680**
	CNEL:	**161**	**348**	**749**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 No Project
Roadway: Cedar Avenue
Segment: Valley Blvd to Bloomington Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	37,267
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2286	43	17	1689	32	13	423	8	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	2.3	-15.0	-18.9	1.0	-16.3	-20.2	-5.1	-22.3	-26.3
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	73.5	65.2	66.1	72.2	63.9	64.8	66.2	57.9	58.8
VEHICULAR NOISE	DAY=	74.7	Leq	EVENING=	73.4	Leq	NIGHT=	67.4	Leq

RESULTS				
NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA):			**Ldn=**	**75.8**
			CNEL=	**76.5**
NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**122**	**264**	**569**
	CNEL:	**135**	**291**	**626**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 No Project
Roadway: Cedar Avenue
Segment: Bloomington Ave to San Bernardin
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	25,467
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1562	30	12	1155	22	9	289	5	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	0.6	-16.6	-20.6	-0.7	-17.9	-21.9	-6.7	-24.0	-27.9
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.7	60.4	61.3	67.4	59.1	60.0	61.4	53.1	54.0
VEHICULAR NOISE	DAY=	70.0	Leq	EVENING=	68.6	Leq	NIGHT=	62.6	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 71.1**, **CNEL= 71.7**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**59**	**127**	**273**
	CNEL:	**65**	**139**	**300**

Valley Blvd SP

2035 With Project

#	ROADWAY	SEGMENT	ADT	POSTED SPEED LIMIT	LANE DISTANCE	SITE CONDITION	LANES	GRADE (%)
1	Valley Boulevard	Sierra Ave to Palmetto Ave	32,460	40	84	Soft	6D	**0%**
2	Valley Boulevard	Palmetto Ave to Alder Ave	24,317	40	48	Soft	4D	**0%**
3	Valley Boulevard	Alder Ave to Locust Ave	27,934	45	48	Soft	4D	**0%**
4	Valley Boulevard	Locust Ave to Cedar Ave	29,609	45	48	Soft	4D	**0%**
5	Valley Boulevard	Cedar Ave to Cactus Ave	23,197	40	48	Soft	4D	**0%**
6	Sierra Avenue	Slover Ave to I-10 ramps	52,687	50	84	Soft	6D	**0%**
7	Sierra Avenue	I-10 ramps to Valley Blvd	71,450	50	84	Soft	6D	**0%**
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	46,490	35	58	Soft	5D	**0%**
9	Alder Avenue	Valley Blvd to Marygold Ave	14,670	40	12	Soft	2U	**0%**
10	Alder Avenue	Marygold Ave to San Bernardino Ave	17,235	40	36	Soft	4U	**0%**
11	Locust Avenue	Valley Blvd to San Bernardino Ave	8,973	40	12	Soft	2U	**0%**
12	Cedar Avenue	Slover Ave to I-10 ramps	34,210	40	48	Soft	4D	**0%**
13	Cedar Avenue	I-10 ramps to Valley Blvd	54,477	40	84	Soft	6D	**0%**
14	Cedar Avenue	Valley Blvd to Bloomington Ave	43,667	40	84	Soft	6D	**0%**
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	27,799	40	48	Soft	4D	**0%**
16					#N/A	Soft		**0%**
17					#N/A	Soft		**0%**
18					#N/A	Soft		**0%**
19					#N/A	Soft		**0%**
20					#N/A	Soft		**0%**
21					#N/A	Soft		**0%**
22					#N/A	Soft		**0%**
23					#N/A	Soft		**0%**
24					#N/A	Soft		**0%**
25					#N/A	Soft		**0%**
26					#N/A	Soft		**0%**
27					#N/A	Soft		**0%**
28					#N/A	Soft		**0%**
29					#N/A	Soft		**0%**
30					54	Soft		**0%**

ANALYST
NJF

ROAD CLASSIFICATION	SPEED	LANE DISTANCE
2U	40	12
4U	40	36
4D	45	48
6D	45	84
2D	40	24

		73.6	75.55%
		13.6	13.96%
		10.22	10.49%

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.42%	DAY	75.5%
% MT	1.84%	EVENING	14.0%
% HT	0.74%	NIGHT	10.5%

Source: Riverside, County of, Department of Public Health, Office of Industrial Hygiene. 2009, November. For Determining and Mitigating Traf

Riverside County Fleet Mix: Secondary, Collectors, or Smaller

Vehicle	Overall %	Day (7 AM to	Evening (7	Night (10 PM to 7 AM)
Auto	97%	73.60	13.60	10.22
Medium Truck	2%	0.90	0.04	0.90
Heavy Truck	1%	0.35	0.04	0.35
		74.85	13.68	11.47

Valley Blvd SP
2035 With Project CONDITIONS NOISE CONTOURS RESULT SUMMARY TABLE

					DISTACE TO NOISE CONTOUR (FT.)		
#	ROADWAY	SEGMENT	TRAFIC VOLUMES	LEVEL AT 50 FT.	70 dBA CNEL	65 dBA CNEL	60 dBA CNEL
1	Valley Boulevard	Sierra Ave to Palmetto Ave	32,460	75.9	123	265	571
2	Valley Boulevard	Palmetto Ave to Alder Ave	24,317	71.5	63	135	291
3	Valley Boulevard	Alder Ave to Locust Ave	27,934	73.4	84	180	389
4	Valley Boulevard	Locust Ave to Cedar Ave	29,609	73.6	87	188	404
5	Valley Boulevard	Cedar Ave to Cactus Ave	23,197	71.3	61	131	282
6	Sierra Avenue	Slover Ave to I-10 ramps	52,687	80.4	247	533	1147
7	Sierra Avenue	I-10 ramps to Valley Blvd	71,450	81.7	303	652	1406
8	Sierra Avenue	Valley Blvd to San Bernardino Ave	46,490	73.4	84	181	389
9	Alder Avenue	Valley Blvd to Marygold Ave	14,670	68.5	40	85	184
10	Alder Avenue	Marygold Ave to San Bernardino Ave	17,235	69.6	47	101	218
11	Locust Avenue	Valley Blvd to San Bernardino Ave	8,973	66.3	29	61	132
12	Cedar Avenue	Slover Ave to I-10 ramps	34,210	73.0	79	170	366
13	Cedar Avenue	I-10 ramps to Valley Blvd	54,477	78.1	174	374	806
14	Cedar Avenue	Valley Blvd to Bloomington Ave	43,667	77.2	150	323	696
15	Cedar Avenue	Bloomington Ave to San Bernardino Ave	27,799	72.1	69	148	318
16	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
17	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
18	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
19	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
20	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
21	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
22	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
23	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
24	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
25	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
26	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
27	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
28	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
29	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!
30	0	0	0	#NUM!	#NUM!	#NUM!	#NUM!

Scenario: 2035 With Project
Roadway: Valley Boulevard
Segment: Sierra Ave to Palmetto Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	32,460
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1991	38	15	1472	28	11	369	7	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.7	-15.6	-19.5	0.4	-16.9	-20.8	-5.7	-22.9	-26.9
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	72.9	64.6	65.5	71.6	63.3	64.2	65.6	57.3	58.2
VEHICULAR NOISE	DAY=	74.1	Leq	EVENING=	72.8	Leq	NIGHT=	66.8	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 75.2**
CNEL= 75.9

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**112**	**241**	**519**
	CNEL:	**123**	**265**	**571**

Scenario: 2035 With Project
Roadway: Valley Boulevard
Segment: Palmetto Ave to Alder Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	24,317
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1491	28	11	1102	21	8	276	5	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	0.4	-16.8	-20.8	-0.9	-18.1	-22.1	-6.9	-24.2	-28.1
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.5	60.2	61.1	67.2	58.9	59.8	61.2	52.9	53.8
VEHICULAR NOISE	DAY=	69.8	Leq	EVENING=	68.4	Leq	NIGHT=	62.4	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**70.9**
					CNEL=	**71.5**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**57**	**123**	**265**
			CNEL:	**63**	**135**	**291**

Scenario: 2035 With Project
Roadway: Valley Boulevard
Segment: Alder Ave to Locust Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	27,934
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1713	32	13	1266	24	10	317	6	2
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	0.5	-16.7	-20.7	-0.8	-18.1	-22.0	-6.8	-24.1	-28.0
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	70.6	61.6	62.2	69.3	60.3	60.9	63.3	54.3	54.9
VEHICULAR NOISE	DAY=	71.6	Leq	EVENING=	70.3	Leq	NIGHT=	64.3	Leq

RESULTS					
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):		**Ldn=**	**72.7**
				CNEL=	**73.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**76**	**164**	**353**
			CNEL:	**84**	**180**	**389**

Scenario: 2035 With Project
Roadway: Valley Boulevard
Segment: Locust Ave to Cedar Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	29,609
SPEED (mph)	45
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1816	34	14	1342	25	10	336	6	3
Speed in MPH	45	45	45	45	45	45	45	45	45
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	69.3	77.6	82.1	69.3	77.6	82.1	69.3	77.6	82.1
ADJUSTMENTS									
Flow	0.8	-16.5	-20.4	-0.6	-17.8	-21.8	-6.6	-23.8	-27.8
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	70.8	61.9	62.4	69.5	60.6	61.1	63.5	54.6	55.1
VEHICULAR NOISE	DAY=	71.9	Leq	EVENING=	70.6	Leq	NIGHT=	64.6	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 73.0**
CNEL= 73.6

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**79**	**170**	**367**
	CNEL:	**87**	**188**	**404**

Scenario: 2035 With Project
Roadway: Valley Boulevard
Segment: Cedar Ave to Cactus Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	23,197
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1423	27	11	1052	20	8	263	5	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	0.2	-17.0	-21.0	-1.1	-18.3	-22.3	-7.1	-24.4	-28.3
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	68.3	60.0	60.9	67.0	58.7	59.6	61.0	52.7	53.6
VEHICULAR NOISE	DAY=	69.6	Leq	EVENING=	68.2	Leq	NIGHT=	62.2	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 70.6**
CNEL= 71.3

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**55**	**119**	**256**
	CNEL:	**61**	**131**	**282**

Scenario: 2035 With Project
Roadway: Sierra Avenue
Segment: Slover Ave to I-10 ramps

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	52,687
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	3231	61	25	2388	45	18	598	11	5
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	2.8	-14.4	-18.4	1.5	-15.8	-19.7	-4.5	-21.8	-25.7
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	77.8	68.2	68.5	76.5	66.9	67.2	70.5	60.9	61.2
VEHICULAR NOISE	DAY=	78.7	Leq	EVENING=	77.4	Leq	NIGHT=	71.4	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**79.8**
					CNEL=	**80.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**225**	**484**	**1042**
			CNEL:	**247**	**533**	**1147**

Scenario: 2035 With Project
Roadway: Sierra Avenue
Segment: I-10 ramps to Valley Blvd

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	71,450
SPEED (mph)	50
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	4382	83	33	3239	61	25	811	15	6
Speed in MPH	50	50	50	50	50	50	50	50	50
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	71.1	78.8	83.0	71.1	78.8	83.0	71.1	78.8	83.0
ADJUSTMENTS									
Flow	4.1	-13.1	-17.1	2.8	-14.4	-18.4	-3.2	-20.4	-24.4
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	79.1	69.6	69.8	77.8	68.2	68.5	71.8	62.2	62.5
VEHICULAR NOISE	DAY=	80.0	Leq	EVENING=	78.7	Leq	NIGHT=	72.7	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**81.1**
					CNEL=	**81.7**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**275**	**593**	**1277**
			CNEL:	**303**	**652**	**1406**

Scenario: 2035 With Project
Roadway: Sierra Avenue
Segment: Valley Blvd to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	46,490
SPEED (mph)	35
ROAD NEAR-FAR LN. DIST.	58
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2851	54	22	2108	40	16	528	10	4
Speed in MPH	35	35	35	35	35	35	35	35	35
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	65.1	74.8	80.0	65.1	74.8	80.0	65.1	74.8	80.0
ADJUSTMENTS									
Flow	3.8	-13.4	-17.4	2.5	-14.7	-18.7	-3.5	-20.8	-24.7
Distance	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	70.1	62.6	63.9	68.8	61.3	62.6	62.8	55.3	56.6
VEHICULAR NOISE	DAY=	71.6	Leq	EVENING=	70.3	Leq	NIGHT=	64.3	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**72.7**
					CNEL=	**73.4**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**76**	**164**	**354**
			CNEL:	**84**	**181**	**389**

Scenario: 2035 With Project
Roadway: Alder Avenue
Segment: Valley Blvd to Marygold Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	14,670
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	900	17	7	665	13	5	167	3	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-1.8	-19.0	-23.0	-3.1	-20.3	-24.3	-9.1	-26.3	-30.3
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	65.5	57.2	58.1	64.2	55.9	56.8	58.2	49.9	50.8
VEHICULAR NOISE	DAY=	66.8	Leq	EVENING=	65.4	Leq	NIGHT=	59.4	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**67.9**
					CNEL=	**68.5**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**36**	**77**	**167**
			CNEL:	**40**	**85**	**184**

Scenario: 2035 With Project
Roadway: Alder Avenue
Segment: Marygold Ave to San Bernardino Ave

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	17,235
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	36
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1057	20	8	781	15	6	196	4	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-1.1	-18.3	-22.3	-2.4	-19.6	-23.6	-8.4	-25.6	-29.6
Distance	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	66.6	58.3	59.2	65.3	57.0	57.9	59.3	51.0	51.9
VEHICULAR NOISE	DAY=	67.9	Leq	EVENING=	66.5	Leq	NIGHT=	60.5	Leq

RESULTS						
NOISE LEVELS AT	50	FEET FROM CENTERLINE (dBA):			**Ldn=**	**69.0**
					CNEL=	**69.6**
NOISE CONTOUR:				*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):			**Ldn:**	**43**	**92**	**198**
			CNEL:	**47**	**101**	**218**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 With Project
Roadway: Locust Avenue
Segment: Valley Blvd to San Bernardino Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	8,973
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	12
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	550	10	4	407	8	3	102	2	1
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	-3.9	-21.2	-25.1	-5.2	-22.5	-26.4	-11.2	-28.5	-32.4
Distance	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1	-0.1
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	63.4	55.1	56.0	62.1	53.8	54.7	56.1	47.8	48.7
VEHICULAR NOISE	DAY=	64.6	Leq	EVENING=	63.3	Leq	NIGHT=	57.3	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 65.7** **CNEL= 66.3**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**26**	**56**	**120**
	CNEL:	**29**	**61**	**132**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 With Project
Roadway: Cedar Avenue
Segment: Slover Ave to I-10 ramps

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	34,210
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2098	40	16	1551	29	12	388	7	3
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.9	-15.3	-19.3	0.6	-16.7	-20.6	-5.4	-22.7	-26.6
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	70.0	61.7	62.6	68.7	60.4	61.3	62.7	54.4	55.3
VEHICULAR NOISE	DAY=	71.2	Leq	EVENING=	69.9	Leq	NIGHT=	63.9	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 72.3**, **CNEL= 73.0**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**72**	**154**	**332**
	CNEL:	**79**	**170**	**366**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 With Project
Roadway: Cedar Avenue
Segment: I-10 ramps to Valley Blvd

Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	54,477
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	3341	63	25	2470	47	19	619	12	5
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	3.9	-13.3	-17.3	2.6	-14.6	-18.6	-3.4	-20.7	-24.6
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	75.2	66.9	67.8	73.8	65.6	66.4	67.8	59.5	60.4
VEHICULAR NOISE	DAY=	76.4	Leq	EVENING=	75.1	Leq	NIGHT=	69.1	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 77.5** **CNEL= 78.1**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**158**	**340**	**732**
	CNEL:	**174**	**374**	**806**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 With Project
Roadway: Cedar Avenue
Segment: Valley Blvd to Bloomington Ave
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	43,667
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	84
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	2678	51	20	1980	37	15	496	9	4
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	3.0	-14.3	-18.2	1.6	-15.6	-19.6	-4.4	-21.6	-25.6
Distance	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	74.2	65.9	66.8	72.9	64.6	65.5	66.9	58.6	59.5
VEHICULAR NOISE	DAY=	75.4	Leq	EVENING=	74.1	Leq	NIGHT=	68.1	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 76.5** **CNEL= 77.2**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**136**	**293**	**632**
	CNEL:	**150**	**323**	**696**

FHWA RD-77-108 NOISE PREDICTION MODEL

Scenario: 2035 With Project
Roadway: Cedar Avenue
Segment: Bloomington Ave to San Bernardin
Project: Valley Blvd SP
Analyst: NJF
Date: 28-Dec-15

ROADWAY INPUTS	
ADT	27,799
SPEED (mph)	40
ROAD NEAR-FAR LN. DIST.	48
DISTANCE ROAD CL (ft)	50
SOFT/HARD CONDITIONS	Soft
GRADE (%)	0%
LEFT VIEW	-90
RIGHT VIEW	90

VEHICLE MIX INPUTS			
DAILY		HOURLY	
% A	97.4%	DAY	75.5%
% MT	1.8%	EVENING	14.0%
% HT	0.7%	NIGHT	10.5%

CALCULATION AREA

	DAYTIME			EVENING			NIGHT		
	AUTOS	MT	HT	AUTOS	MT	HT	AUTOS	MT	HT
Vehicles per hour	1705	32	13	1260	24	10	316	6	2
Speed in MPH	40	40	40	40	40	40	40	40	40
Left angle	-90	-90	-90	-90	-90	-90	-90	-90	-90
Right angle	90	90	90	90	90	90	90	90	90
Reference levels (dBA)	67.4	76.3	81.2	67.4	76.3	81.2	67.4	76.3	81.2
ADJUSTMENTS									
Flow	1.0	-16.2	-20.2	-0.3	-17.6	-21.5	-6.3	-23.6	-27.5
Distance	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Finite Roadway	0	0	0	0	0	0	0	0	0
Barrier	0	0	0	0	0	0	0	0	0
Grade	0	0	0	0	0	0	0	0	0
LEQ	69.1	60.8	61.7	67.8	59.5	60.4	61.8	53.5	54.4
VEHICULAR NOISE	DAY=	70.3	Leq	EVENING=	69.0	Leq	NIGHT=	63.0	Leq

RESULTS

NOISE LEVELS AT 50 FEET FROM CENTERLINE (dBA): **Ldn= 71.4** **CNEL= 72.1**

NOISE CONTOUR:		*70 dBA*	*65 dBA*	*60 dBA*
ROAD CENTERLINE DISTANCE TO NOISE CONTOUR (FEET):	**Ldn:**	**62**	**134**	**289**
	CNEL:	**69**	**148**	**318**

5.9.1 Fundamentals of Acoustics, Noise, and Vibration

5.9.1.1 NOISE DESCRIPTORS

Noise is most often defined as unwanted sound. Although sound can be easily measured, the perception of noise and the physical response to sound complicate the analysis of its impact on people. People judge the relative magnitude of sound sensation in subjective terms such as "noisiness" or "loudness."

The following are brief definitions of terminology used in this chapter:

- **Sound.** A disturbance created by a vibrating object, which, when transmitted by pressure waves through a medium such as air, is capable of being detected by a receiving mechanism, such as the human ear or a microphone.

- **Noise.** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.

- **Decibel (dB).** A unitless measure of sound on a logarithmic scale.

- **Vibration Decibel (VdB).** A unitless measure of vibration, expressed on a logarithmic scale and with respect to a defined reference vibration velocity. In the U.S., the standard reference velocity is 1 micro-inch per second (1x10-6 in/sec).

- **A-Weighted Decibel (dBA).** An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.

- **Equivalent Continuous Noise Level (L_{eq}); also called the Energy-Equivalent Noise Level.** The value of an equivalent, steady sound level which, in a stated time period (often over an hour) and at a stated location, has the same A-weighted sound energy as the time-varying sound. Thus, the L_{eq} metric is a single numerical value that represents the equivalent amount of variable sound energy received by a receptor over the specified duration.

- **Statistical Sound Level (L_n).** The sound level that is exceeded "n" percent of time during a given sample period. For example, the L_{50} level is the statistical indicator of the time-varying noise signal that is exceeded 50 percent of the time (during each sampling period); that is, half of the sampling time, the changing noise levels are above this value and half of the time they are below it. This is called the "median sound level." The L_{10} level, likewise, is the value that is exceeded 10 percent of the time (i.e., near the maximum) and this is often known as the "intrusive sound level." The L_{90} is the sound level exceeded 90 percent of the time and is often considered the "effective background level" or "residual noise level."

- **Day-Night Level (L_{dn} or DNL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10 PM to 7 AM.

- **Community Noise Equivalent Level (CNEL).** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 5 dB added to the A-weighted sound levels occurring during the period from 7 PM to 10 PM and 10 dB added to the A-weighted sound levels occurring during the period

from 10 PM to 7 AM. For general community/environmental noise, CNEL and L_{dn} values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are interchangeable and are treated as being equivalent in this assessment.

- **Sensitive Receptor.** Noise- and vibration-sensitive receptors include land uses where quiet environments are necessary for enjoyment and public health and safety. Residences, schools, motels and hotels, libraries, religious institutions, hospitals, and nursing homes are examples.

5.9.1.2 CHARACTERISTICS OF SOUND

When an object vibrates, it radiates part of its energy as acoustical pressure in the form of a sound wave. Sound is a pressure wave transmitted through the air. Technically speaking, airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure. These fluctuations create sound waves that our ears are sensitive to. Sound is described in terms of loudness or amplitude (measured in dB), frequency or pitch (measured in Hertz [Hz] or cycles per second), and duration or time variations (measured in seconds or minutes).

Amplitude

The range of pressures that cause airborne vibrations (i.e. noise) is quite large and would be cumbersome to deal with on an absolute basis. Therefore, noise is measured on a logarithmic scale, expressed in decibels (dB), which is the accepted standard unit for measuring sound pressure amplitude using a more manageable range of numbers.[1] The standard unit of measurement of the loudness of sound is the decibel. All noise levels in this study—reported in terms of dB—are relative to the industry-standard reference sound pressure of 20 micropascals.

On a logarithmic scale, an increase of 10 dB is 10 times more intense than 1 dB, 20 dB is 100 times more intense, and 30 dB is 1,000 times more intense. A sound as soft as human breathing is about 10 times greater than 0 dB. The decibel system of measuring sound gives a rough connection between the physical intensity of sound and its perceived loudness to the human ear. Ambient sounds generally range from 30 dBA (very quiet) to 100 dBA (very loud). Changes of 1 to 3 dB are detectable under quiet, controlled conditions, and changes of less than 1 dBA are usually indiscernible. A 3 dB change in noise levels is considered the minimum change that is detectable with human hearing in outside environments. A change of 5 dB is readily discernible to most people in an exterior environment, and a 10 dBA change is perceived as a doubling (or halving) of the sound. These relationships are summarized in Table 5.9-1.

[1] The commonly held threshold of audibility is 20 micropascals, and the threshold of pain is on the order of 200 million micropascals; a pressure ratio of 10 million to one. By converting these pressures to a logarithmic scale (in terms of sound pressure levels expressed by decibels), the range becomes a more convenient 0 dB to 140 dB.

Table 5.9-1 Noise Perceptibility

Change in Apparent Loudness	
± 3 dB	Threshold of human perceptibility
± 5 dB	Clearly noticeable change in noise level
± 10 dB	Half or twice as loud
± 20 dB	Much quieter or louder

Source: Bies and Hansen, 2009.

Frequency

The human ear is not equally sensitive to all frequencies. Sound waves below 16 Hz are not heard at all and are "felt" more as a vibration. Similarly, though people with extremely sensitive hearing can hear sounds as high as 20,000 Hz, most people cannot hear above 15,000 Hz. In all cases, hearing acuity falls off rapidly above about 10,000 Hz and below about 200 Hz.

When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to account for or approximate the response of the human ear. The term "A-weighted" refers to a filtering of the noise signal in a manner corresponding to the way the human ear perceives sound. The A-weighted noise level has been found to correlate well with people's judgments of the "noisiness" of different sounds and has been used for many years as a measure of community and industrial noise. The A-weighted sound level is denoted as "dBA" or "dB(A)".

Since most people do not routinely work with decibels or A-weighted sound levels, it is often difficult to appreciate what a given sound pressure level number means. To help relate noise level values to common experience, Table 5.9-2 shows typical noise levels from noise sources.

Table 5.9-2 Typical Noise Levels

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Onset of physical discomfort	120+	
	110	Rock Band (near amplification system)
Jet Flyover at 1,000 feet		
	100	
Gas Lawn Mower at three feet		
	90	
Diesel Truck at 50 feet, at 50 mph		Food Blender at 3 feet
	80	Garbage Disposal at 3 feet
Noisy Urban Area, Daytime		
	70	Vacuum Cleaner at 10 feet
Commercial Area		Normal speech at 3 feet
Heavy Traffic at 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, Concert Hall (background)
	20	
		Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2009.

Although the A-weighted scale and the energy-equivalent metric are commonly used to quantify the range of human response to individual events or general community sound levels, the degree of annoyance or other response effects also depends on several other perceptibility factors, including:

- Ambient (background) sound level
- General nature of existing conditions (e.g. quiet rural vs. busy urban)
- Difference between the magnitude of the sound event level and the ambient condition
- Duration of the sound event
- Number of events and their repetitiveness
- Time of day that the event occurs

Temporal Effects

Time variation in noise exposure is typically expressed in terms of a steady-state energy level equal to the energy content of the time varying period (called L_{eq}), or alternately, as a statistical description of the sound level that is exceeded over some fraction of a given observation period. For example, the L_{50} noise level

represents the noise level that is exceeded 50 percent of the time; half the time the noise level exceeds this level and half the time the noise level is less than this level. This level is also representative of the level that is exceeded 30 minutes in an hour. Similarly, the L_2, L_8 and L_{25} values represent the noise levels that are exceeded 2, 8, and 25 percent of the time or 1, 5, and 15 minutes per hour, respectively. These "n" values are typically used to demonstrate compliance for stationary noise sources with many cities' noise ordinances. Other values typically noted during a noise survey are the L_{min} and L_{max}. These values represent the minimum and maximum root-mean-square noise levels obtained over the measurement period, respectively.

Because community receptors are more sensitive to unwanted noise intrusion during the evening and at night, state law and many local jurisdictions use an adjusted 24-hour noise descriptor called the Community Noise Equivalent Level (CNEL) or Day-Night Noise Level (L_{dn}). The CNEL descriptor requires that an artificial increment (or "penalty") of 5 dBA be added to the actual noise level for the hours from 7:00 PM to 10:00 PM and 10 dBA for the hours from 10:00 PM to 7:00 AM. The L_{dn} descriptor uses the same methodology except that there is no artificial increment added to the hours between 7:00 PM and 10:00 PM. Both descriptors give roughly the same 24-hour level, with the CNEL being only slightly more restrictive (i.e., higher).[2] The CNEL or L_{dn} metrics are commonly applied to the assessment of roadway and airport-related noise sources.

Propagation

Sound dissipates exponentially with distance from the noise source. This phenomenon is known as "spreading loss." For a single-point source, sound levels decrease by approximately 6 dB for each doubling of distance from the source (conservatively neglecting ground attenuation effects, air absorption factors, and barrier shielding). For example, a backhoe at 50 feet generates a maximum noise level of 84 dBA, at 100 feet the maximum noise level would be 79 dBA, and at 200 feet the noise level would be 73 dBA. This drop-off rate is appropriate for noise generated by onsite operations from stationary equipment or activity at a project site. If noise is produced by a line source, such as highway traffic, the sound decreases by 3 dB for each doubling of distance over a reflective ("hard site") surface, such as concrete or asphalt. Line source noise in a relatively flat environment with ground-level absorptive vegetation decreases by 4.5 dB for each doubling of distance.

5.9.1.3 PSYCHOLOGICAL AND PHYSIOLOGICAL EFFECTS OF NOISE

Physical damage to human hearing begins at prolonged exposure to noise levels higher than 85 dBA. Exposure to high noise levels affects the entire system, with prolonged noise exposure in excess of 75 dBA increasing body tensions and affecting blood pressure and functions of the heart and the nervous system. Extended periods of noise exposure above 90 dBA result in permanent cell damage, which is the main driver for employee hearing protection regulations in the workplace. When the noise level reaches 120 dBA, an unpleasant "tickling" sensation occurs in the human ear, even with short-term exposure. This level of noise is called the threshold of feeling. As the sound reaches 140 dBA, the tickling sensation is replaced by pain. This is called the threshold of pain. A sound level of 160 to 165 dBA will result in dizziness or loss of equilibrium. In comparison, for community environments, the ambient or background noise problem is widespread, through generally worse in urban areas than in outlying, less-developed areas. Elevated ambient noise levels

[2] L_{dn} and CNEL values rarely differ by more than 1 dB. As a matter of practice, L_{dn} and CNEL values are considered equivalent and are treated as such in this assessment.

can result in noise interference (e.g., speech interruption/masking, sleep disturbance, disturbance of concentration) and cause annoyance.

Loud noise can be annoying and it can have negative health effects (USEPA 1978). The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction
- Interference with activities such as speech, sleep, learning
- Physiological effects such as startling and hearing loss (temporary and permanent)

In most cases, environmental noise produces effects in the first two categories only. However, unprotected workers in some industrial work settings may experience noise effects in the last category.

5.9.1.4 VIBRATION FUNDAMENTALS

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Vibration is normally associated with activities stemming from operations of railroads or vibration-intensive stationary sources, but can also be associated with construction equipment such as jackhammers, pile drivers, and hydraulic hammers.

Like noise, vibration is transmitted in waves, but in this case through the earth or solid objects. Unlike noise, vibration is typically of a frequency that is felt, rather than heard. Vibration can be either natural as in the form of earthquakes, volcanic eruptions, sea waves, landslides, or man-made as from explosions, the action of heavy machinery or heavy vehicles such as trains. Both natural and man-made vibration may be continuous such as from operating machinery, or transient as from an explosion. As with noise, vibration can be described by both its amplitude and frequency. Amplitude may be characterized in three ways: displacement, velocity, and acceleration.

Vibration displacement is the distance that a point on a surface moves away from its original static position. The instantaneous speed that a point on a surface moves is the velocity, and the rate of change of the speed is the acceleration. Each of these descriptors can be used to correlate vibration to human response, building damage, and acceptable equipment vibration levels. During construction, the operation of construction equipment can cause groundborne vibration. During the operational phase of a project, receptors may be subject to levels of vibration that can cause annoyance due to noise generated from vibration of a structure or items within a structure.

Vibration amplitudes are usually described in terms of either the peak particle velocity (PPV) or the root mean square (RMS) velocity. PPV is the maximum instantaneous peak of the vibration signal, and RMS is the square root of the average of the squared amplitude of the signal. PPV is more appropriate for evaluating potential building damage, and RMS is typically more suitable for evaluating human response.

The units for PPV and RMS velocity are normally inches per second (in/sec). Often, vibration is presented and discussed in dB units in order to compress the range of numbers required to describe the vibration. In this study, all PPV and RMS velocity levels are in in/sec, and all vibration levels are in dB relative to 1 micro-inch per second (abbreviated as VdB). Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source. Man-made vibration problems are, therefore, usually confined to relatively short distances from the source (500 to 600 feet or less).

Vibrations also vary in frequency and this affects perception. Typical construction vibrations fall in the 10 to 30 Hz range and are usually around 15 Hz. Traffic vibrations exhibit a similar range of frequencies; however, due to their suspension systems, buses often generate frequencies around 30 Hz at high vehicle speeds. It is less common, but possible, to measure traffic frequencies above 30 Hz.

The way in which vibration is transmitted through the earth is called propagation. Propagation of groundborne vibrations is complicated and difficult to predict because of the endless variations in the soil and rock through which waves travel. There are three main types of vibration propagation: surface, compression and shear waves. Surface waves, or Raleigh waves, travel along the ground's surface. These waves carry most of their energy along an expanding circular wave front, similar to ripples produced by throwing a rock into a pool of water. Compression waves, or P-waves, are body waves that carry their energy along an expanding spherical wave front. The particle motion in these waves is longitudinal (i.e. in a "push-pull" fashion). P-waves are analogous to airborne sound waves. Shear waves, or S-waves, are also body waves that carry energy along an expanding spherical wave front. However, unlike P-waves, the particle motion is transverse or side-to-side and perpendicular to the direction of propagation. As vibration waves propagate from a source, the energy is spread over an ever-increasing area such that the energy level striking a given point is reduced with the distance from the energy source. This geometric spreading loss is inversely proportional to the square of the distance. Wave energy is also reduced with distance as a result of material damping in the form of internal friction, soil layering, and void spaces. The amount of attenuation provided by material damping varies with soil type and condition as well as the frequency of the wave.

As with airborne sound, annoyance to vibrational energy is a subjective measure, depending on the level of activity or the sensitivity of the individual. To sensitive individuals, vibrations approaching the threshold of perception can be annoying. Persons exposed to elevated ambient vibration levels such as people in an urban environment may tolerate a higher vibration level. Table 5.9-3 displays human annoyance and the effects on buildings resulting from continuous vibration (in terms of various levels of PPV).

Table 5.9-3 Human Reaction to Typical Vibration Levels

Vibration Level, PPV (in/sec)	Human Reaction	Effect on Buildings
0.006–0.019	Threshold of perception, possibility of intrusion	Vibrations unlikely to cause damage of any type
0.08	Vibrations readily perceptible	Recommended upper level of vibration to which ruins and ancient monuments should be subjected
0.10	Level at which continuous vibration begins to annoy people	Virtually no risk of "architectural" (i.e. not structural) damage to normal buildings
0.20	Vibrations annoying to people in buildings	Threshold at which there is a risk to "architectural" damage to normal dwelling – houses with plastered walls and ceilings
0.4–0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges	Vibrations at a greater level than normally expected from traffic, but would cause "architectural" damage and possibly minor structural damage

Source: Caltrans 2004.

Human response to ground vibration is typically discussed in terms of the vibration decibel or VdB.[3] The U.S. Federal Transit Administration (FTA) has developed rational vibration limits that can be used to evaluate human annoyance to groundborne vibration. These criteria are primarily based on experience with rapid transit and commuter rail systems (FTA 2006). Railroad and transit operations are potential sources of substantial ground vibration depending on distance, the type and the speed of trains, and the type of track. Trains generate substantial vibration due to their engines, steel wheels, heavy loads, and wheel-rail interactions.

Similarly, construction operations generally include a wide range of activities that can generate groundborne vibration. In general, blasting and demolition of structures, pile driving, and vibratory compaction equipment generate the highest vibrations. Because of the impulsive nature of such activities, PPV is used to measure and assess groundborne vibration and assess the potential of vibration to induce structural damage and the degree of annoyance for humans. Vibratory compactors or rollers, pile drivers, and pavement breakers can generate perceptible amounts of vibration at up to 200 feet. Heavy trucks can also generate groundborne vibrations that vary depending on vehicle type, weight, and pavement conditions. Potholes, pavement joints, discontinuities, and differential settlement of pavement all increase the vibration levels from vehicles passing over a road surface. Construction vibration is normally of greater concern than vibration from normal traffic flows on streets and freeways with smooth pavement conditions (Caltrans 2004).

[3] The reference velocity is 1 x 10^{-6} inch/second RMS, which equals 0 VdB, and 1 inch/second equals 120 VdB. The abbreviation "VdB" is used in this document for vibration decibels to reduce the potential for confusion with sound decibels.