NOISE TECHNICAL REPORT

Pellissippi Parkway Extension (State Route 162)

From State Route 33 to U.S. 321/State Route 73

Blount County, Tennessee

State Project No. 05097-1226-04

PIN 101423.00

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List of Acronyms

CFR	Code of Federal Regulations
dB	Decibel
dBA	A-Weighted Decibel
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
Hz	Hertz
Leq	Equivalent Continuous Noise Level
LRTP	Long Range Transportation Plan
NAC	Noise Abatement Criteria
NIST	National Institute of Standards and Technology
NOI	Notice of Intent
ROD	Record of Decision
SEIS	Supplemental Environmental Impact Statement
SHA	State Highway Associations
SLM	Sound Level Meter
TPO	Knoxville Region Transportation Planning Organization
TDOT	Tennessee Department of Transportation
TNM	Traffic Noise Model
USDOT	United States Department of Transportation

1.0 INTRODUCTION

Pellissippi Parkway (State Route (SR) 162) is a major northwest/southeast route connecting Interstate 40 (I-40)/I-75 and SR 33 in Knox and Blount Counties, Tennessee. Pellissippi Parkway (designated as I-140) between I-40/I-75 and SR 33 was designed and built in four sections between 1987 and 2005. The section of Pellissippi Parkway between SR 33 and US 321/SR 73 (Lamar Alexander Parkway) is the remaining undeveloped portion of the parkway that was identified in the State's 1986 Urgent Highway Needs Plan. The Tennessee Department of Transportation (TDOT) proposes to extend the existing Pellissippi Parkway from SR 33 to US 321/SR 73 (Lamar Alexander Parkway) in the cities of Alcoa and Maryville and in unincorporated Blount County. The approximate length of the proposed extension ranges from 4.38 to 5.77 miles depending on the alternative route.

The project is proposed by TDOT for the purpose of:

- Provide travel options for motorists to the existing radial roadway network;
- Enhance regional transportation system linkages;
- Assist in achieving acceptable traffic flows (level of service) on the transportation network; and
- Enhance roadway safety on the roadway network, including the Maryville core.

In April 2006, TDOT initiated an Environmental Impact Statement (EIS) for the project with the publication of a formal Notice of Intent (NOI) to prepare an EIS in the Federal Register. Public and agency scoping meetings were conducted in both the spring and summer of 2006. At that time, TDOT asked the public to provide input on the purpose and need for the project and to identify potential alternatives for consideration in the Draft EIS. Additional public meetings were held in November 2007 and February 2008 to gather additional public input on the refined purpose and need and potential alternative project corridors.

1.1 DESCRIPTION OF STUDY AREA

The corridor study area is located between SR 33 and US 321/SR 73 (Lamar Alexander Parkway) in Blount County. The proposed project under Alternative A and C will begin at the intersection of the existing Pellissippi Parkway and SR 33 and end at US 321/SR 73 (Lamar Alexander Parkway). The proposed project under Alternative D will begin at the intersection of SR 33 and Sam Houston School Road and end at US 321/SR 73 (Lamar Alexander Parkway). The project corridor study area is shown in Figure 1. The entire project study area is located in Blount County. The present surrounding land use consists of mainly undeveloped farmland and scattered residential sites. However, there are several commercial operations located along US321/SR 73 (Lamar Alexander Parkway), a golf driving range located on John Helton Road and a water treatment plant located on Sam Houston School Road. Additional land uses located along the proposed corridors consist of one town-home complex, three churches, one church ball park, one elementary school, one historic schoolhouse museum and two cemeteries.

1.2 PROJECT ALTERNATIVES

An initial range of alternatives and corridors were developed as a result of public input and input from local and regional agencies, including the Knoxville Regional Transportation Planning Organization (TPO). The alternatives and corridors were refined based on windshield reviews and reviews of existing data sources including Geographic Information Systems (GIS) information from local, state and federal agencies.

Based on the results of the screening analysis and application of evaluation criteria, public input during public meetings in 2007 and 2008, and participating agency comments and concurrence, TDOT has determined the following alternatives that will be carried forward, refined and evaluated in the DEIS.

- **Extend Pellissippi Parkway as a new location alignment**: Under the Build Alternative, existing Pellissippi Parkway would be extended from SR 33 to US 321/SR 73 (Lamar Alexander Parkway), as a four-lane divided roadway, with a proposed interchange at SR 33, US 411 and US 321. Each Alternative "Alignment under consideration for the DEIS, Alternative A and Alternative C, are described below:
  - **Alternative A:** This Alternative Alignment generally follows the corridor identified and investigated in the 2002 Environmental Assessment (EA) and selected as the preferred alternative. This alternative starts on the east side of SR 33, opposite the existing half interchange of Pellissippi Parkway and SR 33. From this terminus, the route follows a generally easterly and southeasterly path to Wildwood Road, passing through former farmlands that are now the site of the proposed Pellissippi Center Research and Development Park. Alternative A also runs west of Mount Lebanon Road in this area. After crossing Wildwood Road, the alignment continues in a generally southerly direction, crossing Brown School Road, US 411 east of the Davis Ford Road intersection with US 411, and Davis Ford Road, and then passing along the northeastern edge of the Kensington Place mobile home park. The alignment intersects with US 321 just east of Flag Branch. The total length of Alternative A is approximately 4.38 miles.
  - **Alternative C**: This alternative shares the route of Alternative A from SR 33 to the vicinity of Brown School Road, at which point Alternative C diverges to the east. Alternative C then runs in a southeasterly direction, crossing US 411 about 0.6 miles east of Alternative A. It continues southeasterly to cross Davis Ford Road and proceeds southerly, crossing Centennial Church Road about 500 feet west of Helton Road, crossing John Helton Road and terminating with US 321 at Hubbard School Road. The total length of this alternative is approximately 4.68 miles.
- **Upgrade Existing Two-Lane Network – Alternative D**: The concept of upgrading a two-lane network of existing roads to serve as a two-lane connection between SR 33 and US 321 emerged during a study based on discussions with the public about travel needs and environmental concerns. This upgraded network was seen as a way to improve some of the currently deficient two-lane roads in the study area and provide a more direct connection between SR 33 and US 321/SR 73 (Lamar Alexander Parkway) east of Maryville without constructing a completely new facility. Therefore the route utilizing portions of existing Sam Houston Road, Peppermint Road, Hitch Road and Helton Road was identified. Under this alternative, referred to

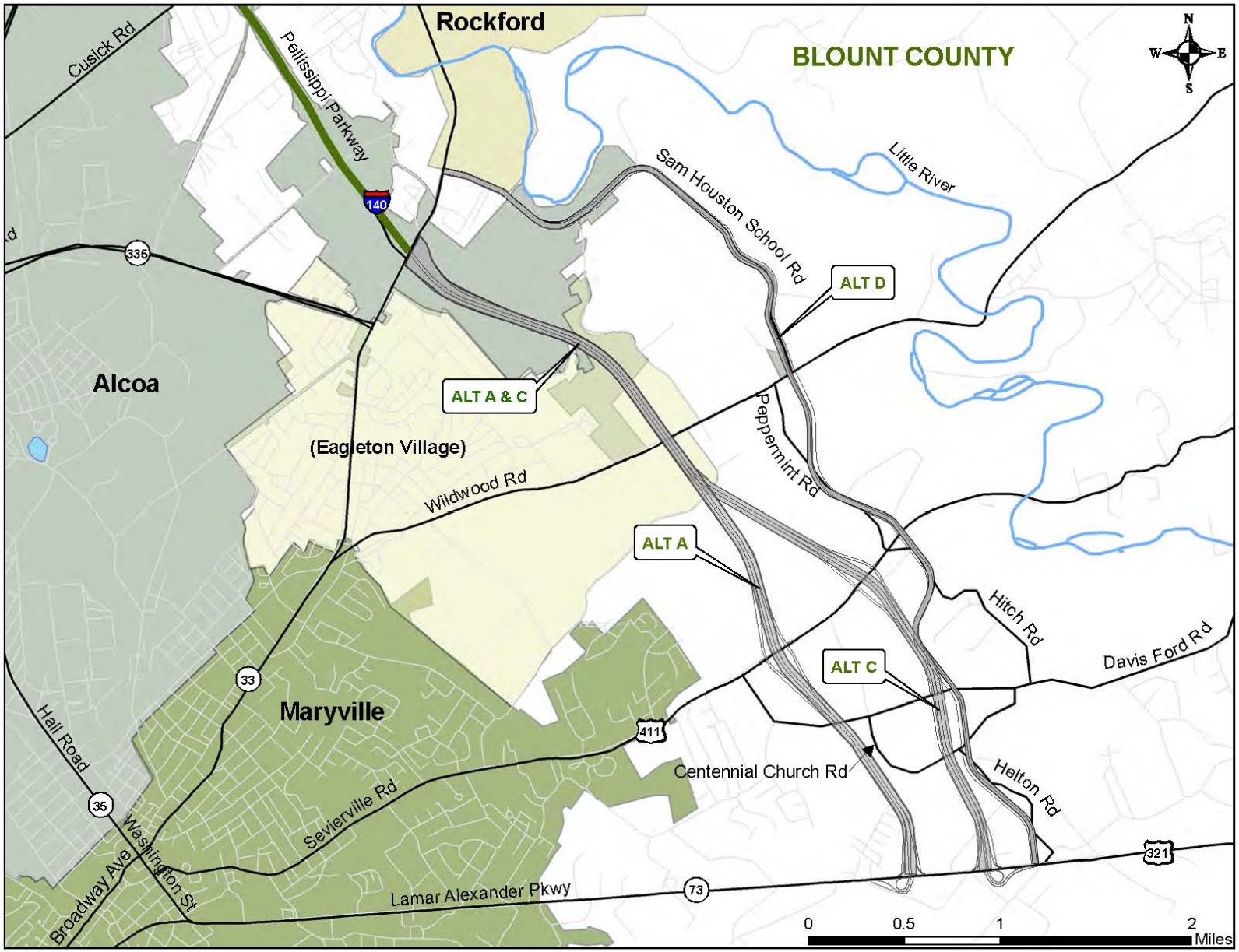
as Alternative D, an improved two-lane roadway with shoulder upgrades would be constructed utilizing both the existing roadway alignment where possible and using new location portions. In addition, several curves will be straightened and several intersections will be realigned to allow for a continuous route with a 50 mile per hour design speed. The total length of this corridor is approximately 5.77 miles.

1.3 NO-BUILD ALTERNATIVE

The No-Build Alternative would not extend Pellissippi Parkway beyond it existing terminus at SR 33; however, the No-Build Alternative would include projects in the study area that are identified in the Knoxville Region Long Range Transportation Plan (LRTP) 2005 to 2030, including those projects listed below:

- Improving SR 33, including widening to four lanes and making intersection improvements at East Brown School Road;
- Improving sections of US 411, including adding a center turn lane and reconstructing substandard two-lane sections;
- Constructing new six-lane Relocated Alcoa Highway;
- Improving Alcoa Highway (SR 115) by adding turn lanes and traffic signals and widening four-lane sections to six-lanes.

Figure 1: Project Location



2.0 FUNDAMENTAL CONCEPTS OF ROADWAY NOISE

Sounds exist in the human and natural environment at all times. Some sounds are necessary or desirable for communication or pleasure, some are unnoticed, and some are unwanted or disturbing. By definition, unwanted sounds are called noise. The following sections provide a background for some of the concepts and terminology of sound and noise.

2.1 Generation of Sound

Sound is a disturbance that propagates as a wave through air, causing air particles to vibrate. Although the generating motion and the resultant motion of the air particles are very small, a sound wave can propagate over several miles. When these vibrations (or sound waves) reach our ears, we hear what we call sound. Noise is considered an unwanted sound. Noise levels are measured in units called decibels (dB). Objects that move back and forth very rapidly produce sound waves, similar to the action of vocal chords when a person speaks. Their frequency is the rate at which these objects move back and forth. The frequency of the moving objects determines the frequency or pitch of the sound. Human ears can only hear sound waves with a frequency or pitch between approximately 20 cycles per second (Hertz) and 15,000 cycles per second. Because of these hearing limitations, measured sound levels are often adjusted or weighted to correspond to human response to the range of frequencies of sound and the human perception of loudness.

Three basic parameters of environmental noise play major roles in determining human subjective response. These parameters are:

- Intensity or level.
- Frequency spectrum.
- Time-varying character.

2.2 Intensity

The first parameter of environmental noise, intensity or level, is quantified in dB. The range of pressure variations that the human ear can detect is tremendous; however, to describe sound in terms of pressure variations would be very cumbersome because of the great range of amplitudes that is involved. Therefore, a compressed scale was devised based upon the logarithm of the mean square pressure. The dB is the unit of this compressed scale. By using these units, the range of normally encountered sounds can be expressed as 20 to 140 dB rather than as 1 to 1,000,000.

2.3 Frequency

The second parameter of environmental noise that can be quantified is frequency. The rate at which the vibrating objects move back and forth in one second is called the frequency and is expressed as cycles per second or Hertz (Hz). The frequency determines the pitch of the sound that is subjectively heard. Human ears can hear sound waves with a frequency or pitch between approximately 20 Hz for low frequencies and an upper limit between 15,000 and 20,000 Hz.

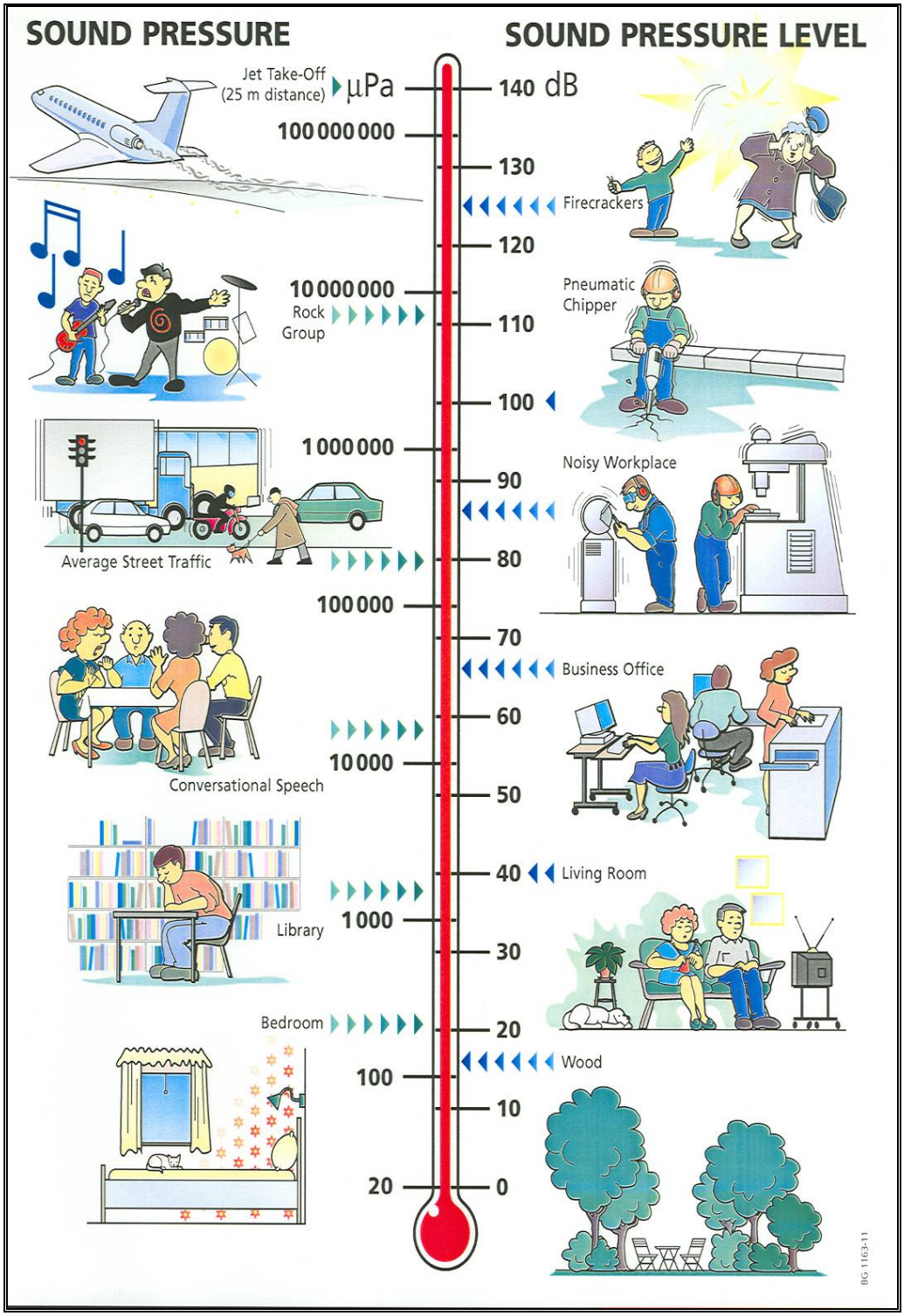
2.4 A-Weighted Sound Level

From many experiments with human listeners, scientists have found that the human ear is more sensitive to midrange frequencies than it is to either low or very high frequencies. At the same sound level, midrange frequencies are therefore heard as louder than low or very high frequencies. This characteristic of the human ear is taken into account by adjusting or weighting the measured sound spectrum to correspond to the human hearing spectrum. Because the human ear does not hear sound waves of different frequencies with equal subjective loudness, an adjustment or weighting of the high-pitched and low-pitched sounds is often made to approximate the average human perception of sounds at different frequencies. Because of these hearing limitations, measured or predicted sound levels are often adjusted or weighted to correspond to human response to the range of frequencies of sound and the human perception of loudness. The resultant noise level, as measured by a Sound Level Meter (SLM), is called the "A-weighted noise level" expressed in units of dBA. The "A-weighted noise level" is accepted by acousticians as the appropriate noise descriptor for establishing the human perception and response to traffic noise annoyance.

It has been found by testing the hearing of a large number of people that a 10 dBA change in the sound level is equivalent to a doubling or halving of the noise as heard by the human ear. This means that a sound level of 60 dBA sounds twice as loud as a sound level of 50 dBA and a sound level of 40 dBA sounds half as loud as a sound level of 50 dBA. It also means that a sound level of 70 dBA sounds four times as loud as a sound level of 50 dBA. The general principle on which most noise impact criteria is based on, is an increase in project generated noise above a certain threshold limit, defined by land use type or activity, which will result in impacts to individuals exposed to noise levels above these limits. For reference and orientation to the decibel scale, representative environmental noise sources and their respective dBA levels are shown in Figure 2.

When sound is expressed as decibels (in dB or dBA), the decibel scale is based on the ratio of the squared sound pressure of the sound source under study to the squared sound pressure of a reference sound, which is the threshold of hearing. Thus, the decibel scale for measuring the intensity of sound is equal to 10 times the logarithmic ratio of the measured sound pressure level squared relative to a standardized reference sound pressure level squared. The logarithmic scale is based on base 10; therefore, the scale is not linear. Because of the logarithmic nature of the decibel scale, the sound levels and sound power from different noise sources do not add in a linear fashion. For example, if a sound of 60 dBA is added to another sound of 60 dBA, the resulting sound is 63 dBA, not 120 dBA. This holds true of adding other differing sound levels. For example, 65 dBA plus 65 dBA equals 68 dBA. If two sounds differ by 10 dB or more in level, the louder of the two sounds dominates the overall sound level and the quieter sound is ignored.

Figure 2: Sound Pressure and Sound Pressure Levels



Source: Brüel and Kjær. Environmental Noise, Sound and Vibration Measurements, 2000

2.5 Sound Level Descriptors

The third basic parameter of environmental noise is its time-varying character. Noise is defined as "unwanted sound" or sound that is not desired by the recipient. Because highway traffic sound is not normally desired, highway traffic sound is usually called highway traffic noise. The level of highway traffic noise at a given receptor fluctuates from moment to moment; thus, it is useful to average such time-varying noise levels during a specified period into a single number called the equivalent continuous noise level (Leq). The Leq sound level is the level of a constant sound in dBA that within a given situation and time period has the same sound energy as does the time-varying sound. The hourly traffic noise level is expressed as Leq (1 hour) in units of dBA. The Leq descriptor correlates well with human response and annoyance caused by changes in noise levels; it is the primary noise descriptor used for impact assessment in this study. The hourly noise level that is used to compare to the Federal Highway Administration's (FHWA) Noise Abatement Criteria (NAC) is the peak-noise-hour Leq in dBA produced by traffic flowing on the selected highway.

3.0 NOISE STANDARDS AND CRITERIA

In order to determine whether highway noise levels are compatible with various land uses, the FHWA developed NAC and procedures to be used in the planning and design of highways. Title 23 of the Code of Federal Regulations Part 772 (23 CFR 772) defines traffic noise impacts as impacts that occur when the future predicted traffic noise levels approach or exceed the NAC or when the future predicted traffic noise levels substantially exceed the existing noise levels. A summary of the NAC for various land uses is presented in Table 1.

Table 1: Federal Highway Administration Noise Abatement Criteria

Activity Category	Leq for Noisiest Traffic Hour	Description of Activity Category
A	57 (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purposes.
B	67 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	52 (Interior)	Residences, motels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: Federal Highway Administration 23 CFR 772. *"Procedures for Abatement of Highway Traffic Noise and Construction Noise",* Federal Highway Administration, USDOT, April 1992.

TDOT "approach" noise abatement criteria are 1 dBA less than the Leq (1-hr) levels shown above.

A memorandum dated December 1, 1993, from the Director, Office of Environment and Planning, FHWA says that, "effective from the date of this memorandum, all State Highway Associations (SHA's) must establish a definition of "approach" that is at least 1 dBA less than the NAC (Noise Abatement Criteria) for use in identifying traffic noise impacts in traffic noise analysis." The TDOT Policy on Highway Traffic Noise Abatement (Policy number 520-01 dated September 2005) has defined "approach" to be one dBA less than the NAC. Therefore, an "approach" level of 66 dBA Leq (1 hour) is the noise acceptability criterion NAC for FHWA Category "B" locations, and an "approach" level of 71 dBA Leq (1 hour) is the NAC for FHWA Category "C" locations. In some locations the project may result in a large increase in the future noise levels over the existing levels, even though the future noise levels may not reach the NAC.

The basic goals of noise criteria, as they apply to highway projects, are to minimize impacts on the community and where necessary and appropriate, provide feasible and reasonable measures to abate predicted noise impacts. FHWA regulation 23 CFR 772 contains the NAC which represent the upper limit of highway traffic Leq (1-hour) noise deemed acceptable as defined by various exterior land use activity categories and for certain indoor activities. The NAC are noise impact thresholds for considering abatement measures. The NAC are not attenuation design criteria or targets. The basic goals of the NAC, as they apply to highway projects, are to identify locations in communities exposed to traffic noise above these thresholds due to the operation of the project and where necessary and appropriate evaluate the feasibility and reasonableness of noise abatement measures used to mitigate these impacts.

In addition to the approach level impact thresholds, traffic noise impacts can also occur if a substantial increase in build noise levels is predicted. According to the current TDOT policy, a substantial increase is defined as an increase of the future traffic noise level over the existing traffic noise level by 10 dBA or more Leq (1 hour) when the predicted noise levels are between 57 and 67 dBA Leq. For example, if the existing peak hour noise level was determined to be 44 dBA and the build noise level was predicted to reach 59 dBA, this would constitute a substantial increase and therefore a noise impact. The criteria for a noise level increase are provided in Table 2.

Table 2: Noise Level Increase

Increase in Existing Noise Level (dB)	Subjective Descriptor
0 – 5	Minor Increase
6 – 9	Moderate Increase
10 or more	Substantial Increase

Source: TDOT Guidelines on Highway Traffic Noise Abatement dated 9/15/05

4.0 FHWA TRAFFIC NOISE MODEL

The FHWA Traffic Noise Model (TNM®) Version 2.5 (FHWA Report-PD-96-009, 2004) was used to predict existing and future 2035 peak hour traffic noise levels within the project study area. The TNM model predicts traffic noise levels at individual properties (receptor locations) by determining the noise level contribution of each roadway segment located at varying distances from these receptor points while applying adjustments for the attenuating effects of the intervening topography, vegetation, tree zones, atmospheric absorption and noise reducing

shielding effects of building rows, ground terrain mounds (berms), sound walls and jersey barriers on predicted noise levels. Prior to applying the adjustment factors, the TNM model determines the traffic noise level at a given receptor location by calculating and summing up the individual noise level contribution generated from each roadway segment. For each roadway segment, the resultant noise level is a function of the number of automobiles, medium trucks, buses and heavy trucks and their associated travel speeds. Typically near most major highways, heavy trucks are the dominate noise source with the greatest noise level occurring at receptor locations exposed to roadways with a high percentage of heavy trucks traveling at high travel speeds. Non-vehicular traffic noise sources, such as aircrafts, trains and construction activities are not included in TNM. Base maps and design files were exported from Micro-station as DXF design files and then imported into the TNM model. All TNM modeling files were created using the actual ground elevations of all existing and proposed roadways, ramp modifications and receptor locations. Upon input of these various input parameters, TNM 2.5 program is executed and the model runs are completed. The TNM output data is exported into tabular format. Future predicted traffic noise levels are compared to existing modeled noise levels and to the FHWA NAC to determine where potential noise impacts associated with the proposed project are likely to occur.

5.0 NOISE ANALYSIS METHODOLOGY

Paragraph b, Section 772.17 of 23 CFR 772 states that, “when predicting noise levels and assessing noise impacts, traffic characteristics which will yield the worst hourly traffic noise impact on a regular basis for the design year shall be used.” Because the level of highway traffic noise generated for a particular hour is normally related directly to the combined effect of traffic volume, the traffic characteristic that yields the “worst case” hourly traffic noise impact on a regular basis for the design year is typically the average hourly volume for the peak traffic hour of each day of the design year.

Existing, future build and future no-build peak hour traffic data along each Alternative Alignment of the proposed project was obtained from data provided by Sain Associates, July 2007. Traffic volumes utilized for the model were based on three vehicle classifications: cars (all vehicles with two axles and four tires) medium trucks (all cargo vehicles with two axles and six tires), and heavy trucks (all cargo vehicles with three or more axles). The traffic volumes and travel speeds used in TNM were based on this “worst case” traffic data that will likely generate the highest traffic noise levels. Existing and future projected traffic data (volumes and speeds) used in the TNM noise modeling effort are contained in Appendix B, C and D with additional traffic summary tables provided in Appendix G. The assessment of traffic noise impacts requires the following comparisons:

- The noise levels under existing conditions must be compared to those determined under future build conditions. This comparison shows the noise level change that will likely occur between existing conditions and the future build conditions.
- The noise levels under the Build Conditions must be compared to the applicable NAC. This comparison determines if noise impacts are projected to occur under the proposed Build Alternative.

Predicted existing (2008), future 2035 no-build and 2035 build noise levels were predicted based on peak hour traffic data provided for each roadway. This would represent the worst-case (loudest) hourly noise level period. Build year 2035 predicted traffic noise levels were

compared to the existing modeled noise levels and to the FHWA NAC to determine potential noise impacts associated with the proposed project.

This noise impact assessment evaluated 311 noise sensitive locations, including the 25 noise monitoring locations. The locations are comprised mainly of FHWA Category "B" land use activities consisting of mainly undeveloped land and residential dwellings along with the Category "C" land uses consisting of several commercial development locations and a water treatment plant. All locations were included in the model runs to provide noise level information along each project corridor. The location of each of the proposed modeling sites are shown in Figures 3 through 15. In general, the modeled receptor locations are representative of the land use activities within the limits of the proposed project study area. The figures 3 through 15 depict impacts associated with each proposed alignment. The final results table located in Appendix A reflects all impacts associated with each modeled alignment; however, some impacts may result from future build cross street traffic volumes, not just by the new alignment alone.

This report documents the findings of the traffic noise analysis completed for the proposed project consisting of the following elements:

- Present a summary of measured existing noise levels at representative noise-sensitive properties identified within the study area limits that will be used to establish project noise impacts;

- Describe the traffic noise model used to predict future noise levels and present a summary of future noise levels at the representative noise measurement locations and other noise sensitive properties identified within the study area boundaries;

- Conduct a series of noise measurements to help establish the ambient noise levels along the proposed project alternatives. In addition, determine existing noise levels at each receptor site.

- Determine future noise levels at each receptor site with and without the proposed build roadway improvement(s) by identifying locations where the future noise impacts are likely to occur;

- Determine if noise impacts will occur by comparing predicted future 2035 Build noise levels with the NAC impact thresholds and identifying locations where build noise levels increase by 10 decibels or more over comparable existing noise levels;

- Determine the feasibility and reasonableness of noise abatement measures that would eliminate or reduce expected noise impact; and

- Summarize the findings in a noise study report.

For the purpose of evaluating noise impacts, this analysis compares the impacts of the Pellissippi Parkway extension with each of the three proposed options against a no-build scenario. The No-Build scenario would make no additional changes, other than routine maintenance, to the existing roadway facilities consisting of Peppermint Hills Road and Sam Houston School Road. The build Alternative is the proposed extension with three separate options as described above in Section 1.2, Project Description, of this report.

Figure 3: Location of Noise Receptors
Alternate A, northern section at SR 33

Figure 4: Location of Noise Receptors
Alternate A, middle section crossing Wildwood Rd.

Figure 5: Location of Noise Receptors
Alternate A, middle section crossing US 411

Figure 6: Location of Noise Receptors
Alternate A, southern section at US 321

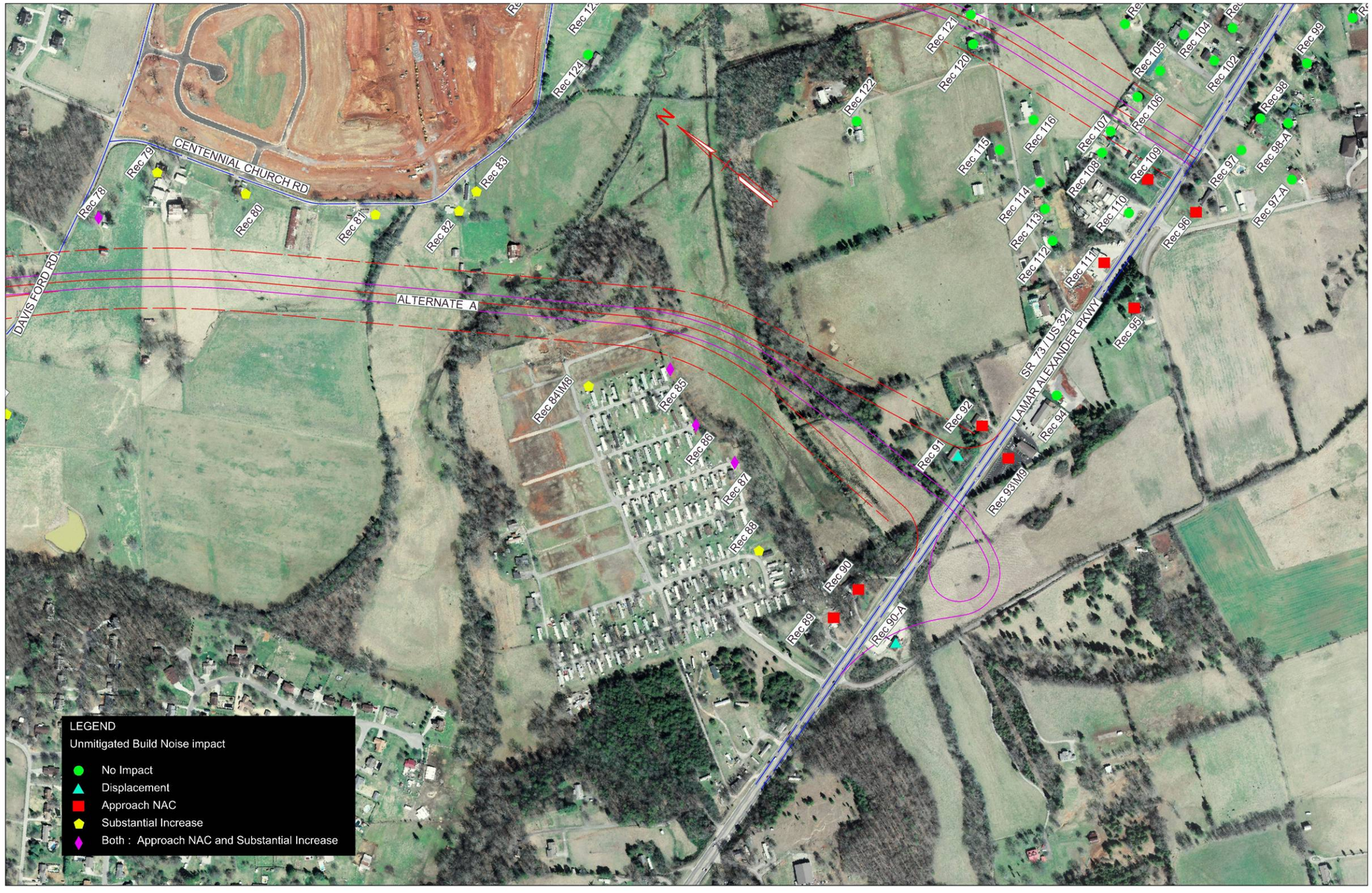


Figure 7: Location of Noise Receptors
Alternate C, northern section at SR 33

Figure 8: Location of Noise Receptors
Alternate C, middle section crossing Wildwood Rd.

Figure 9: Location of Noise Receptors
Alternate C, middle section crossing US 411

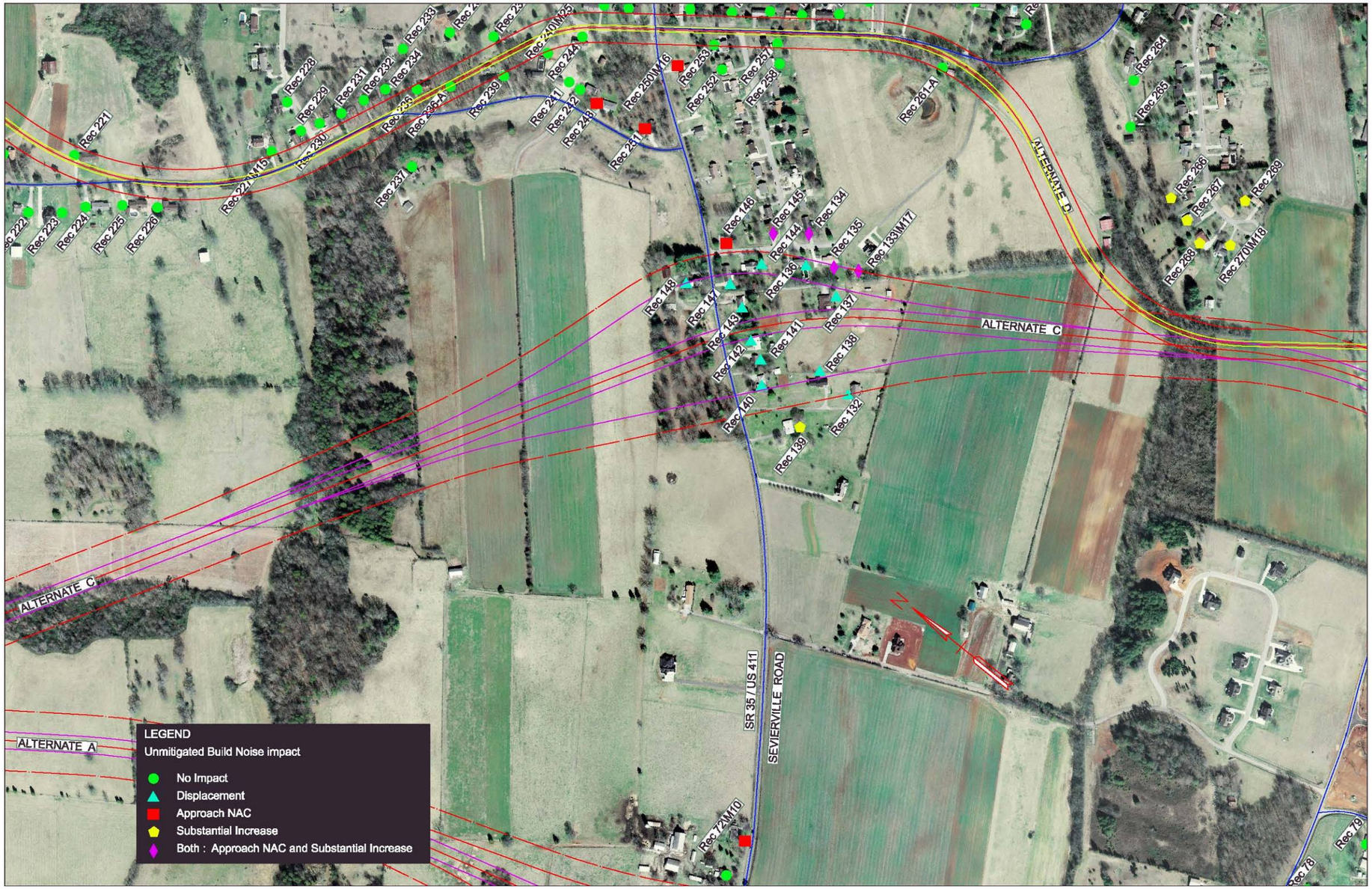


Figure 10: Location of Noise Receptors

Alternate C, southern section at US 321

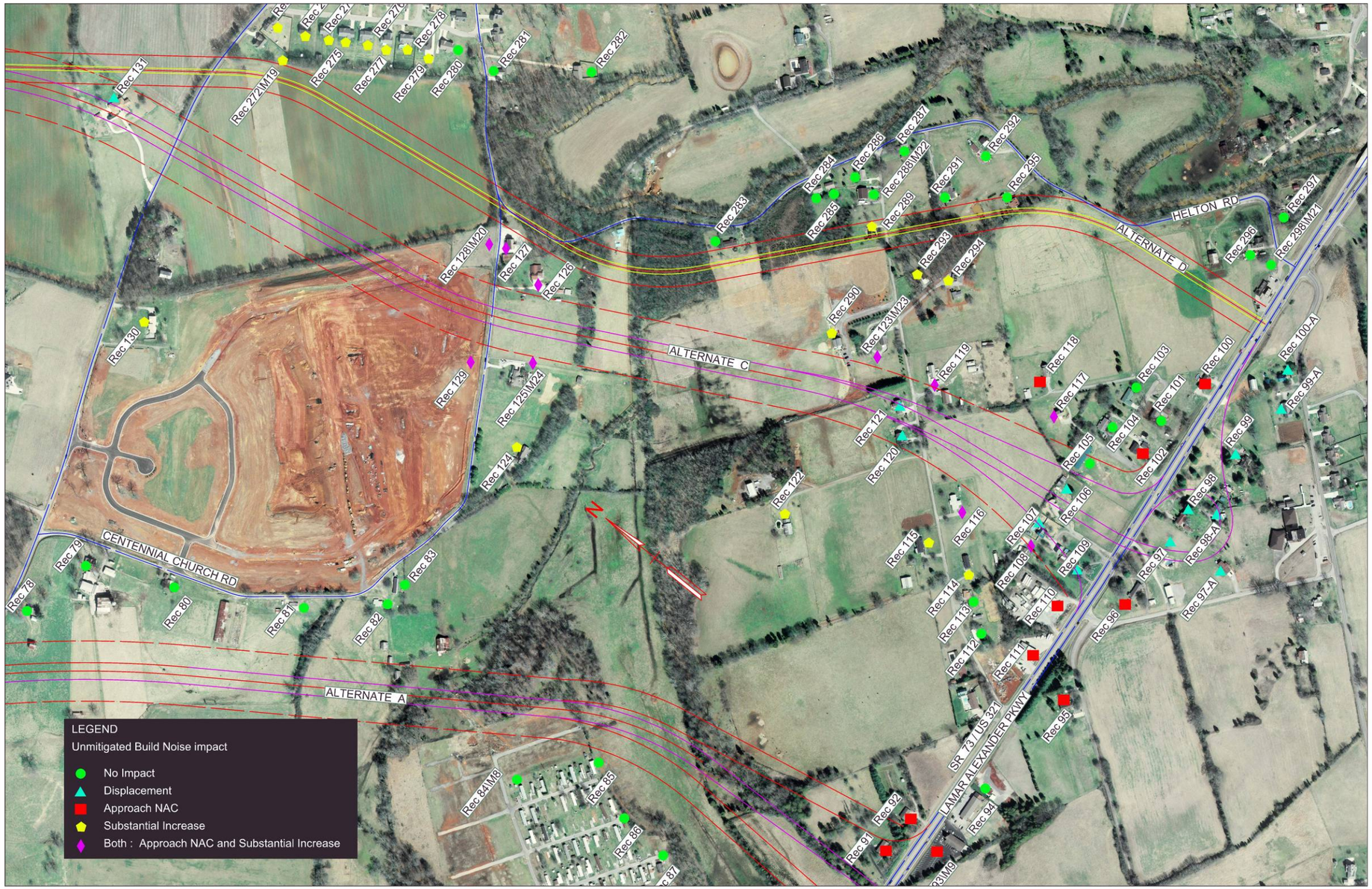


Figure 11: Location of Noise Receptors
Alternate D, northern section at SR 33

Figure 12: Location of Noise Receptors
Alternate D, middle section along Sam Houston School Rd.

Figure 13: Location of Noise Receptors

Alternate D, middle section along Peppermint Rd.

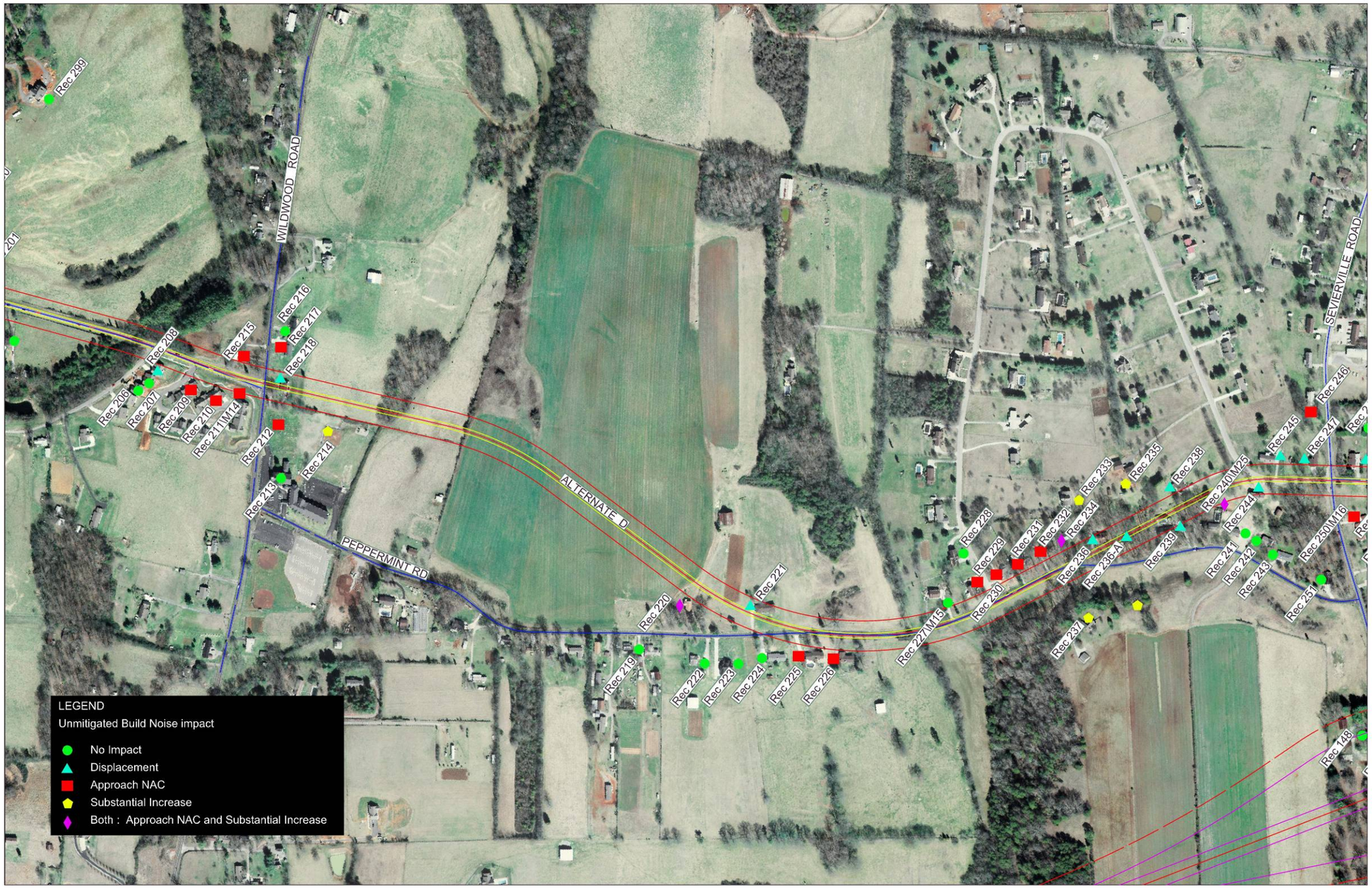
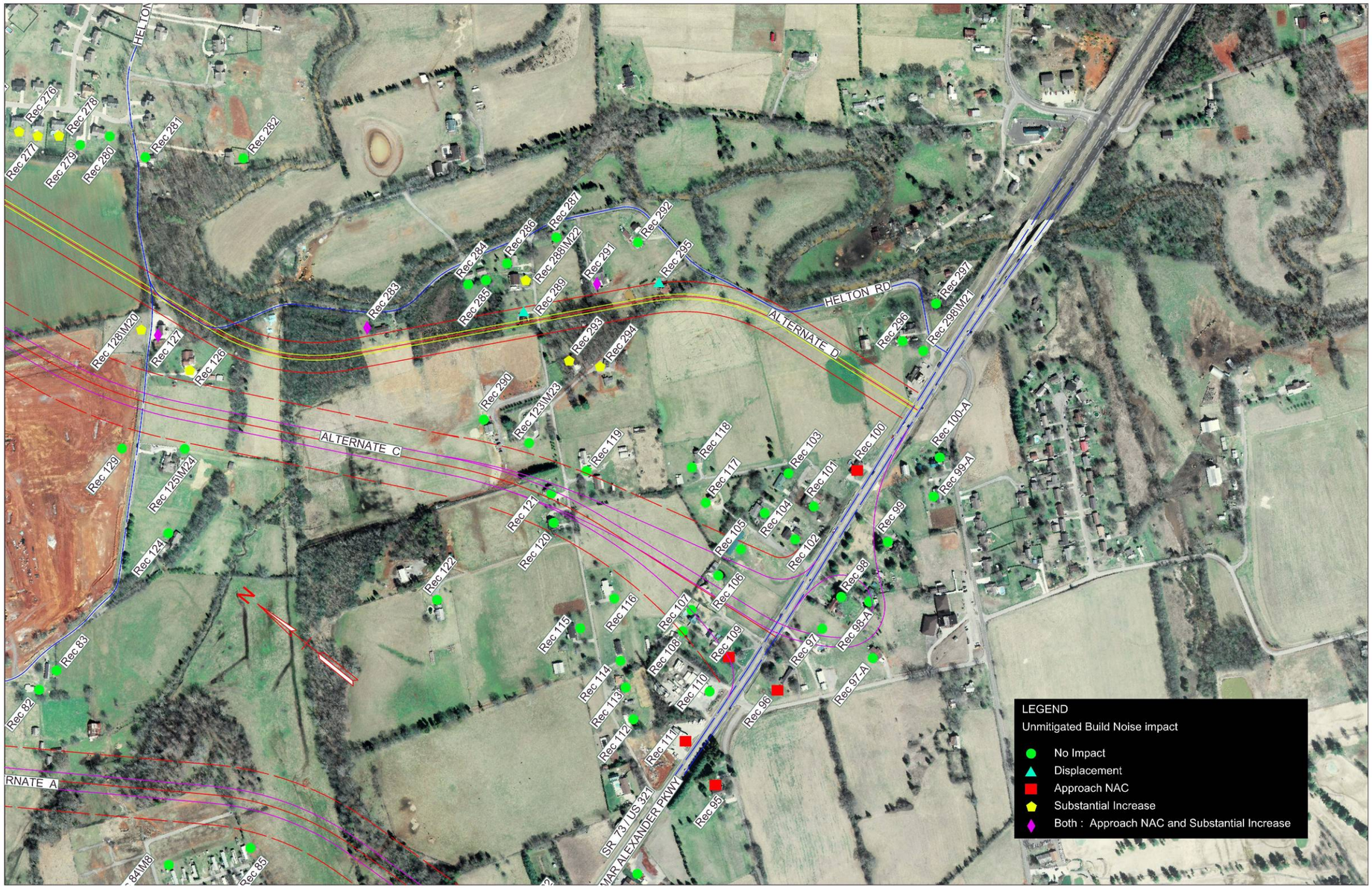


Figure 14: Location of Noise Receptors
Alternate D, crossing US 411 & Davis Ford Rd.

Figure 15: Location of Noise Receptors
Alternate D, southern section at US 321



6.0 EXISTING SHORT-TERM NOISE MEASUREMENTS

In October 2008, existing noise levels were measured at twenty-five representative properties identified along the proposed build Alternative Alignments within the project study area limits. The criteria used in selecting these measurement sites included the land use, the existing noise environment, the number of sensitive receptors in the area, and the location's potential sensitivity to changes in noise levels. The selected measurement locations represent a variety of ambient noise conditions and are considered representative of other nearby noise-sensitive receptors within the proposed project study area.

In accordance with TDOT guidelines, a series of 15-minute duration noise measurements were collected to aide in establishing the existing noise environment, within the project area, that provide typical weekday background ambient conditions. A 15-minute monitoring period is considered to be an adequate representation of 1-hour traffic noise along a busy highway. The noise level measurements were obtained during acceptable weather (no precipitation and relatively low winds) and dry road surface conditions. The representative monitoring locations consisted of mainly undeveloped farmland, residential locations and two commercial properties (golf driving range and gas station) adjacent to the proposed build alignments.

Noise measurements were taken on October 28, 29 and 30, 2008 at twenty-five representative locations within the proposed project study area using a calibrated Brüel & Kjær Model 2231 SLM fitted with a windshield. Before each noise measurement is collected the SLM is calibrated using a Brüel & Kjær 4230 calibrator which is in specified in conformance with U.S. National Institute of Standards and Technology (NIST) Type I instrument precision standards. The built in SLM software computes the Leq noise level for the time period during which the noise samples were collected. The measurement procedures conformed to those contained in the FHWA document, "Measurement of Highway-Related Noise: Final Report (May 1996)." A summary of the short-term noise measurement survey findings are shown in Table 3.

Table 3: Summary of Existing Noise Measurements

Receptor ID	Alternate	Receptor Address	Land Use	Distance to Centerline (feet)	Date	Time	Measured	Measured	Modeled	Modeled Minus Measured
							Leq (1-hr)	Average Leq (1-hr)	Leq (1-hr)	
M1/Rec 7	A & C	213 Jackson Hills Dr.	Residential	210	10/28/08	8:10 AM	48	N/A	41	-7
M2/Rec 35	A & C	557 Jackson Hills Dr.	Residential	N/A	10/28/08	8:55 AM	43	N/A	38	-5
M3/Rec 51	A & C	3049 Wildwood Road	Residential	1070	10/28/08	9:30 AM	41	N/A	40	-1
M5/Rec 63	A & C	1785 E. Brown School Rd.	Residential	890	10/28/08	1:40 PM	43	N/A	40	-3
M7/Rec 76	A	3047 Davis Ford Rd.	Residential	106	10/28/08	2:30 PM	33	N/A	47	14
M8/Rec 84	A	626 Hepatica Dr.	Residential	N/A	10/28/08	3:25 PM	40	N/A	41	1
M9/Rec 93	A	3412 Lamar Alex. Pkwy.	Church	65	10/28/08	4:00 PM	67	N/A	70	3
M10/Rec 72	A	3115 Sevierville Rd.	Residential	78	10/30/08	4:15 PM	64	N/A	68	4
M4/Rec 66	C	1834 E. Brown School Rd.	Residential	500	10/28/08	10:45 AM	32	N/A	40	8
M17/Rec 133	C	1225 Hitch Rd.	Residential	N/A	10/29/08	2:20 PM	46	44	46	2
					10/30/08	3:10 PM	39			
M18/Rec 270	C	3307 Melanie Dr.	Residential	N/A	10/29/08	3:00 PM	47	45	40	-5
					10/30/08	3:45 PM	36			
M20/Rec 128	C	Cemetery	Cemetery	1070	10/29/08	4:10 PM	44	N/A	53	9
M23/Rec 123	C	225 John Helton Rd.	Residential	149	10/30/08	10:15 AM	40	N/A	44	4
M24/Rec 125	C	3330 Centennial Ch. Rd.	Residential	235	10/30/08	11:05 AM	39	N/A	42	3

Receptor ID	Alternate	Receptor Address	Land Use	Distance to Centerline (feet)	Date	Time	Measured	Measured	Modeled	Modeled Minus Measured
							Leq (1-hr)	Average Leq (1-hr)	Leq (1-hr)	
M6/Rec 181	D	708 Sam Houston School Rd.	School	1040	10/28/08	1:00 PM	42	N/A	44	2
M11/Rec 167	D	229 Sam Houston School Rd.	Residential	105	10/29/08	8:30 AM	57	N/A	65	8
M12/Rec 177	D	436 Sam Houston School Rd.	Residential	167	10/29/08	9:10 AM	55	N/A	60	5
M13/Rec 198	D	909 Sam Houston School Rd.	Residential	103	10/29/08	9:55 AM	51	54	64	10
					10/29/08	5:00 PM	56			
M14/Rec 211	D	1036 Belfair Lane	Residential	123	10/29/08	10:35 AM	55	N/A	67	12
M15/Rec 227	D	1514 Peppermint Rd.	Residential	96	10/29/08	1:00 PM	53	N/A	62	9
M16/Rec 250	D	3324 Sevierville Rd.	Residential	86	10/29/08	1:40 PM	56	N/A	64	8
M19/Rec 272	D	839 Misty View Dr.	Residential	247	10/29/08	3:35 PM	48	N/A	42	-6
M21/Rec 298	D	3553 Lamar Alex. Pkwy.	Commercial	107	10/30/08	8:35 AM	63	N/A	68	5
M22/Rec 288	D	253 John Helton Rd.	Residential	46	10/30/08	9:15 AM	45	N/A	47	2
M25/Rec 240	D	2078 State Route 3	Residential	211	10/30/08	2:35 PM	42	N/A	55	13

Note: Measurement duration - 15-minute per reading. Traffic volumes based on traffic counts taken during noise measurements.
Source: Parsons Brinckerhoff 2008

7.0 EXISTING AND PREDICTED FUTURE NOISE LEVELS

Using the methodology previously described in Section 4, the following results were obtained. Build year 2035 noise levels were predicted at the twenty-five representative noise monitoring locations with and without the proposed roadway improvements. To aid in determining these predictions, future traffic volumes including cars, medium and heavy trucks and operating speeds were considered. The posted speed limits were used for the existing roadways throughout the project area.

Tables 4, 5 and 6 present a summary of the predicted noise levels at each representative noise measurement location and compares the existing and future noise conditions with each corresponding Alternative. In addition, Table 7 presents a summary count of the total number of predicted impacts along each corresponding Alternative. The receptor sites that were impacts under both criteria were only counted as one impact.

Along Alternative A, the predicted 2035 build year noise levels at the noise monitoring locations range from 47 dBA at site M18/Rec 270 to 73 dBA at site M9/Rec 93. The predicted build noise levels approach or exceed the NAC at nine of the representative sites modeled. In addition, there are seven representative noise measurement sites predicted to increase by 10 or more decibels under the same modeled results.

Along Alternative C, the predicted 2035 build year noise levels at the noise monitoring locations range from 48 dBA at site M8/Rec 84 to 73 dBA at site M24/Rec 125. The predicted build noise levels approach or exceed the NAC at thirteen of the representative sites modeled. In addition, there are eleven representative noise measurement sites predicted to increase by 10 or more decibels under the same modeled results.

Along Alternative D, the predicted 2035 build year noise levels at the noise monitoring locations range from 42 dBA at site M2/R35 to 72 dBA at site M9/R93. The predicted build noise levels approach or exceed the NAC at eight of the representative sites modeled. In addition, there are four representative noise measurement sites predicted to increase by 10 or more decibels under the same modeled results.

In addition to the 25 noise measurement locations, future build noise levels were predicted at 286 additional receptor locations identified along the proposed corridor resulting in a total of 311 noise-sensitive properties analyzed in the noise impact analysis. The TNM® results for all modeled locations for the existing, future build and future no-build conditions are depicted in Appendix A.

Table 4: Summary of Predicted Noise Levels (Leq (1 hr) dBA) at Noise Measurement Sites Under 2008 Existing, 2035 No-Build and 2035 Build Conditions for Alternative A

Receptor ID	FHWA Land Use Category	Land Use Description	2008 Existing Leq (H)	(2035) No Build Leq (H)	(2035) Build Alternative A (2032) Leq (H)	Build Minus Existing Delta	Predicted Build Noise Levels Vs. FHWA NAC	Predicted Build Vs. Existing Noise Levels
M1/Rec 7	B	Residential	41	44	60	19	No Impact	**Impact**
M2/Rec 35	B	Residential	38	40	68	30	**Impact**	**Impact**
M3/Rec 51	B	Residential	40	41	65	25	No Impact	**Impact**
M4/Rec 66	B	Residential	40	41	60	20	No Impact	**Impact**
M5/Rec 63	B	Residential	40	41	71	31	**Impact**	**Impact**
M6/Rec 181	B	School	44	45	48	4	No Impact	No Impact
M7/Rec 76	B	Residential	47	41	72	25	**Impact**	**Impact**
M8/Rec 84	B	Residential	41	44	65	24	No Impact	**Impact**
M9/Rec 93	B	Church	70	74	73	3	**Impact**	No Impact
M10/Rec 72	B	Residential	68	71	71	3	**Impact**	No Impact
M11/Rec 167	B	Residential	65	66	66	1	**Impact**	No Impact
M12/Rec 177	B	Residential	60	61	61	1	No Impact	No Impact
M13/Rec 198	B	Residential	64	66	66	2	**Impact**	No Impact
M14/Rec 211	B	Residential	67	69	69	2	**Impact**	No Impact
M15/Rec 227	B	Residential	62	64	64	2	No Impact	No Impact
M16/Rec 250	B	Residential	64	66	66	2	**Impact**	No Impact
M17/Rec 133	B	Residential	46	47	50	4	No Impact	No Impact
M18/Rec 270	B	Residential	40	41	47	7	No Impact	No Impact
M19/Rec 272	B	Residential	42	41	48	6	No Impact	No Impact
M20/Rec 128	B	Cemetery	53	60	56	3	No Impact	No Impact
M21/Rec 298	C	Commercial	68	71	69	1	No Impact	No Impact
M22/Rec 288	B	Residential	47	48	50	3	No Impact	No Impact
M23/Rec 123	B	Residential	44	46	49	5	No Impact	No Impact
M24/Rec 125	B	Residential	42	47	51	9	No Impact	No Impact
M25/Rec 240	B	Residential	55	56	57	2	No Impact	No Impact

Source: Parsons Brinckerhoff 2008

Table 5: Summary of Predicted Noise Levels (Leq (1 hr) dBA) at Noise Measurement Sites Under 2008 Existing, 2035 No-Build and 2035 Build Conditions for Alternative C

Receptor ID	FHWA Land Use Category	Land Use Description	2008 Existing Leq(H)	(2035) No Build Leq(H)	2035 Build Alternative C Leq(H)	Build Minus Existing Delta	Predicted Build Noise Levels Vs. FHWA NAC	Predicted Build Vs. Existing Noise Levels
M1/Rec 7	B	Residential	41	44	60	19	No Impact	**Impact**
M2/Rec 35	B	Residential	38	40	68	30	**Impact**	**Impact**
M3/Rec 51	B	Residential	40	41	65	25	No Impact	**Impact**
M4/Rec 66	B	Residential	40	41	67	27	**Impact**	**Impact**
M5/Rec 63	B	Residential	40	41	71	31	**Impact**	**Impact**
M6/Rec 181	B	School	44	45	48	4	No Impact	No Impact
M7/Rec 76	B	Residential	47	41	51	4	No Impact	No Impact
M8/Rec 84	B	Residential	41	44	48	7	No Impact	No Impact
M9/Rec 93	B	Church	70	74	72	2	**Impact**	No Impact
M10/Rec 72	B	Residential	68	71	70	2	**Impact**	No Impact
M11/Rec 167	B	Residential	65	66	66	1	**Impact**	No Impact
M12/Rec 177	B	Residential	60	61	61	1	No Impact	No Impact
M13/Rec 198	B	Residential	64	66	66	2	**Impact**	No Impact
M14/Rec 211	B	Residential	67	69	69	2	**Impact**	No Impact
M15/Rec 227	B	Residential	62	64	64	2	No Impact	No Impact
M16/Rec 250	B	Residential	64	66	66	2	**Impact**	No Impact
M17/Rec 133	B	Residential	46	47	72	26	**Impact**	**Impact**
M18/Rec 270	B	Residential	40	41	60	20	No Impact	**Impact**
M19/Rec 272	B	Residential	42	41	62	20	No Impact	**Impact**
M20/Rec 128	B	Cemetery	53	60	66	13	**Impact**	**Impact**
M21/Rec 298	C	Commercial	68	71	69	1	No Impact	No Impact
M22/Rec 288	B	Residential	47	48	56	9	No Impact	No Impact
M23/Rec 123	B	Residential	44	46	71	27	**Impact**	**Impact**
M24/Rec 125	B	Residential	42	47	73	31	**Impact**	**Impact**
M25/Rec 240	B	Residential	55	56	59	4	No Impact	No Impact

Source: Parsons Brinckerhoff 2008

Table 6: Summary of Predicted Noise Levels (Leq (1 hr) dBA) at Noise Measurement Sites Under 2008 Existing, 2035 No-Build and 2035 Build Conditions for Alternative D

Receptor ID	FHWA Land Use Category	Land Use Description	2008 Existing Leq (H)	(2035) No Build Leq (H)	(2035) Build Alternative D Leq(H)	Build Minus Existing Delta	Predicted Build Noise Levels Vs. FHWA NAC	Predicted Build Vs. Existing Noise Levels
M1/Rec 7	B	Residential	41	44	47	6	No Impact	No Impact
M2/Rec 35	B	Residential	38	40	42	4	No Impact	No Impact
M3/Rec 51	B	Residential	40	41	43	3	No Impact	No Impact
M4/Rec 66	B	Residential	40	41	44	4	No Impact	No Impact
M5/Rec 63	B	Residential	40	41	43	3	No Impact	No Impact
M6/Rec 181	B	School	44	45	47	3	No Impact	No Impact
M7/Rec 76	B	Residential	47	41	50	3	No Impact	No Impact
M8/Rec 84	B	Residential	41	44	44	3	No Impact	No Impact
M9/Rec 93	B	Church	70	74	72	2	**Impact**	No Impact
M10/Rec 72	B	Residential	68	71	70	2	**Impact**	No Impact
M11/Rec 167	B	Residential	65	66	69	4	**Impact**	No Impact
M12/Rec 177	B	Residential	60	61	63	3	No Impact	No Impact
M13/Rec 198	B	Residential	64	66	68	4	**Impact**	No Impact
M14/Rec 211	B	Residential	67	69	71	4	**Impact**	No Impact
M15/Rec 227	B	Residential	62	64	64	2	No Impact	No Impact
M16/Rec 250	B	Residential	64	66	68	4	**Impact**	No Impact
M17/Rec 133	B	Residential	46	47	51	5	No Impact	No Impact
M18/Rec 270	B	Residential	40	41	54	14	No Impact	No Impact
M19/Rec 272	B	Residential	42	41	69	27	**Impact**	**Impact**
M20/Rec 128	B	Cemetery	53	60	65	12	No Impact	**Impact**
M21/Rec 298	C	Commercial	68	71	69	1	No Impact	No Impact
M22/Rec 288	B	Residential	47	48	61	14	No Impact	**Impact**
M23/Rec 123	B	Residential	44	46	54	10	No Impact	No Impact
M24/Rec 125	B	Residential	42	47	54	12	No Impact	No Impact
M25/Rec 240	B	Residential	55	56	67	12	**Impact**	**Impact**

Source: Parsons Brinckerhoff 2008

Table 7: Number of Noise Sensitive Receptors Affected by Alternative

Type of Noise Impact	2008 Existing	2035 No-Build	2035 Build Alt. A	2035 Build Alt. C	2035 Build Alt. D
Approach or exceeds NAC	11	33	39	46	46
Minor Increase over 2008 Existing	NA	302	198	146	199
Moderate Increase over 2008 Existing	NA	9	25	31	47
Substantial increase over 2008 existing	NA	0	56	86	25
Both a Substantial Increase and NAC Impact	0	0	12	22	7
Total Receptors Impacted	**11**	**33**	**83**	**110**	**64**

Source: Parsons Brinckerhoff 2008 NA (Not Applicable) – Site Displaced

For this project, simplifying assumptions were made in gathering information to provide elevations to the TNM models for the future build conditions, future ramp locations and future edge of shoulder locations. The assumptions used are as follows:

Existing Ground Surface

Existing Blount County topographic data is available in the form of two-dimensional GIS contours with an elevation attribute. The contours are in 2-ft increments. AutoCAD Map 3D 2009 was used to replace the poly-line zero-elevation with the elevation in the attribute field of the GIS contour data sets. Contours were clipped to 2,300-ft corridors along Alternatives A and C and a 2,150-ft corridor along Alternative D. The TIN surface created in AutoCAD Civil 3D 2009 are based on the 3D contour lines.

Proposed Alignments

The existing ground surface was used to develop preliminary profiles along the three alignments. Proposed vertical alignments were developed representing preliminary profiles that meet TDOT/AASHTO requirements for a 70 mph design speed on a 4-lane interstate (Alternatives A and C) or a 50 mph design speed on a 2-lane rural highway (Alternative D).

Care was taken to represent crossings of existing roads (Alternatives A and C) as overpasses or underpasses and intersections with existing roads (Alternative D) at existing grades. Alternative D was developed to match the existing grade as closely as possible while improving vertical curves where necessary. No effort was made to refine the proposed profiles further. Specifically, no effort was made to coordinate horizontal and vertical alignments or to minimize or balance cut-and-fill. Table 8 summarizes the mainline grade assumptions for Alternatives A and C relative to the existing grade (EG).

Table 8: Mainline Grade Assumptions

Alternative	Roadway Intersection	Proposed PPE Grade
A	Overpass over SR-33	EG +25’
A	Overpass over Wildwood Rd	EG +25’
A	Underpass beneath E Brown School Rd	EG -25’
A	Diamond Interchange at Sevierville Pike	EG +25’
A	Underpass beneath Davis Ford Rd	EG -25’
A	Trumpet Interchange at Lamar Alexander Parkway	Ramp at EG +25’
C	Overpass over SR-33	EG +25’
C	Overpass over Wildwood Rd	EG +25’
C	Underpass beneath E Brown School Rd	EG -25’
C	Diamond Interchange at Sevierville Pike	EG +25’
C	Underpass beneath Davis Ford Rd	EG -25’
C	Underpass beneath Centennial Church Rd	EG -25’
C	Sever John Helton Rd either side of PPE	n/a
C	Trumpet Interchange at Lamar Alexander Parkway	Ramp at EG +25’

A corridor model was created in Civil 3D 2009 for each alternative. The corridor models are based on the proposed alignments and cross-sections. The proposed cross-sections tie back to the existing ground at a slope of 4:1. A proposed TIN surface was developed for each proposed vertical alignment and displayed as 2-foot interval contours. These contours were exported to AutoCAD Exchange Format (.dxf) format to be used as an underlay in the TNM model.

7.1 Existing Noise Levels

A total of 311 receptor locations were modeled within the proposed Pellissippi Parkway project study area. Twenty-five measurement sites, consisting of one commercial property, one cemetery, one school, one church and twenty-one residential locations, were included. The remaining 286 modeled locations consisted mainly of residential development. However, one town-home complex, one water treatment plant, one historic school museum and several commercial sites were also evaluated. Eleven receptor locations would experience noise levels that approach or exceed the NAC under present conditions. These eleven sites consist of nine residential properties, one church (Morning Star Baptist Church) and one commercial establishment. The predicted noise levels for the existing conditions range from 38 dBA at several sites within the project study area to 71 dBA at site R111. The modeled existing noise levels at all receptor sites are summarized in Table 1, Table 2 and Table 3 in Appendix A and their locations are depicted in Figures 3 through 15.

7.2 Predicted 2035 No-Build Noise Levels

In the year 2035, predicted future peak hour no-build Leq (1 hour) traffic generated noise levels at the 311 receptors are expected to increase from approximately 1 to 6 decibels over the 2008 existing peak hour noise levels. Thirty-three receptor locations, consisting twenty-eight

residential properties, one church (Morning Star Baptist Church) and four commercial establishments would experience noise levels that approach or exceed the NAC under future no-build traffic conditions. The predicted noise levels under the 2035 no-build conditions are expected to range from 40 dBA at several sites within the project study area up to 75 dBA projected at site R111. A summary of these predicted noise levels are also presented Table 1, Table 2 and Table 3 in Appendix A and their locations are depicted in Figures 3 through 15.

7.3 Predicted Design Year 2035 Build Alternative Noise Levels

If the proposed Pellissippi Parkway Extension project is constructed, the design year (2035) build noise levels along the corridor are expected to change from 1 to 32 dBA from existing noise levels under Alternative A and Alternative C and minus 5 to plus 27 dBA under Alternative D. Along Alternative D option, the proposed build alignment would shift the travel lanes away from several properties located adjacent to the existing roadway. As a result, some of these receptors will experience a decrease in future noise levels. The predicted noise levels under the design build (year 2035) conditions are expected to range from a minimum noise level of 46 dBA to a maximum noise level of 73 dBA Leq under Alternative A and a minimum noise level of 45 dBA to a maximum noise level of 73 dBA Leq under Alternative C. Under the Alternative D alignment and a minimum noise level of 41 dBA to a maximum noise level of 73 dBA Leq will occur. The predicted TNM® model noise level predictions for all modeled properties under each alternative for the future build and future no-build conditions are presented in Table 1, Table 2 and Table 3 in Appendix A and their locations are depicted in Figures 3 through 15. Each build option is discussed below in greater detail.

Alternative A Noise Analysis Findings

The predicted 2035 build year noise levels at the noise monitoring locations range from 47 dBA at sites M18/Rec 270 to 73 dBA at site M9/Rec 93. The predicted build noise levels approach or exceed the NAC criteria at ten representative sites modeled. Furthermore, seven of the representative noise measurement sites are predicted to show 2035 build noise level increases of 10 or more decibels.

In addition to the 25 noise measurements locations, future build noise levels were predicted at 286 additional receptor locations identified along the proposed corridor study area resulting in a total of 311 noise-sensitive properties analyzed in the noise impact analysis. Under the proposed Alternative A build alignment, a total of 83 receptor sites were impacted. Thirty-nine receptor sites are expected to experience noise levels that approach or exceed the NAC and 56 receptor sites will experience noise level increases of 10 decibels or more. In addition, 12 receptor sites will exceed the impact threshold of both criteria however impacted properties were only counted once. The receptor sites experiencing both criteria were only counted once. The 39 NAC identified impacts consist of 38 FHWA Category “B” properties and one FHWA Category “C” land use. The Category “B” land uses consist of one church and 37 residential sites. The Category “C” land uses consists of one commercial establishment. The 56 receptors experiencing increases of 10 decibels or more over existing conditions are all FHWA Category “B” land uses. The predicted noise levels for the Alternative A corridor are expected to change from 1 to 32 dBA from existing peak hour noise levels. Furthermore, predicted build noise levels are expected to range from 46 dBA at the School House Museum to 73 dBA Leq at a commercial property (site Rec 111) and a church (site Rec 93/M9). The construction of the Alternative A option will result in six property displacements along the proposed corridor. A summary count of the total expected corridor wide impacts is presented in Table 7.

Alternative C Noise Analysis Findings

The predicted 2035 build year noise levels, at the noise monitoring locations, range from 48 dBA at sites M8/Rec 84 to 73 dBA at Site M24/Rec 125. The predicted build noise levels approach or exceed the NAC criteria at thirteen receptor sites modeled. Furthermore, eleven of the representative noise measurement sites are predicted to experience 2035 build noise level increases of 10 or more decibels.

In addition to the 25 noise measurements locations, future build noise levels were predicted at 286 additional receptor locations identified along the proposed corridor study area resulting in a total of 311 noise-sensitive properties analyzed in the noise impact analysis. Under the proposed Alternative C build alignment, a total of 110 receptor sites were impacted. Forty-six receptor sites are expected to experience noise levels that approach or exceed the NAC and 86 receptors will experience noise level increases of 10 decibels or more. In addition, 22 receptor sites will exceed the impact threshold of both criteria however impacted properties were only counted once. The receptor sites experiencing both criteria were only counted once. The 46 NAC impacts identified consist of 44 FHWA Category “B” land uses and 2 FHWA Category “C” properties. The Category “B” land use consists of two churches, one cemetery and 41 residential sites and the Category “C” land uses consist of two commercial establishments. The 86 receptor sites experiencing increases of 10 decibels or more over existing conditions consist of 85 FHWA Category “B” land uses and one FHWA Category “C” land use. The Category “B” land uses consist of one church, one cemetery and 83 residential properties. The Category “C” land uses consist of one commercial property. In addition, the predicted noise levels for the Alternative C corridor are expected to change from 1 to 32 dBA from existing peak hour noise levels. Furthermore, predicted build noise levels are expected to range from 46 dBA at the School House Museum site to 73 dBA Leq at a commercial property (site Rec 111). The construction of the Alternative C option will result in 28 property displacements along the proposed corridor. A summary count of the total expected corridor wide impacts is presented in Table 7.

Alternative D Noise Analysis Findings

The predicted 2035 build year noise levels, at the noise monitoring locations, range from 42 dBA at sites M2/Rec 35 to 72 dBA at Site M9/Rec 93. The predicted build noise levels approach or exceed the NAC criteria at nine representative sites modeled. Furthermore, seven of the representative noise measurement sites are predicted to show 2035 build noise level increases of 10 or more decibels.

In addition to the 25 noise measurements locations, future build noise levels were predicted at 286 additional receptor locations identified along the proposed corridor study area resulting in a total of 311 noise-sensitive properties analyzed in the noise impact analysis. Under the proposed Alternative D build alignment, a total of 64 receptor sites were impacted. Forty-six receptor sites are expected to experience noise levels that approach or exceed the NAC and 25 receptor sites will experience noise level increases of 10 decibels or more. In addition, seven receptor sites will experience noise levels above both criteria however impacted properties were only counted once. The 46 NAC impacts consist of 45 FHWA Category “B” land uses and one FHWA Category “C” land use. The Category “B” land uses consist of two churches, one cemetery and 42 residential properties and the Category “C” land uses consist of one commercial establishment. The 25 properties experiencing increases of 10 decibels or more over existing conditions all consist of FHWA Category “B” land uses. The Category “B” land uses consist of one church, one church ball field, one cemetery and 22 residential properties.

The predicted noise levels for the Alternative D corridor are expected to change from minus 5 dBA to plus 27 dBA from existing peak hour noise levels. Furthermore, predicted build noise levels are expected to range from 42 dBA Leq at several residential sites to 73 dBA Leq at a commercial property (site R111). The construction of the Alternative D option would result in 24 property displacements along the proposed corridor. A summary count of the total expected corridor wide impacts is presented in Table 7.

8.0 PROJECT NOISE ABATEMENT

As outlined in 23 CFR 772, FHWA and TDOT require that noise abatement measures be considered at all locations where traffic related noise impacts are identified for Type I projects. The requirement to consider abatement is based on the projections of noise impacts due to the proposed roadway improvements at exterior areas where human activity may occur and a lowered noise level would be of benefit to the people living there. In conformance with TDOT requirements, abatement measures were evaluated in terms of their effectiveness to substantially reduce predicted design year noise levels at locations where impacts occur. Potential abatement measures include:

- Alteration of roadway horizontal or vertical alignments;
- Traffic management measures;
- Acquisition of property rights (either for fee or lesser interest) for construction of noise barriers;
- Providing sound insulation of public use or non-profit institutional structures; and
- Construction of noise barriers (noise walls).

These noise abatement measures and their applicability to the proposed project are discussed below.

8.1 Alignment Shifts

Shifting the alignment to reduce impacts would likely result in impacts to other sensitive receptors or greater environmental impacts because the alignments have been developed to minimize impacts to residences, businesses, wetlands, and cultural resources. For these reasons, alignment shifts do not appear to be a reasonable measure to reduce noise impacts.

8.2 Traffic Control Measures

The use of traffic control measures, such as reducing speed limits, prohibiting heavy trucks, etc., would be contrary to the purpose of the road, which is to facilitate movement of truck and automobile traffic in the area.

8.3 Acquisition of Property Rights

Acquisition of property rights is generally limited to large-scale projects where right-of-way needs for a proposed roadway widening project would require additional space for the construction of noise walls.

8.4 Sound Insulation of Public Use or Non-Profit Institutional Structures

The reasonableness determination for non-residential Category "B" land uses includes schools, churches, parks, hospitals, rest homes and day care centers. Within the Pellissippi Parkway Extension study area, there are no impacts identified for these types of structures and therefore it is not a necessary consideration.

8.5 Noise Barriers

Barriers reduce noise levels by blocking the sound path between the roadway and noise sensitive sites. To be effective in reducing traffic noise effects, a noise barrier should have certain geometric characteristics. Theoretically for a single impacted receptor, a barrier should be, approximately eight times the distance from the receptor to the noise source, continuous (with no intermittent openings) and sufficiently high enough to provide the necessary reduction in noise levels. In addition, for areas with multiple impacted receptors, a barrier should be approximately four times the distance from the receptor, on each end of the barrier location, to the noise source, continuous (with no intermittent openings) and sufficiently high enough to provide the necessary reduction in noise levels.

In order for a barrier to be considered feasible and economically reasonable, it should meet the following minimum criteria:

- Produce a 10 dBA reduction with a minimum of a 7 dBA reduction in highway traffic noise for first-row receivers and at least a 5 dBA reduction for other receptors such as second-row residences.
- The unit cost in 2008 dollars to construct the barrier is $15.00 per square foot. The cost per benefited residence is calculated using the formula described in Section 2.2.1 of the TDOT Noise Policy. Following this procedure each evaluated noise barrier analysis area may have a different final cost per benefited residence limit. The three components described in Section 2.2.1 to consider when determining the final cost per benefiting residence consist of the following: the *Base Allowance* ($15,000 per benefiting residence), *Noise Level Allowance* based on the predicted noise level and the *Build Versus Existing Noise Level Allowance* based on the projected noise level increase. The sum of all these three factors determines the acceptable unit cost limit per benefiting dwelling for a given noise barrier location.
- Noise barriers are not normally constructed when the height requirements exceed 20 feet.

Eight locations were considered for an in-depth barrier analysis. All noise barriers were evaluated at heights ranging from six to twenty-four feet. Three of the eight barrier locations were along the combined corridor portion for Alternatives A and C. Two additional barrier locations were located along the remaining portion of Alternative A. Furthermore, two additional barrier locations were located along the remaining portion of Alternative C. Along the Alternative D alignment, one barrier location was evaluated. This is primarily because there are several locations along the proposed Alternative D corridor where barrier placement is not feasible due to access control breaks needed for cross streets and driveways. All eight barriers were determined to be too costly based on cost criteria obtained from the TDOT noise policy and procedure guidelines. However, these determinations were based on assumed roadway elevations for each alternative. Once final design details are developed for the selected

alternative, the noise analysis and associated feasibility and reasonableness determinations will be updated. Final decisions regarding the construction of noise barriers will be made during final project design and following the public involvement process. The allowable cost per benefited residence is presented in Table 9 and the barrier design results are presented in Table 10. In addition, the dimensions and location of each analyzed noise barrier evaluated and the calculations determining cost effectiveness based on the above mentioned assumptions are presented in Appendix F.

Table 9: Allowable Cost Per Benefitted Residence

Noise Analysis Area	Base Allowance	Development Date/New Alignment Allowance	Average Noise Level (dBA) (1)	Noise Levels Allowance	Average sound Level Increase (dB) (1)	Build Versus Existing Levels Allowance	Allowable Cost per Benefitted Residence
Barrier 1	$15,000	$15,000	59	$0	17	$8,000	$38,000
Barrier 2	$15,000	$15,000	58	$0	19	$8,000	$38,000
Barrier 3	$15,000	$15,000	68	$0	17	$8,000	$38,000
Barrier 4	$15,000	$15,000	67	$0	16	$8,000	$38,000
Barrier 5	$15,000	$15,000	63	$0	21	$8,000	$38,000
Barrier 6	$15,000	$15,000	57	$0	19	$8,000	$38,000
Barrier 7	$15,000	$15,000	59	$0	16	$8,000	$38,000
Barrier 9	$15,000	$15,000	60	$0	18	$8,000	$38,000

(1) Impacted first-row receivers.

Table 10: Noise Barrier Design Results and Reasonableness Analysis

Noise Analysis Area	Length (ft.)	Average Height (ft.)	Cost	Benefitted Residences	Cost Per Benefitted Residence	Allowable Cost Per Benefitted Residence	Reasonable
Barrier 1	5678	24	$2,044,080	14	$146,006	$38,000	Not Cost Effective
Barrier 2	6767	24	$2,030,850	13	$156,219	$38,000	Not Cost Effective
Barrier 3	2700	24	$972,000	5	$194,400	$38,000	Not Cost Effective
Barrier 4	2548	24	$917,280	22	$41,695	$38,000	Not Cost Effective
Barrier 5	4287	24	$1,358,100	4	$339,525	$38,000	Not Cost Effective
Barrier 6	2898	24	$1,043,280	3	$181,656	$38,000	Not Cost Effective
Barrier 7	2499	24	$899,640	0	N/A	$38,000	Not Cost Effective
Barrier 9	1491	20	$447,300	9	$49,700	$38,000	Not Cost Effective

9.0 COORDINATON WITH LOCAL OFFICIALS

Coordination with and providing information to local officials is an important part of noise control and the prevention of future noise impacts. Highway traffic noise should be reduced through a program of shared responsibility. Local government should use their influence to protect future land development from becoming incompatible with anticipated highway noise levels. Therefore, local governments should provide guidance to help regulate land development so noise sensitive land uses are either prohibited from being located adjacent to a highway or new developments are planned, designated and constructed to help minimize noise impacts.

TDOT assists local government officials in protecting against future incompatible development along its highways by furnishing the results of all highway traffic noise analyses to the local officials. These results will include predicted future noise levels for undeveloped lands along the project. Local coordination can be accomplished through the distribution of noise study reports and environmental documents for proposed highway projects.

Table 11 indicates the future predicted noise levels at three critical distances for the proposed project alternatives. The critical distances are measured perpendicular to the proposed

centerline for an at-grade condition. The predicted Leq noise levels displayed are conservative and should be considered to be maximum (highest) noise levels expected at any location along the entire roadway at the same distance from the roadway. This information is included to provide awareness to local officials and planners of the predicted highway noise levels so future development can be compatible.

Table 11: 2035 Build Alternative Predicted Noise Levels Increases expected away from the Proposed Roadway Improvements (in dBA)

Perpendicular Distance Away From Proposed Roadway Widening (Centerline near lane by direction)	TNM 2.5 Projected Noise Level Increase
100 feet	Inside R/W
200 feet	65 to 67 dBA
300 feet	62 to 64 dBA

TDOT currently has an active Type II Noise Barrier Program to facilitate the construction of "retrofit" noise barriers along existing highways. To be eligible for a Type II noise barrier, an area must meet the following criteria:

- The neighborhood must be located along a limited-access roadway;
- The neighborhood must be primarily residential;
- The majority (more than 50%) of residences in the neighborhood near the highway pre-dated the initial highway construction;
- A noise barrier for the neighborhood must not have been previously determined to be not reasonable or not feasible as part of a new highway construction or through-lane widening study (Type I project);
- Existing noise levels measured in the neighborhood must be above the Noise Abatement Criteria (NAC) of 66 dBA;
- A barrier must be feasible to construct and will provide substantial noise reduction; and,
- A barrier must be reasonable (barrier cost per benefited residence) in accordance with TDOT's noise policy. A residence is considered "benefited" if the noise barrier will reduce the traffic noise by at least 5 dB."

10.0 CONSTRUCTION NOISE

Project area noise levels would increase during construction of the proposed improvements. Construction noise differs from noise generated by normal traffic due to differences in the spectral and temporal characteristics of the noise. The degree of construction noise impact would be a function of the number and types of equipment being used, and the distances between the construction equipment and the noise sensitive areas.

Construction procedures shall be governed by the Standard Specifications for Road and Bridge Construction (March 2006) as issued by TDOT and as amended by the most recent applicable supplements. The contractor will be bound by Section 107.01 of the Standard Specification to observe any noise ordinances in effect within the construction so as to cause the least practicable noise impact upon residential and noise sensitive areas.

Generally, construction activity would occur during normal working hours on weekdays. Therefore, noise impact experienced by local residents as a result of construction activities should not occur during sleeping hours. Construction noise includes noise from the operation of construction equipment and noise from construction and delivery vehicles traveling to and from the site. The level of noise (and potential impact) from these noise sources depends upon the noise characteristics of the equipment and activities involved, the construction schedule, and the distance of equipment from sensitive receptors. Typical noise levels of construction equipment are presented in Table 12. At a typical receptor, the noise levels would be highest during the early phases of construction when excavation and daily heavy truck traffic may occur. Average noise levels for typical construction equipment, measured at 50 feet from the construction site, range from 76 dBA for generators and pumps to 89 dBA for asphalt spreaders to 101 dBA for pile drivers. The total hourly energy average dBA noise level, Leq (1-hour), at a distance of 50 feet from the construction site boundary is usually predicted at 86 dBA. Noise levels at receptors located at known distances from the construction site boundary are predicted by assuming a 6 dBA drop off for every doubling of distance from the site boundary. Impacts may occur along the proposed project corridor during construction where outdoor activity takes place during normal working hours.

A number of measures can be utilized to help minimize noise generated from construction activities. Such measures include, but are not limited to, the following:

- The contractor shall comply with all state and local sound control and noise level rules, regulations, and ordinances that apply to any work performed pursuant to the contract.

- Each internal combustion engine used for any purpose on work related to the project shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without such muffler.

- Conduct truck loading, unloading and hauling so that noise is kept to a minimum;

- Route construction equipment and vehicles in areas that will cause the least disturbance to nearby receptors where possible; and

- Place continuously operated diesel-powered equipment, such as compressors and generators, in areas as far as possible from or shielded from noise-sensitive locations.

- Wherever possible, noise barriers to be constructed as part of the project will be constructed as soon as possible to allow the barriers to protect noise-sensitive areas from construction noise.

- Prohibit or restrict to certain portions of the project, any work that produces objectionable noise between 10 P.M. and 6 A.M. If other hours are established by local ordinance, the ordinance shall govern.

- Equipment shall in no way be altered so as to result in noise levels that are greater than those produced by the original equipment.

Table 12: Construction Equipment Noise Emission Levels

Equipment	Typical Noise Level (dBA) 50 Feet From Source
Air Compressor	81
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jack Hammer	88
Loader	85
Pavers	89
Pile Driver (Impact)	101
Sonic	96
Pneumatic Tool	85
Pump	76
Rail Saw	90
Rock Drill	98
Roller	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Truck	88

Source: Guidance Manual for Transit Noise and Vibration Impact Assessment, March 1995

11.0 REFERENCES

Federal Highway Administration, “Highway Traffic Noise Analysis and Abatement: Policy and Guidance,” U.S. Department of Transportation, Office of Environment and Planning, Noise and Air Quality Branch, Washington D.C., June 1995.

Federal Highway Administration, “23 CFR Part 772: Procedures for Abatement of Highway Traffic Noise and Construction Noise B Final Rule.” Federal Register, Vol. 47, No. 131, July 8, 1982.

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Tennessee Department of Transportation, Environmental Division, Policy on Highway Traffic Noise Abatement, September 16, 2005.

Tennessee Department of Transportation, Construction Division, Standard Specifications for Road and Bridge Construction, March 1, 2006.

U.S. Department of Transportation, Research and Special Programs Administration, John A. Volpe National Transportation Systems Center, Acoustics Facility, Federal Highway Administration's Traffic Noise Model Version 2.5, February 2004.

U.S. Department of Transportation, Federal Highway Administration, Office of Environment and Planning, Measurement of Highway-Related Noise: Final Report, May 1996.

APPENDIX A

Results Tables

Results Table 1

2008 Existing and 2035 Future Noise Levels Alternative A

Results Table 1: 2008 Existing and 2035 Future Noise Levels, Alternative A

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 1	B	Residential	56	61	64	8	No Impact	No Impact
Rec 2	B	Residential	49	55	59	10	No Impact	**Impact**
Rec 3	B	Residential	47	52	58	11	No Impact	**Impact**
Rec 4	B	Residential	46	50	58	12	No Impact	**Impact**
Rec 5	B	Residential	46	49	57	11	No Impact	**Impact**
Rec 6	B	Residential	46	49	57	11	No Impact	**Impact**
Rec 7/M1	B	Residential	41	45	60	19	No Impact	**Impact**
Rec 8	B	Residential	40	45	59	19	No Impact	**Impact**
Rec 9	B	Residential	41	45	59	18	No Impact	**Impact**
Rec 10	B	Residential	41	45	59	18	No Impact	**Impact**
Rec 11	B	Residential	43	46	56	13	No Impact	No Impact
Rec 12	B	Residential	41	44	59	18	No Impact	**Impact**
Rec 13	B	Residential	41	44	58	17	No Impact	**Impact**
Rec 14	B	Residential	40	43	57	17	No Impact	**Impact**
Rec 15	B	Residential	40	43	57	17	No Impact	**Impact**
Rec 16	B	Residential	41	44	56	15	No Impact	No Impact
Rec 17	B	Residential	40	43	56	16	No Impact	No Impact
Rec 18	B	Residential	45	47	53	8	No Impact	No Impact
Rec 19	B	Residential	40	43	55	15	No Impact	No Impact
Rec 20	B	Residential	40	43	55	15	No Impact	No Impact
Rec 21	B	Residential	41	43	54	13	No Impact	No Impact
Rec 22	B	Residential	40	43	54	14	No Impact	No Impact
Rec 23	B	Residential	39	42	53	14	No Impact	No Impact
Rec 24	B	Residential	42	44	53	11	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 25	B	Residential	40	43	52	12	No Impact	No Impact
Rec 26	B	Residential	46	48	52	6	No Impact	No Impact
Rec 27	B	Residential	41	43	52	11	No Impact	No Impact
Rec 28	B	Residential	40	42	52	12	No Impact	No Impact
Rec 29	B	Residential	40	42	52	12	No Impact	No Impact
Rec 30	B	Residential	38	41	54	16	No Impact	No Impact
Rec 31	B	Residential	41	43	55	14	No Impact	No Impact
Rec 32	B	Residential	40	43	56	16	No Impact	No Impact
Rec 33	B	Residential	40	42	58	18	No Impact	**Impact**
Rec 34	B	Residential	38	40	70	32	**Impact**	**Impact**
Rec 35/M2	B	Residential	38	40	68	30	**Impact**	**Impact**
Rec 36	B	Residential	38	41	56	18	No Impact	No Impact
Rec 37	B	Residential	38	41	59	21	No Impact	**Impact**
Rec 38	B	Residential	39	41	57	18	No Impact	**Impact**
Rec 39	B	Residential	39	41	58	19	No Impact	**Impact**
Rec 40	B	Residential	39	41	58	19	No Impact	**Impact**
Rec 41	B	Residential	39	41	58	19	No Impact	**Impact**
Rec 42	B	Residential	39	41	62	23	No Impact	**Impact**
Rec 43	B	Residential	39	41	61	22	No Impact	**Impact**
Rec 44	B	Residential	39	41	59	20	No Impact	**Impact**
Rec 45	B	Residential	40	42	57	17	No Impact	**Impact**
Rec 46	B	Residential	40	42	59	19	No Impact	**Impact**
Rec 47	B	Residential	40	42	59	19	No Impact	**Impact**
Rec 48	B	Residential	40	42	65	25	No Impact	**Impact**
Rec 49	B	Residential	41	43	60	19	No Impact	**Impact**
Rec 50	B	Residential	43	44	58	15	No Impact	**Impact**

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 51/M3	B	Residential	40	42	65	25	No Impact	**Impact**
Rec 52	B	Residential	40	42	NA	NA	NA	NA
Rec 53	B	Residential	44	45	NA	NA	NA	NA
Rec 54	B	Residential	45	46	59	14	No Impact	**Impact**
Rec 55	B	Residential	49	51	59	10	No Impact	**Impact**
Rec 56	B	Residential	57	58	63	6	No Impact	No Impact
Rec 57	B	Residential	60	61	66	6	**Impact**	No Impact
Rec 58	B	Residential	56	57	65	9	No Impact	No Impact
Rec 59	B	Residential	49	50	64	15	No Impact	**Impact**
Rec 60	B	Residential	44	45	63	19	No Impact	**Impact**
Rec 61	B	Residential	46	47	NA	NA	NA	NA
Rec 62	B	Residential	45	47	66	21	**Impact**	**Impact**
Rec 63/M5	B	Residential	40	42	71	31	**Impact**	**Impact**
Rec 64	B	Residential	41	43	61	20	No Impact	**Impact**
Rec 65	B	Residential	41	43	59	18	No Impact	**Impact**
Rec 66/M4	B	Residential	40	42	60	20	No Impact	**Impact**
Rec 67	B	Residential	40	41	71	31	**Impact**	**Impact**
Rec 68	B	Residential	38	40	60	22	No Impact	**Impact**
Rec 69	B	Residential	38	40	61	23	No Impact	**Impact**
Rec 70	B	Residential	39	40	68	29	**Impact**	**Impact**
Rec 71	B	Residential	63	65	69	6	**Impact**	No Impact
Rec 72/M10	B	Residential	68	71	71	3	**Impact**	No Impact
Rec 73	B	Residential	63	65	NA	NA	NA	NA
Rec 74	B	Residential	62	64	67	5	**Impact**	No Impact
Rec 75	B	Residential	45	47	66	21	**Impact**	**Impact**
Rec 76/M7	B	Residential	47	49	72	25	**Impact**	**Impact**

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 77	B	Residential	41	43	59	18	No Impact	**Impact**
Rec 78	B	Residential	48	50	68	20	**Impact**	**Impact**
Rec 79	B	Residential	45	47	60	15	No Impact	**Impact**
Rec 80	B	Residential	50	52	63	13	No Impact	**Impact**
Rec 81	B	Residential	50	52	64	14	No Impact	**Impact**
Rec 82	B	Residential	45	47	63	18	No Impact	**Impact**
Rec 83	B	Residential	46	48	61	15	No Impact	**Impact**
Rec 84/M8	B	Trailer Park	41	44	65	24	No Impact	**Impact**
Rec 85	B	Trailer Park	43	46	72	29	**Impact**	**Impact**
Rec 86	B	Trailer Park	44	48	66	22	**Impact**	**Impact**
Rec 87	B	Trailer Park	47	50	66	19	**Impact**	**Impact**
Rec 88	B	Trailer Park	51	54	61	10	No Impact	**Impact**
Rec 89	B	Residential	64	68	68	4	**Impact**	No Impact
Rec 90	B	Residential	66	70	70	4	**Impact**	No Impact
Rec 91	B	Residential	68	72	NA	NA	NA	NA
Rec 92	B	Residential	69	72	71	2	**Impact**	No Impact
Rec 93/M9	B	Church	70	74	73	3	**Impact**	No Impact
Rec 94	C	Commercial	69	73	71	2	No Impact	No Impact
Rec 95	B	Residential	64	68	66	2	**Impact**	No Impact
Rec 96	B	Residential	65	68	66	1	**Impact**	No Impact
Rec 97	B	Residential	63	67	65	2	No Impact	No Impact
Rec 98	B	Residential	64	67	65	1	No Impact	No Impact
Rec 99	B	Residential	62	66	63	1	No Impact	No Impact
Rec 100	B	Residential	69	72	70	1	**Impact**	No Impact
Rec 101	B	Residential	60	64	62	2	No Impact	No Impact
Rec 102	B	Residential	62	66	63	1	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 103	B	Residential	56	59	57	1	No Impact	No Impact
Rec 104	B	Residential	58	62	60	2	No Impact	No Impact
Rec 105	C	Commercial	58	62	60	2	No Impact	No Impact
Rec 106	B	Residential	58	62	60	2	No Impact	No Impact
Rec 107	B	Residential	58	61	60	2	No Impact	No Impact
Rec 108	B	Residential	58	62	60	2	No Impact	No Impact
Rec 109	B	Residential	68	72	70	2	**Impact**	No Impact
Rec 110	C	Commercial	69	72	70	1	No Impact	No Impact
Rec 111	C	Commercial	71	75	73	2	**Impact**	No Impact
Rec 112	B	Residential	58	62	60	2	No Impact	No Impact
Rec 113	B	Residential	56	59	58	2	No Impact	No Impact
Rec 114	B	Residential	54	57	56	2	No Impact	No Impact
Rec 115	B	Residential	49	53	54	5	No Impact	No Impact
Rec 116	B	Residential	50	54	54	4	No Impact	No Impact
Rec 117	B	Residential	52	56	54	2	No Impact	No Impact
Rec 118	B	Residential	50	54	52	2	No Impact	No Impact
Rec 119	B	Residential	46	49	50	4	No Impact	No Impact
Rec 120	B	Residential	46	49	51	5	No Impact	No Impact
Rec 121	B	Residential	45	49	50	5	No Impact	No Impact
Rec 122	B	Residential	44	48	53	9	No Impact	No Impact
Rec 123/M23	B	Residential	44	48	49	5	No Impact	No Impact
Rec 124	B	Residential	42	45	52	10	No Impact	No Impact
Rec 125/M24	B	Residential	42	45	51	9	No Impact	No Impact
Rec 126	B	Residential	45	48	50	5	No Impact	No Impact
Rec 127	B	Church	54	56	58	4	No Impact	No Impact
Rec 128/M20	B	Cemetery	53	55	56	3	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE A 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 129	B	Residential	49	51	54	5	No Impact	No Impact
Rec 130	B	Residential	43	45	53	10	No Impact	No Impact
Rec 131	B	Residential	40	43	49	9	No Impact	No Impact
Rec 132	B	Residential	47	49	51	5	No Impact	No Impact
Rec 133/M17	B	Residential	46	48	50	4	No Impact	No Impact
Rec 134	B	Residential	49	51	52	3	No Impact	No Impact
Rec 135	B	Residential	48	50	51	3	No Impact	No Impact
Rec 136	B	Residential	49	51	52	3	No Impact	No Impact
Rec 137	B	Residential	47	49	51	4	No Impact	No Impact
Rec 138	B	Residential	49	51	52	3	No Impact	No Impact
Rec 139	B	Residential	53	55	55	2	No Impact	No Impact
Rec 140	B	Residential	59	61	61	2	No Impact	No Impact
Rec 141	B	Residential	58	60	60	2	No Impact	No Impact
Rec 142	B	Residential	59	61	61	2	No Impact	No Impact
Rec 143	B	Residential	60	62	62	2	No Impact	No Impact
Rec 144	B	Residential	54	56	56	2	No Impact	No Impact
Rec 145	B	Residential	52	54	54	2	No Impact	No Impact
Rec 146	B	Residential	62	65	64	2	No Impact	No Impact
Rec 147	B	Residential	64	66	66	2	**Impact**	No Impact
Rec 148	B	Residential	59	62	61	2	No Impact	No Impact
Rec 149	B	Residential	43	48	53	10	No Impact	No Impact
Rec 150	B	Residential	44	49	55	11	No Impact	No Impact
Rec 151	B	Residential	44	50	55	11	No Impact	No Impact
Rec 152	B	Residential	45	51	56	11	No Impact	No Impact
Rec 153	B	Residential	46	52	56	10	No Impact	No Impact
Rec 154	B	Residential	47	53	57	10	No Impact	**Impact**

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 155	B	Residential	49	55	58	9	No Impact	No Impact
Rec 156	B	Residential	51	57	60	9	No Impact	No Impact
Rec 157	B	Residential	56	62	63	7	No Impact	No Impact
Rec 158	B	Residential	60	62	63	2	No Impact	No Impact
Rec 159	B	Residential	61	63	64	3	No Impact	No Impact
Rec 160	B	Residential	55	58	60	5	No Impact	No Impact
Rec 161	B	Residential	53	55	56	3	No Impact	No Impact
Rec 162	B	Residential	61	63	63	2	No Impact	No Impact
Rec 163	B	Residential	64	65	65	1	No Impact	No Impact
Rec 164	B	Residential	58	60	60	2	No Impact	No Impact
Rec 165	B	Residential	68	69	70	2	**Impact**	No Impact
Rec 166	B	Residential	68	70	70	2	**Impact**	No Impact
Rec 167/M11	B	Residential	65	66	66	1	**Impact**	No Impact
Rec 168	B	Residential	65	66	67	2	**Impact**	No Impact
Rec 169	C	Water Treatment Plant	55	57	57	2	No Impact	No Impact
Rec 170	B	Residential	53	55	55	2	No Impact	No Impact
Rec 171	B	Residential	55	56	57	2	No Impact	No Impact
Rec 172	B	Residential	61	62	62	1	No Impact	No Impact
Rec 173	B	Residential	59	61	61	2	No Impact	No Impact
Rec 174	B	Residential	59	61	61	2	No Impact	No Impact
Rec 175	B	Residential	60	62	62	2	No Impact	No Impact
Rec 176	B	Residential	60	61	61	1	No Impact	No Impact
Rec 177/M12	B	Residential	60	61	61	1	No Impact	No Impact
Rec 178	B	Residential	58	59	59	1	No Impact	No Impact
Rec 179	B	Residential	63	65	65	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 180	B	Residential	46	47	49	3	No Impact	No Impact
Rec 181/M6	B	Elementary School	44	46	48	4	No Impact	No Impact
Rec 182	B	Residential	53	54	54	1	No Impact	No Impact
Rec 183	B	Residential	60	62	62	2	No Impact	No Impact
Rec 184	B	Residential	46	48	49	3	No Impact	No Impact
Rec 185	B	Residential	55	57	57	2	No Impact	No Impact
Rec 186	B	Residential	62	64	64	2	No Impact	No Impact
Rec 187	B	Residential	63	65	65	2	No Impact	No Impact
Rec 188	B	Residential	62	63	63	1	No Impact	No Impact
Rec 189	B	Residential	62	64	64	2	No Impact	No Impact
Rec 190	B	Residential	53	55	55	2	No Impact	No Impact
Rec 191	B	Residential	49	51	51	2	No Impact	No Impact
Rec 192	B	Residential	55	57	57	2	No Impact	No Impact
Rec 193	B	Residential	55	56	57	2	No Impact	No Impact
Rec 194	B	Residential	61	62	62	1	No Impact	No Impact
Rec 195	B	Residential	54	55	56	2	No Impact	No Impact
Rec 196	B	Residential	51	53	53	2	No Impact	No Impact
Rec 197	B	Residential	56	57	57	1	No Impact	No Impact
Rec 198/M13	B	Residential	64	66	66	2	**Impact**	No Impact
Rec 199	B	Residential	61	62	62	1	No Impact	No Impact
Rec 200	B	Residential	53	55	55	2	No Impact	No Impact
Rec 201	B	Residential	63	65	65	2	No Impact	No Impact
Rec 202	B	Residential	58	59	60	2	No Impact	No Impact
Rec 203	B	Residential	59	60	60	1	No Impact	No Impact
Rec 204	B	Residential	59	61	61	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 205	B	Residential	60	61	62	2	No Impact	No Impact
Rec 206	B	Town-homes	56	58	58	2	No Impact	No Impact
Rec 207	B	Town-homes	59	60	60	1	No Impact	No Impact
Rec 208	B	Town-homes	63	64	65	2	No Impact	No Impact
Rec 209	B	Town-homes	61	63	63	2	No Impact	No Impact
Rec 210	B	Town-homes	61	63	63	2	No Impact	No Impact
Rec 211/M14	B	Town-homes	67	69	69	2	**Impact**	No Impact
Rec 212	B	Cemetery	63	64	64	1	No Impact	No Impact
Rec 213	B	Church	60	61	61	1	No Impact	No Impact
Rec 214	B	Church Ball Field	51	52	53	2	No Impact	No Impact
Rec 215	B	Residential	64	66	66	1	**Impact**	No Impact
Rec 216	B	Residential	63	64	64	1	No Impact	No Impact
Rec 217	B	Residential	65	66	66	1	**Impact**	No Impact
Rec 218	B	Residential	62	63	63	1	No Impact	No Impact
Rec 219	B	Residential	65	66	66	1	**Impact**	No Impact
Rec 220	B	Residential	58	60	60	2	No Impact	No Impact
Rec 221	B	Residential	59	60	61	2	No Impact	No Impact
Rec 222	B	Residential	59	61	61	2	No Impact	No Impact
Rec 223	B	Residential	59	61	61	2	No Impact	No Impact
Rec 224	B	Residential	61	63	63	2	No Impact	No Impact
Rec 225	B	Residential	61	62	62	1	No Impact	No Impact
Rec 226	B	Residential	60	62	62	2	No Impact	No Impact
Rec 227/M15	B	Residential	62	64	64	2	No Impact	No Impact
Rec 228	B	Residential	52	54	55	3	No Impact	No Impact
Rec 229	B	Residential	59	61	61	2	No Impact	No Impact
Rec 230	B	Residential	60	61	62	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE A 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 231	B	Residential	61	63	63	2	No Impact	No Impact
Rec 232	B	Residential	60	62	62	2	No Impact	No Impact
Rec 233	B	Residential	52	54	55	3	No Impact	No Impact
Rec 234	B	Residential	59	61	61	2	No Impact	No Impact
Rec 235	B	Residential	51	53	54	3	No Impact	No Impact
Rec 236	B	Residential	61	62	62	1	No Impact	No Impact
Rec 237	B	Residential	54	56	56	2	No Impact	No Impact
Rec 238	B	Residential	52	54	55	3	No Impact	No Impact
Rec 239	B	Residential	61	63	63	2	No Impact	No Impact
Rec 240/M25	B	Residential	55	57	57	2	No Impact	No Impact
Rec 241	B	Residential	62	64	64	2	No Impact	No Impact
Rec 242	B	Residential	63	65	65	2	No Impact	No Impact
Rec 243	B	Residential	65	67	67	2	**Impact**	No Impact
Rec 244	B	Residential	53	56	56	3	No Impact	No Impact
Rec 245	B	Residential	55	57	57	2	No Impact	No Impact
Rec 246	B	Residential	64	67	66	2	**Impact**	No Impact
Rec 247	B	Residential	61	63	62	1	No Impact	No Impact
Rec 248	B	Residential	56	59	58	2	No Impact	No Impact
Rec 249	B	Residential	60	62	62	2	No Impact	No Impact
Rec 250/M16	B	Residential	64	67	66	2	**Impact**	No Impact
Rec 251	B	Residential	65	67	67	2	**Impact**	No Impact
Rec 252	B	Residential	56	58	58	2	No Impact	No Impact
Rec 253	B	Residential	62	64	64	2	No Impact	No Impact
Rec 254	B	Residential	58	60	60	2	No Impact	No Impact
Rec 255	B	Residential	58	60	60	2	No Impact	No Impact
Rec 256	B	Residential	60	62	62	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE A 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 257	B	Residential	63	65	65	2	No Impact	No Impact
Rec 258	B	Residential	55	57	57	2	No Impact	No Impact
Rec 259	B	Residential	59	61	61	2	No Impact	No Impact
Rec 260	B	Residential	54	56	56	2	No Impact	No Impact
Rec 261	B	Residential	50	52	52	2	No Impact	No Impact
Rec 262	B	Residential	50	52	52	2	No Impact	No Impact
Rec 263	B	Residential	53	55	56	3	No Impact	No Impact
Rec 264	B	Residential	49	52	52	3	No Impact	No Impact
Rec 265	B	Residential	45	47	48	3	No Impact	No Impact
Rec 266	B	Residential	40	42	46	6	No Impact	No Impact
Rec 267	B	Residential	40	43	47	7	No Impact	No Impact
Rec 268	B	Residential	40	42	47	7	No Impact	No Impact
Rec 269	B	Residential	40	42	47	7	No Impact	No Impact
Rec 270/M18	B	Residential	40	42	47	7	No Impact	No Impact
Rec 271	B	Residential	47	49	51	4	No Impact	No Impact
Rec 272/M19	B	Residential	42	45	48	6	No Impact	No Impact
Rec 273	B	Residential	42	44	48	6	No Impact	No Impact
Rec 274	B	Residential	42	44	48	6	No Impact	No Impact
Rec 275	B	Residential	42	45	48	6	No Impact	No Impact
Rec 276	B	Residential	42	45	48	6	No Impact	No Impact
Rec 277	B	Residential	42	44	48	6	No Impact	No Impact
Rec 278	B	Residential	42	45	48	6	No Impact	No Impact
Rec 279	B	Residential	44	46	49	5	No Impact	No Impact
Rec 280	B	Residential	51	53	54	3	No Impact	No Impact
Rec 281	B	Residential	59	61	61	2	No Impact	No Impact
Rec 282	B	Residential	42	45	47	5	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE A 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 283	B	Residential	54	56	57	3	No Impact	No Impact
Rec 284	B	Residential	51	54	54	3	No Impact	No Impact
Rec 285	B	Residential	50	53	53	3	No Impact	No Impact
Rec 286	B	Residential	53	55	55	2	No Impact	No Impact
Rec 287	B	Residential	55	57	57	2	No Impact	No Impact
Rec 288/M22	B	Residential	47	50	50	3	No Impact	No Impact
Rec 289	B	Residential	45	48	49	4	No Impact	No Impact
Rec 290	C	Commercial	44	47	49	5	No Impact	No Impact
Rec 291	B	Residential	46	49	49	3	No Impact	No Impact
Rec 292	B	Residential	51	53	53	2	No Impact	No Impact
Rec 293	B	Residential	44	48	48	4	No Impact	No Impact
Rec 294	B	Residential	45	49	49	4	No Impact	No Impact
Rec 295	B	Residential	49	52	51	3	No Impact	No Impact
Rec 296	B	Residential	61	64	62	1	No Impact	No Impact
Rec 297	B	Residential	63	66	65	2	No Impact	No Impact
Rec 298/M21	C	Commercial	68	71	69	1	No Impact	No Impact
Rec 299	B	Residential	46	48	49	3	No Impact	No Impact
Rec 300	B	Residential	47	49	50	3	No Impact	No Impact
Rec 301	B	Residential	46	48	48	2	No Impact	No Impact
Rec 302	B	Schoolhouse Museum	45	46	47	2	No Impact	No Impact
Rec 303	B	Schoolhouse Museum	44	45	46	2	No Impact	No Impact
Rec 304	B	Schoolhouse Museum	43	45	46	3	No Impact	No Impact
Rec 236-A	B	Residential	60	62	62	2	No Impact	No Impact
Rec 261-A	B	Residential	57	59	59	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE A 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 90-A	C	Commercial	64	67	NA	NA	NA	NA
Rec 97-A	B	Residential	55	59	57	2	No Impact	No Impact
Rec 98-A	B	Residential	60	63	61	2	No Impact	No Impact
Rec 99-A	B	Residential	60	64	61	2	No Impact	No Impact
Rec 100-A	B	Residential	62	66	64	2	No Impact	No Impact

Results Table 2

2008 Existing and 2035 Future Noise Levels Alternative C

Results Table 2: 2008 Existing and 2035 Future Noise Levels, Alternative C

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 1	B	Residential	56	61	64	8	No Impact	No Impact
Rec 2	B	Residential	49	55	59	10	No Impact	**Impact**
Rec 3	B	Residential	47	52	58	11	No Impact	**Impact**
Rec 4	B	Residential	46	50	58	12	No Impact	**Impact**
Rec 5	B	Residential	46	49	57	11	No Impact	**Impact**
Rec 6	B	Residential	46	49	57	11	No Impact	**Impact**
Rec 7/M1	B	Residential	41	45	60	19	No Impact	**Impact**
Rec 8	B	Residential	40	45	59	19	No Impact	**Impact**
Rec 9	B	Residential	41	45	59	18	No Impact	**Impact**
Rec 10	B	Residential	41	45	59	18	No Impact	**Impact**
Rec 11	B	Residential	43	46	56	13	No Impact	No Impact
Rec 12	B	Residential	41	44	59	18	No Impact	**Impact**
Rec 13	B	Residential	41	44	58	17	No Impact	**Impact**
Rec 14	B	Residential	40	43	57	17	No Impact	**Impact**
Rec 15	B	Residential	40	43	57	17	No Impact	**Impact**
Rec 16	B	Residential	41	44	56	15	No Impact	No Impact
Rec 17	B	Residential	40	43	56	16	No Impact	No Impact
Rec 18	B	Residential	45	47	53	8	No Impact	No Impact
Rec 19	B	Residential	40	43	55	15	No Impact	No Impact
Rec 20	B	Residential	40	43	55	15	No Impact	No Impact
Rec 21	B	Residential	41	43	54	13	No Impact	No Impact
Rec 22	B	Residential	40	43	54	14	No Impact	No Impact
Rec 23	B	Residential	39	42	53	14	No Impact	No Impact
Rec 24	B	Residential	42	44	53	11	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 25	B	Residential	40	43	52	12	No Impact	No Impact
Rec 26	B	Residential	46	48	52	6	No Impact	No Impact
Rec 27	B	Residential	41	43	52	11	No Impact	No Impact
Rec 28	B	Residential	40	42	52	12	No Impact	No Impact
Rec 29	B	Residential	40	42	52	12	No Impact	No Impact
Rec 30	B	Residential	38	41	54	16	No Impact	No Impact
Rec 31	B	Residential	41	43	55	14	No Impact	No Impact
Rec 32	B	Residential	40	43	56	16	No Impact	No Impact
Rec 33	B	Residential	40	42	58	18	No Impact	**Impact**
Rec 34	B	Residential	38	40	70	32	**Impact**	**Impact**
Rec 35/M2	B	Residential	38	40	68	30	**Impact**	**Impact**
Rec 36	B	Residential	38	41	56	18	No Impact	No Impact
Rec 37	B	Residential	38	41	59	21	No Impact	**Impact**
Rec 38	B	Residential	39	41	57	18	No Impact	**Impact**
Rec 39	B	Residential	39	41	58	19	No Impact	**Impact**
Rec 40	B	Residential	39	41	58	19	No Impact	**Impact**
Rec 41	B	Residential	39	41	58	19	No Impact	**Impact**
Rec 42	B	Residential	39	41	62	23	No Impact	**Impact**
Rec 43	B	Residential	39	41	61	22	No Impact	**Impact**
Rec 44	B	Residential	39	41	59	20	No Impact	**Impact**
Rec 45	B	Residential	40	42	57	17	No Impact	**Impact**
Rec 46	B	Residential	40	42	59	19	No Impact	**Impact**
Rec 47	B	Residential	40	42	59	19	No Impact	**Impact**
Rec 48	B	Residential	40	42	65	25	No Impact	**Impact**
Rec 49	B	Residential	41	43	60	19	No Impact	**Impact**
Rec 50	B	Residential	43	44	58	15	No Impact	**Impact**

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 51/M3	B	Residential	40	42	65	25	No Impact	**Impact**
Rec 52	B	Residential	40	42	NA	NA	NA	NA
Rec 53	B	Residential	44	45	NA	NA	NA	NA
Rec 54	B	Residential	45	46	59	14	No Impact	**Impact**
Rec 55	B	Residential	49	51	59	10	No Impact	**Impact**
Rec 56	B	Residential	57	58	63	6	No Impact	No Impact
Rec 57	B	Residential	60	61	66	6	**Impact**	No Impact
Rec 58	B	Residential	56	57	65	9	No Impact	No Impact
Rec 59	B	Residential	49	50	64	15	No Impact	**Impact**
Rec 60	B	Residential	44	45	63	19	No Impact	**Impact**
Rec 61	B	Residential	46	47	NA	NA	NA	NA
Rec 62	B	Residential	45	47	66	21	**Impact**	**Impact**
Rec 63/M5	B	Residential	40	42	71	31	**Impact**	**Impact**
Rec 64	B	Residential	41	43	62	21	No Impact	**Impact**
Rec 65	B	Residential	41	43	61	20	No Impact	**Impact**
Rec 66/M4	B	Residential	40	42	67	27	**Impact**	**Impact**
Rec 67	B	Residential	40	41	NA	NA	NA	NA
Rec 68	B	Residential	38	40	58	20	No Impact	**Impact**
Rec 69	B	Residential	38	40	58	20	No Impact	**Impact**
Rec 70	B	Residential	39	40	60	21	No Impact	**Impact**
Rec 71	B	Residential	63	65	65	2	No Impact	No Impact
Rec 72/M10	B	Residential	68	71	70	2	**Impact**	No Impact
Rec 73	B	Residential	63	65	65	2	No Impact	No Impact
Rec 74	B	Residential	62	64	64	2	No Impact	No Impact
Rec 75	B	Residential	45	47	50	5	No Impact	No Impact
Rec 76/M7	B	Residential	47	49	51	4	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 77	B	Residential	41	43	49	8	No Impact	No Impact
Rec 78	B	Residential	48	50	53	5	No Impact	No Impact
Rec 79	B	Residential	45	47	52	7	No Impact	No Impact
Rec 80	B	Residential	50	52	54	4	No Impact	No Impact
Rec 81	B	Residential	50	52	55	5	No Impact	No Impact
Rec 82	B	Residential	45	47	53	8	No Impact	No Impact
Rec 83	B	Residential	46	48	53	7	No Impact	No Impact
Rec 84/M8	B	Trailer Park	41	44	48	7	No Impact	No Impact
Rec 85	B	Trailer Park	43	46	49	6	No Impact	No Impact
Rec 86	B	Trailer Park	44	48	49	5	No Impact	No Impact
Rec 87	B	Trailer Park	47	50	50	3	No Impact	No Impact
Rec 88	B	Trailer Park	51	54	53	2	No Impact	No Impact
Rec 89	B	Residential	64	68	66	2	**Impact**	No Impact
Rec 90	B	Residential	66	70	68	2	**Impact**	No Impact
Rec 91	B	Residential	68	72	70	2	**Impact**	No Impact
Rec 92	B	Residential	69	72	70	1	**Impact**	No Impact
Rec 93/M9	B	Church	70	74	72	2	**Impact**	No Impact
Rec 94	C	Commercial	69	73	71	2	No Impact	No Impact
Rec 95	B	Residential	64	68	66	2	**Impact**	No Impact
Rec 96	B	Residential	65	68	68	3	**Impact**	No Impact
Rec 97	B	Residential	63	67	NA	NA	NA	NA
Rec 98	B	Residential	64	67	NA	NA	NA	NA
Rec 99	B	Residential	62	66	NA	NA	NA	NA
Rec 100	B	Residential	69	72	71	2	**Impact**	No Impact
Rec 101	B	Residential	60	64	64	4	No Impact	No Impact
Rec 102	B	Residential	62	66	66	4	**Impact**	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 103	B	Residential	56	59	61	5	No Impact	No Impact
Rec 104	B	Residential	58	62	64	6	No Impact	No Impact
Rec 105	C	Commercial	58	62	67	9	No Impact	No Impact
Rec 106	B	Residential	58	62	NA	NA	NA	NA
Rec 107	B	Residential	58	61	NA	NA	NA	NA
Rec 108	B	Residential	58	62	71	13	**Impact**	**Impact**
Rec 109	B	Residential	68	72	NA	NA	NA	NA
Rec 110	C	Commercial	69	72	71	2	**Impact**	No Impact
Rec 111	C	Commercial	71	75	73	2	**Impact**	No Impact
Rec 112	B	Residential	58	62	62	4	No Impact	No Impact
Rec 113	B	Residential	56	59	63	7	No Impact	No Impact
Rec 114	B	Residential	54	57	64	10	No Impact	**Impact**
Rec 115	B	Residential	49	53	63	14	No Impact	**Impact**
Rec 116	B	Residential	50	54	70	20	**Impact**	**Impact**
Rec 117	B	Residential	52	56	66	14	**Impact**	**Impact**
Rec 118	B	Residential	50	54	65	15	No Impact	**Impact**
Rec 119	B	Residential	46	49	73	27	**Impact**	**Impact**
Rec 120	B	Residential	46	49	NA	NA	NA	NA
Rec 121	B	Residential	45	49	NA	NA	NA	NA
Rec 122	B	Residential	44	48	59	15	No Impact	**Impact**
Rec 123/M23	B	Residential	44	48	71	27	**Impact**	**Impact**
Rec 124	B	Residential	42	45	58	16	No Impact	**Impact**
Rec 125/M24	B	Residential	42	45	73	31	**Impact**	**Impact**
Rec 126	B	Residential	45	48	72	27	**Impact**	**Impact**
Rec 127	B	Church	54	56	66	12	**Impact**	**Impact**
Rec 128/M20	B	Cemetery	53	55	66	13	**Impact**	**Impact**

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 129	B	Residential	49	51	71	22	**Impact**	**Impact**
Rec 130	B	Residential	43	45	59	15	No Impact	**Impact**
Rec 131	B	Residential	40	43	NA	NA	NA	NA
Rec 132	B	Residential	47	49	NA	NA	NA	NA
Rec 133/M17	B	Residential	46	48	72	26	**Impact**	**Impact**
Rec 134	B	Residential	49	51	68	19	**Impact**	**Impact**
Rec 135	B	Residential	48	50	72	24	**Impact**	**Impact**
Rec 136	B	Residential	49	51	NA	NA	NA	NA
Rec 137	B	Residential	47	49	NA	NA	NA	NA
Rec 138	B	Residential	49	51	NA	NA	NA	NA
Rec 139	B	Residential	53	55	65	12	No Impact	**Impact**
Rec 140	B	Residential	59	61	NA	NA	NA	NA
Rec 141	B	Residential	58	60	NA	NA	NA	NA
Rec 142	B	Residential	59	61	NA	NA	NA	NA
Rec 143	B	Residential	60	62	NA	NA	NA	NA
Rec 144	B	Residential	54	56	NA	NA	NA	NA
Rec 145	B	Residential	52	54	67	15	**Impact**	**Impact**
Rec 146	B	Residential	62	65	67	5	**Impact**	No Impact
Rec 147	B	Residential	64	66	NA	NA	NA	NA
Rec 148	B	Residential	59	62	NA	NA	NA	NA
Rec 149	B	Residential	43	48	53	10	No Impact	No Impact
Rec 150	B	Residential	44	49	55	11	No Impact	No Impact
Rec 151	B	Residential	44	50	55	11	No Impact	No Impact
Rec 152	B	Residential	45	51	56	11	No Impact	No Impact
Rec 153	B	Residential	46	52	56	10	No Impact	No Impact
Rec 154	B	Residential	47	53	57	10	No Impact	**Impact**

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 155	B	Residential	49	55	58	9	No Impact	No Impact
Rec 156	B	Residential	51	57	60	9	No Impact	No Impact
Rec 157	B	Residential	56	62	63	7	No Impact	No Impact
Rec 158	B	Residential	60	62	63	3	No Impact	No Impact
Rec 159	B	Residential	61	63	64	3	No Impact	No Impact
Rec 160	B	Residential	55	58	60	5	No Impact	No Impact
Rec 161	B	Residential	53	55	56	3	No Impact	No Impact
Rec 162	B	Residential	61	63	63	2	No Impact	No Impact
Rec 163	B	Residential	64	65	65	1	No Impact	No Impact
Rec 164	B	Residential	58	60	60	2	No Impact	No Impact
Rec 165	B	Residential	68	69	70	2	**Impact**	No Impact
Rec 166	B	Residential	68	70	70	2	**Impact**	No Impact
Rec 167/M11	B	Residential	65	66	66	1	**Impact**	No Impact
Rec 168	B	Residential	65	66	67	2	**Impact**	No Impact
Rec 169	C	Water Treatment Plant	55	57	57	2	No Impact	No Impact
Rec 170	B	Residential	53	55	55	2	No Impact	No Impact
Rec 171	B	Residential	55	56	57	2	No Impact	No Impact
Rec 172	B	Residential	61	62	62	1	No Impact	No Impact
Rec 173	B	Residential	59	61	61	2	No Impact	No Impact
Rec 174	B	Residential	59	61	61	2	No Impact	No Impact
Rec 175	B	Residential	60	62	62	2	No Impact	No Impact
Rec 176	B	Residential	60	61	61	1	No Impact	No Impact
Rec 177/M12	B	Residential	60	61	61	1	No Impact	No Impact
Rec 178	B	Residential	58	59	59	1	No Impact	No Impact
Rec 179	B	Residential	63	65	65	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 180	B	Residential	46	47	49	3	No Impact	No Impact
Rec 181/M6	B	Elementary School	44	46	48	4	No Impact	No Impact
Rec 182	B	Residential	53	54	54	1	No Impact	No Impact
Rec 183	B	Residential	60	62	62	2	No Impact	No Impact
Rec 184	B	Residential	46	48	49	3	No Impact	No Impact
Rec 185	B	Residential	55	57	57	2	No Impact	No Impact
Rec 186	B	Residential	62	64	64	2	No Impact	No Impact
Rec 187	B	Residential	63	65	65	2	No Impact	No Impact
Rec 188	B	Residential	62	63	63	1	No Impact	No Impact
Rec 189	B	Residential	62	64	64	2	No Impact	No Impact
Rec 190	B	Residential	53	55	55	2	No Impact	No Impact
Rec 191	B	Residential	49	51	51	2	No Impact	No Impact
Rec 192	B	Residential	55	57	57	2	No Impact	No Impact
Rec 193	B	Residential	55	56	57	2	No Impact	No Impact
Rec 194	B	Residential	61	62	62	1	No Impact	No Impact
Rec 195	B	Residential	54	55	56	2	No Impact	No Impact
Rec 196	B	Residential	51	53	53	2	No Impact	No Impact
Rec 197	B	Residential	56	57	57	2	No Impact	No Impact
Rec 198/M13	B	Residential	64	66	66	2	**Impact**	No Impact
Rec 199	B	Residential	61	62	62	1	No Impact	No Impact
Rec 200	B	Residential	53	55	55	2	No Impact	No Impact
Rec 201	B	Residential	63	65	65	2	No Impact	No Impact
Rec 202	B	Residential	58	59	60	2	No Impact	No Impact
Rec 203	B	Residential	59	60	60	1	No Impact	No Impact
Rec 204	B	Residential	59	61	61	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 205	B	Residential	60	61	62	2	No Impact	No Impact
Rec 206	B	Town-homes	56	58	58	2	No Impact	No Impact
Rec 207	B	Town-homes	59	60	60	1	No Impact	No Impact
Rec 208	B	Town-homes	63	64	65	2	No Impact	No Impact
Rec 209	B	Town-homes	61	63	63	2	No Impact	No Impact
Rec 210	B	Town-homes	61	63	63	2	No Impact	No Impact
Rec 211/M14	B	Town-homes	67	69	69	2	**Impact**	No Impact
Rec 212	B	Cemetery	63	64	64	1	No Impact	No Impact
Rec 213	B	Church	60	61	61	1	No Impact	No Impact
Rec 214	B	Church Ball Field	51	52	53	2	No Impact	No Impact
Rec 215	B	Residential	64	66	66	2	**Impact**	No Impact
Rec 216	B	Residential	63	64	64	1	No Impact	No Impact
Rec 217	B	Residential	65	66	66	1	**Impact**	No Impact
Rec 218	B	Residential	62	63	63	1	No Impact	No Impact
Rec 219	B	Residential	65	66	67	2	**Impact**	No Impact
Rec 220	B	Residential	58	60	60	2	No Impact	No Impact
Rec 221	B	Residential	59	60	61	2	No Impact	No Impact
Rec 222	B	Residential	59	61	61	2	No Impact	No Impact
Rec 223	B	Residential	59	61	61	2	No Impact	No Impact
Rec 224	B	Residential	61	63	63	2	No Impact	No Impact
Rec 225	B	Residential	61	62	63	2	No Impact	No Impact
Rec 226	B	Residential	60	62	62	2	No Impact	No Impact
Rec 227/M15	B	Residential	62	64	64	2	No Impact	No Impact
Rec 228	B	Residential	52	54	56	4	No Impact	No Impact
Rec 229	B	Residential	59	61	61	2	No Impact	No Impact
Rec 230	B	Residential	60	61	62	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE C 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 231	B	Residential	61	63	63	2	No Impact	No Impact
Rec 232	B	Residential	60	62	63	3	No Impact	No Impact
Rec 233	B	Residential	52	54	58	6	No Impact	No Impact
Rec 234	B	Residential	59	61	62	3	No Impact	No Impact
Rec 235	B	Residential	51	53	58	7	No Impact	No Impact
Rec 236	B	Residential	61	62	63	2	No Impact	No Impact
Rec 237	B	Residential	54	56	58	4	No Impact	No Impact
Rec 238	B	Residential	52	54	58	6	No Impact	No Impact
Rec 239	B	Residential	61	63	63	2	No Impact	No Impact
Rec 240/M25	B	Residential	55	57	59	4	No Impact	No Impact
Rec 241	B	Residential	62	64	64	2	No Impact	No Impact
Rec 242	B	Residential	63	65	65	2	No Impact	No Impact
Rec 243	B	Residential	65	67	67	2	**Impact**	No Impact
Rec 244	B	Residential	53	56	58	5	No Impact	No Impact
Rec 245	B	Residential	55	57	59	4	No Impact	No Impact
Rec 246	B	Residential	64	67	66	2	**Impact**	No Impact
Rec 247	B	Residential	61	63	63	2	No Impact	No Impact
Rec 248	B	Residential	56	59	59	3	No Impact	No Impact
Rec 249	B	Residential	60	62	63	3	No Impact	No Impact
Rec 250/M16	B	Residential	64	67	66	2	**Impact**	No Impact
Rec 251	B	Residential	65	67	68	3	**Impact**	No Impact
Rec 252	B	Residential	56	58	60	4	No Impact	No Impact
Rec 253	B	Residential	62	64	64	2	No Impact	No Impact
Rec 254	B	Residential	58	60	60	2	No Impact	No Impact
Rec 255	B	Residential	58	60	60	2	No Impact	No Impact
Rec 256	B	Residential	60	62	62	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE C 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 257	B	Residential	63	65	65	2	No Impact	No Impact
Rec 258	B	Residential	55	57	59	5	No Impact	No Impact
Rec 259	B	Residential	59	61	61	2	No Impact	No Impact
Rec 260	B	Residential	54	56	58	4	No Impact	No Impact
Rec 261	B	Residential	50	52	57	7	No Impact	No Impact
Rec 262	B	Residential	50	52	57	7	No Impact	No Impact
Rec 263	B	Residential	53	55	58	5	No Impact	No Impact
Rec 264	B	Residential	49	52	54	5	No Impact	No Impact
Rec 265	B	Residential	45	47	54	9	No Impact	No Impact
Rec 266	B	Residential	40	42	57	17	No Impact	**Impact**
Rec 267	B	Residential	40	43	59	19	No Impact	**Impact**
Rec 268	B	Residential	40	42	61	21	No Impact	**Impact**
Rec 269	B	Residential	40	42	58	18	No Impact	**Impact**
Rec 270/M18	B	Residential	40	42	60	20	No Impact	**Impact**
Rec 271	B	Residential	47	49	60	13	No Impact	**Impact**
Rec 272/M19	B	Residential	42	45	62	20	No Impact	**Impact**
Rec 273	B	Residential	42	44	59	17	No Impact	**Impact**
Rec 274	B	Residential	42	44	59	17	No Impact	**Impact**
Rec 275	B	Residential	42	45	59	17	No Impact	**Impact**
Rec 276	B	Residential	42	45	59	17	No Impact	**Impact**
Rec 277	B	Residential	42	44	58	16	No Impact	**Impact**
Rec 278	B	Residential	42	45	58	16	No Impact	**Impact**
Rec 279	B	Residential	44	46	58	14	No Impact	**Impact**
Rec 280	B	Residential	51	53	58	7	No Impact	No Impact
Rec 281	B	Residential	59	61	62	3	No Impact	No Impact
Rec 282	B	Residential	42	45	53	11	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 283	B	Residential	54	56	61	7	No Impact	No Impact
Rec 284	B	Residential	51	54	57	6	No Impact	No Impact
Rec 285	B	Residential	50	53	57	7	No Impact	No Impact
Rec 286	B	Residential	53	55	58	5	No Impact	No Impact
Rec 287	B	Residential	55	57	59	3	No Impact	No Impact
Rec 288/M22	B	Residential	47	50	56	9	No Impact	No Impact
Rec 289	B	Residential	45	48	57	12	No Impact	**Impact**
Rec 290	C	Commercial	44	47	67	23	No Impact	**Impact**
Rec 291	B	Residential	46	49	56	10	No Impact	No Impact
Rec 292	B	Residential	51	53	56	5	No Impact	No Impact
Rec 293	B	Residential	44	48	61	16	No Impact	**Impact**
Rec 294	B	Residential	45	49	62	16	No Impact	**Impact**
Rec 295	B	Residential	49	52	56	7	No Impact	No Impact
Rec 296	B	Residential	61	64	63	2	No Impact	No Impact
Rec 297	B	Residential	63	66	65	2	No Impact	No Impact
Rec 298/M21	C	Commercial	68	71	69	2	No Impact	No Impact
Rec 299	B	Residential	46	48	49	3	No Impact	No Impact
Rec 300	B	Residential	47	49	50	2	No Impact	No Impact
Rec 301	B	Residential	46	48	48	3	No Impact	No Impact
Rec 302	B	Schoolhouse Museum	45	46	47	3	No Impact	No Impact
Rec 303	B	Schoolhouse Museum	44	45	46	2	No Impact	No Impact
Rec 304	B	Schoolhouse Museum	43	45	46	2	No Impact	No Impact
Rec 236-A	B	Residential	60	62	63	2	No Impact	No Impact
Rec 261-A	B	Residential	57	59	60	3	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE C 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 90-A	C	Commercial	64	67	65	1	No Impact	No Impact
Rec 97-A	B	Residential	55	59	NA	NA	NA	NA
Rec 98-A	B	Residential	60	63	NA	NA	NA	NA
Rec 99-A	B	Residential	60	64	NA	NA	NA	NA
Rec 100-A	B	Residential	62	66	NA	NA	NA	NA

Results Table 3

2008 Existing and 2035 Future Noise Levels Alternative D

Results Table 3: 2008 Existing and 2035 Future Noise Levels, Alternative D

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE D 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 1	B	Residential	56	61	63	7	No Impact	No Impact
Rec 2	B	Residential	49	55	56	7	No Impact	No Impact
Rec 3	B	Residential	47	52	53	6	No Impact	No Impact
Rec 4	B	Residential	46	50	51	5	No Impact	No Impact
Rec 5	B	Residential	46	49	50	4	No Impact	No Impact
Rec 6	B	Residential	46	49	50	4	No Impact	No Impact
Rec 7/M1	B	Residential	41	45	47	6	No Impact	No Impact
Rec 8	B	Residential	40	45	46	6	No Impact	No Impact
Rec 9	B	Residential	41	45	46	5	No Impact	No Impact
Rec 10	B	Residential	41	45	46	5	No Impact	No Impact
Rec 11	B	Residential	43	46	48	5	No Impact	No Impact
Rec 12	B	Residential	41	44	46	5	No Impact	No Impact
Rec 13	B	Residential	41	44	46	5	No Impact	No Impact
Rec 14	B	Residential	40	43	45	5	No Impact	No Impact
Rec 15	B	Residential	40	43	45	5	No Impact	No Impact
Rec 16	B	Residential	41	44	45	4	No Impact	No Impact
Rec 17	B	Residential	40	43	45	5	No Impact	No Impact
Rec 18	B	Residential	45	47	49	4	No Impact	No Impact
Rec 19	B	Residential	40	43	44	4	No Impact	No Impact
Rec 20	B	Residential	40	43	44	4	No Impact	No Impact
Rec 21	B	Residential	41	43	45	4	No Impact	No Impact
Rec 22	B	Residential	40	43	44	4	No Impact	No Impact
Rec 23	B	Residential	39	42	43	4	No Impact	No Impact
Rec 24	B	Residential	42	44	45	3	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE D 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 25	B	Residential	40	43	44	4	No Impact	No Impact
Rec 26	B	Residential	46	48	49	3	No Impact	No Impact
Rec 27	B	Residential	41	43	44	3	No Impact	No Impact
Rec 28	B	Residential	40	42	43	3	No Impact	No Impact
Rec 29	B	Residential	40	42	44	4	No Impact	No Impact
Rec 30	B	Residential	38	41	42	4	No Impact	No Impact
Rec 31	B	Residential	41	43	44	3	No Impact	No Impact
Rec 32	B	Residential	40	43	44	4	No Impact	No Impact
Rec 33	B	Residential	40	42	44	4	No Impact	No Impact
Rec 34	B	Residential	38	40	42	4	No Impact	No Impact
Rec 35/M2	B	Residential	38	40	42	4	No Impact	No Impact
Rec 36	B	Residential	38	41	43	5	No Impact	No Impact
Rec 37	B	Residential	38	41	42	4	No Impact	No Impact
Rec 38	B	Residential	39	41	43	4	No Impact	No Impact
Rec 39	B	Residential	39	41	43	4	No Impact	No Impact
Rec 40	B	Residential	39	41	43	4	No Impact	No Impact
Rec 41	B	Residential	39	41	44	5	No Impact	No Impact
Rec 42	B	Residential	39	41	43	4	No Impact	No Impact
Rec 43	B	Residential	39	41	43	4	No Impact	No Impact
Rec 44	B	Residential	39	41	44	5	No Impact	No Impact
Rec 45	B	Residential	40	42	44	4	No Impact	No Impact
Rec 46	B	Residential	40	42	44	4	No Impact	No Impact
Rec 47	B	Residential	40	42	44	4	No Impact	No Impact
Rec 48	B	Residential	40	42	43	3	No Impact	No Impact
Rec 49	B	Residential	41	43	44	3	No Impact	No Impact
Rec 50	B	Residential	43	44	45	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 51/M3	B	Residential	40	42	43	3	No Impact	No Impact
Rec 52	B	Residential	40	42	43	3	No Impact	No Impact
Rec 53	B	Residential	44	45	45	1	No Impact	No Impact
Rec 54	B	Residential	45	46	47	2	No Impact	No Impact
Rec 55	B	Residential	49	51	50	1	No Impact	No Impact
Rec 56	B	Residential	57	58	57	0	No Impact	No Impact
Rec 57	B	Residential	60	61	60	0	No Impact	No Impact
Rec 58	B	Residential	56	57	56	0	No Impact	No Impact
Rec 59	B	Residential	49	50	49	1	No Impact	No Impact
Rec 60	B	Residential	44	45	46	2	No Impact	No Impact
Rec 61	B	Residential	46	47	47	1	No Impact	No Impact
Rec 62	B	Residential	45	47	46	1	No Impact	No Impact
Rec 63/M5	B	Residential	40	42	43	3	No Impact	No Impact
Rec 64	B	Residential	41	43	44	3	No Impact	No Impact
Rec 65	B	Residential	41	43	45	4	No Impact	No Impact
Rec 66/M4	B	Residential	40	42	44	4	No Impact	No Impact
Rec 67	B	Residential	40	41	43	3	No Impact	No Impact
Rec 68	B	Residential	38	40	42	4	No Impact	No Impact
Rec 69	B	Residential	38	40	42	4	No Impact	No Impact
Rec 70	B	Residential	39	40	42	3	No Impact	No Impact
Rec 71	B	Residential	63	65	64	1	No Impact	No Impact
Rec 72/M10	B	Residential	68	71	70	2	**Impact**	No Impact
Rec 73	B	Residential	63	65	65	2	No Impact	No Impact
Rec 74	B	Residential	62	64	64	2	No Impact	No Impact
Rec 75	B	Residential	45	47	48	3	No Impact	No Impact
Rec 76/M7	B	Residential	47	49	50	3	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	FHWA LAND USE Activity Category	Land Use at Receptor Location	2008 EXISTING Leq(H) dBA	2035 NO BUILD Leq(H) dBA	ALTERNATIVE D 2035 BUILD Leq(H) dBA	BUILD MINUS EXISTING DELTA (dBA)	PREDICTED BUILD NOISE LEVELS vs. FHWA NAC	PREDICTED BUILD vs. EXISTING NOISE LEVELS
Rec 77	B	Residential	41	43	45	4	No Impact	No Impact
Rec 78	B	Residential	48	50	52	4	No Impact	No Impact
Rec 79	B	Residential	45	47	52	7	No Impact	No Impact
Rec 80	B	Residential	50	52	58	8	No Impact	No Impact
Rec 81	B	Residential	50	52	59	9	No Impact	No Impact
Rec 82	B	Residential	45	47	54	9	No Impact	No Impact
Rec 83	B	Residential	46	48	54	8	No Impact	No Impact
Rec 84/M8	B	Trailer Park	41	44	44	3	No Impact	No Impact
Rec 85	B	Trailer Park	43	46	46	3	No Impact	No Impact
Rec 86	B	Trailer Park	44	48	47	3	No Impact	No Impact
Rec 87	B	Trailer Park	47	50	49	2	No Impact	No Impact
Rec 88	B	Trailer Park	51	54	53	2	No Impact	No Impact
Rec 89	B	Residential	64	68	66	2	**Impact**	No Impact
Rec 90	B	Residential	66	70	68	2	**Impact**	No Impact
Rec 91	B	Residential	68	72	69	1	**Impact**	No Impact
Rec 92	B	Residential	69	72	70	1	**Impact**	No Impact
Rec 93/M9	B	Church	70	74	72	2	**Impact**	No Impact
Rec 94	C	Commercial	69	73	70	1	No Impact	No Impact
Rec 95	B	Residential	64	68	66	2	**Impact**	No Impact
Rec 96	B	Residential	65	68	66	1	**Impact**	No Impact
Rec 97	B	Residential	63	67	65	2	No Impact	No Impact
Rec 98	B	Residential	64	67	65	1	No Impact	No Impact
Rec 99	B	Residential	62	66	63	1	No Impact	No Impact
Rec 100	B	Residential	69	72	70	1	**Impact**	No Impact
Rec 101	B	Residential	60	64	62	2	No Impact	No Impact
Rec 102	B	Residential	62	66	64	2	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 103	B	Residential	56	59	58	2	No Impact	No Impact
Rec 104	B	Residential	58	62	60	2	No Impact	No Impact
Rec 105	C	Commercial	58	62	60	2	No Impact	No Impact
Rec 106	B	Residential	58	62	60	2	No Impact	No Impact
Rec 107	B	Residential	58	61	59	1	No Impact	No Impact
Rec 108	B	Residential	58	62	60	2	No Impact	No Impact
Rec 109	B	Residential	68	72	70	2	**Impact**	No Impact
Rec 110	C	Commercial	69	72	70	1	No Impact	No Impact
Rec 111	C	Commercial	71	75	73	2	**Impact**	No Impact
Rec 112	B	Residential	58	62	60	2	No Impact	No Impact
Rec 113	B	Residential	56	59	57	1	No Impact	No Impact
Rec 114	B	Residential	54	57	55	1	No Impact	No Impact
Rec 115	B	Residential	49	53	52	3	No Impact	No Impact
Rec 116	B	Residential	50	54	53	3	No Impact	No Impact
Rec 117	B	Residential	52	56	55	3	No Impact	No Impact
Rec 118	B	Residential	50	54	54	4	No Impact	No Impact
Rec 119	B	Residential	46	49	52	6	No Impact	No Impact
Rec 120	B	Residential	46	49	51	5	No Impact	No Impact
Rec 121	B	Residential	45	49	52	7	No Impact	No Impact
Rec 122	B	Residential	44	48	49	5	No Impact	No Impact
Rec 123/M23	B	Residential	44	48	54	10	No Impact	No Impact
Rec 124	B	Residential	42	45	50	8	No Impact	No Impact
Rec 125/M24	B	Residential	42	45	54	12	No Impact	No Impact
Rec 126	B	Residential	45	48	62	17	No Impact	**Impact**
Rec 127	B	Church	54	56	66	12	**Impact**	**Impact**
Rec 128/M20	B	Cemetery	53	55	65	12	No Impact	**Impact**

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 129	B	Residential	49	51	58	9	No Impact	No Impact
Rec 130	B	Residential	43	45	50	7	No Impact	No Impact
Rec 131	B	Residential	40	43	65	25	No Impact	**Impact**
Rec 132	B	Residential	47	49	50	3	No Impact	No Impact
Rec 133/M17	B	Residential	46	48	51	5	No Impact	No Impact
Rec 134	B	Residential	49	51	53	4	No Impact	No Impact
Rec 135	B	Residential	48	50	52	4	No Impact	No Impact
Rec 136	B	Residential	49	51	53	4	No Impact	No Impact
Rec 137	B	Residential	47	49	51	4	No Impact	No Impact
Rec 138	B	Residential	49	51	52	3	No Impact	No Impact
Rec 139	B	Residential	53	55	55	2	No Impact	No Impact
Rec 140	B	Residential	59	61	61	2	No Impact	No Impact
Rec 141	B	Residential	58	60	60	2	No Impact	No Impact
Rec 142	B	Residential	59	61	61	2	No Impact	No Impact
Rec 143	B	Residential	60	62	62	2	No Impact	No Impact
Rec 144	B	Residential	54	56	56	2	No Impact	No Impact
Rec 145	B	Residential	52	54	55	3	No Impact	No Impact
Rec 146	B	Residential	62	65	64	2	No Impact	No Impact
Rec 147	B	Residential	64	66	66	2	**Impact**	No Impact
Rec 148	B	Residential	59	62	61	2	No Impact	No Impact
Rec 149	B	Residential	43	48	50	7	No Impact	No Impact
Rec 150	B	Residential	44	49	51	7	No Impact	No Impact
Rec 151	B	Residential	44	50	51	7	No Impact	No Impact
Rec 152	B	Residential	45	51	52	7	No Impact	No Impact
Rec 153	B	Residential	46	52	53	7	No Impact	No Impact
Rec 154	B	Residential	47	53	55	8	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 155	B	Residential	49	55	56	7	No Impact	No Impact
Rec 156	B	Residential	51	57	59	8	No Impact	No Impact
Rec 157	B	Residential	56	62	63	7	No Impact	No Impact
Rec 158	B	Residential	60	62	66	6	**Impact**	No Impact
Rec 159	B	Residential	61	63	67	6	**Impact**	No Impact
Rec 160	B	Residential	55	58	62	7	No Impact	No Impact
Rec 161	B	Residential	53	55	59	6	No Impact	No Impact
Rec 162	B	Residential	61	63	63	2	No Impact	No Impact
Rec 163	B	Residential	64	65	NA	NA	NA	NA
Rec 164	B	Residential	58	60	62	4	No Impact	No Impact
Rec 165	B	Residential	68	69	71	3	**Impact**	No Impact
Rec 166	B	Residential	68	70	71	3	**Impact**	No Impact
Rec 167/M11	B	Residential	65	66	69	4	**Impact**	No Impact
Rec 168	B	Residential	65	66	70	5	**Impact**	No Impact
Rec 169	C	Water Treatment Plant	55	57	60	5	No Impact	No Impact
Rec 170	B	Residential	53	55	59	6	No Impact	No Impact
Rec 171	B	Residential	55	56	61	6	No Impact	No Impact
Rec 172	B	Residential	61	62	66	5	**Impact**	No Impact
Rec 173	B	Residential	59	61	65	6	No Impact	No Impact
Rec 174	B	Residential	59	61	65	6	No Impact	No Impact
Rec 175	B	Residential	60	62	65	5	No Impact	No Impact
Rec 176	B	Residential	60	61	64	4	No Impact	No Impact
Rec 177/M12	B	Residential	60	61	63	3	No Impact	No Impact
Rec 178	B	Residential	58	59	62	4	No Impact	No Impact
Rec 179	B	Residential	63	65	68	5	**Impact**	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 180	B	Residential	46	47	49	3	No Impact	No Impact
Rec 181/M6	B	Elementary School	44	46	47	3	No Impact	No Impact
Rec 182	B	Residential	53	54	57	4	No Impact	No Impact
Rec 183	B	Residential	60	62	NA	NA	NA	NA
Rec 184	B	Residential	46	48	50	4	No Impact	No Impact
Rec 185	B	Residential	55	57	57	2	No Impact	No Impact
Rec 186	B	Residential	62	64	NA	NA	NA	NA
Rec 187	B	Residential	63	65	67	4	**Impact**	No Impact
Rec 188	B	Residential	62	63	66	4	**Impact**	No Impact
Rec 189	B	Residential	62	64	67	5	**Impact**	No Impact
Rec 190	B	Residential	53	55	56	3	No Impact	No Impact
Rec 191	B	Residential	49	51	53	4	No Impact	No Impact
Rec 192	B	Residential	55	57	59	4	No Impact	No Impact
Rec 193	B	Residential	55	56	60	5	No Impact	No Impact
Rec 194	B	Residential	61	62	66	5	**Impact**	No Impact
Rec 195	B	Residential	54	55	56	2	No Impact	No Impact
Rec 196	B	Residential	51	53	54	3	No Impact	No Impact
Rec 197	B	Residential	56	57	59	3	No Impact	No Impact
Rec 198/M13	B	Residential	64	66	68	4	**Impact**	No Impact
Rec 199	B	Residential	61	62	63	2	No Impact	No Impact
Rec 200	B	Residential	53	55	56	3	No Impact	No Impact
Rec 201	B	Residential	63	65	NA	NA	NA	NA
Rec 202	B	Residential	58	59	62	4	No Impact	No Impact
Rec 203	B	Residential	59	60	64	5	No Impact	No Impact
Rec 204	B	Residential	59	61	64	5	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 205	B	Residential	60	61	64	4	No Impact	No Impact
Rec 206	B	Town-homes	56	58	61	5	No Impact	No Impact
Rec 207	B	Town-homes	59	60	63	4	No Impact	No Impact
Rec 208	B	Town-homes	63	64	NA	NA	NA	NA
Rec 209	B	Town-homes	61	63	66	5	**Impact**	No Impact
Rec 210	B	Town-homes	61	63	66	5	**Impact**	No Impact
Rec 211/M14	B	Town-homes	67	69	71	4	**Impact**	No Impact
Rec 212	B	Cemetery	63	64	67	4	**Impact**	No Impact
Rec 213	B	Church	60	61	60	0	No Impact	No Impact
Rec 214	B	Church Ball Field	51	52	61	10	No Impact	**Impact**
Rec 215	B	Residential	64	66	69	5	**Impact**	No Impact
Rec 216	B	Residential	63	64	65	2	No Impact	No Impact
Rec 217	B	Residential	65	66	67	2	**Impact**	No Impact
Rec 218	B	Residential	62	63	NA	NA	NA	NA
Rec 219	B	Residential	65	66	59	-6	No Impact	No Impact
Rec 220	B	Residential	58	60	68	10	**Impact**	**Impact**
Rec 221	B	Residential	59	60	NA	NA	NA	NA
Rec 222	B	Residential	59	61	60	1	No Impact	No Impact
Rec 223	B	Residential	59	61	61	2	No Impact	No Impact
Rec 224	B	Residential	61	63	65	4	No Impact	No Impact
Rec 225	B	Residential	61	62	68	7	**Impact**	No Impact
Rec 226	B	Residential	60	62	68	8	**Impact**	No Impact
Rec 227/M15	B	Residential	62	64	64	2	No Impact	No Impact
Rec 228	B	Residential	52	54	60	8	No Impact	No Impact
Rec 229	B	Residential	59	61	67	8	**Impact**	No Impact
Rec 230	B	Residential	60	61	68	8	**Impact**	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 231	B	Residential	61	63	69	8	**Impact**	No Impact
Rec 232	B	Residential	60	62	69	9	**Impact**	No Impact
Rec 233	B	Residential	52	54	63	11	No Impact	**Impact**
Rec 234	B	Residential	59	61	69	10	**Impact**	**Impact**
Rec 235	B	Residential	51	53	64	13	No Impact	**Impact**
Rec 236	B	Residential	61	62	NA	NA	NA	NA
Rec 237	B	Residential	54	56	64	10	No Impact	**Impact**
Rec 238	B	Residential	52	54	NA	NA	NA	NA
Rec 239	B	Residential	61	63	NA	NA	NA	NA
Rec 240/M25	B	Residential	55	57	67	12	**Impact**	**Impact**
Rec 241	B	Residential	62	64	61	-1	No Impact	No Impact
Rec 242	B	Residential	63	65	61	-2	No Impact	No Impact
Rec 243	B	Residential	65	67	61	-4	No Impact	No Impact
Rec 244	B	Residential	53	56	NA	NA	NA	NA
Rec 245	B	Residential	55	57	NA	NA	NA	NA
Rec 246	B	Residential	64	67	67	3	**Impact**	No Impact
Rec 247	B	Residential	61	63	NA	NA	NA	NA
Rec 248	B	Residential	56	59	61	5	No Impact	No Impact
Rec 249	B	Residential	60	62	NA	NA	NA	NA
Rec 250/M16	B	Residential	64	67	68	4	**Impact**	No Impact
Rec 251	B	Residential	65	67	63	-2	No Impact	No Impact
Rec 252	B	Residential	56	58	63	7	No Impact	No Impact
Rec 253	B	Residential	62	64	NA	NA	NA	NA
Rec 254	B	Residential	58	60	NA	NA	NA	NA
Rec 255	B	Residential	58	60	NA	NA	NA	NA
Rec 256	B	Residential	60	62	NA	NA	NA	NA

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 257	B	Residential	63	65	NA	NA	NA	NA
Rec 258	B	Residential	55	57	64	9	No Impact	No Impact
Rec 259	B	Residential	59	61	NA	NA	NA	NA
Rec 260	B	Residential	54	56	63	9	No Impact	No Impact
Rec 261	B	Residential	50	52	60	10	No Impact	**Impact**
Rec 262	B	Residential	50	52	59	9	No Impact	No Impact
Rec 263	B	Residential	53	55	59	6	No Impact	No Impact
Rec 264	B	Residential	49	52	51	2	No Impact	No Impact
Rec 265	B	Residential	45	47	52	7	No Impact	No Impact
Rec 266	B	Residential	40	42	54	14	No Impact	No Impact
Rec 267	B	Residential	40	43	54	14	No Impact	No Impact
Rec 268	B	Residential	40	42	55	15	No Impact	No Impact
Rec 269	B	Residential	40	42	52	12	No Impact	No Impact
Rec 270/M18	B	Residential	40	42	54	14	No Impact	No Impact
Rec 271	B	Residential	47	49	62	15	No Impact	**Impact**
Rec 272/M19	B	Residential	42	45	69	27	**Impact**	**Impact**
Rec 273	B	Residential	42	44	62	20	No Impact	**Impact**
Rec 274	B	Residential	42	44	61	19	No Impact	**Impact**
Rec 275	B	Residential	42	45	60	18	No Impact	**Impact**
Rec 276	B	Residential	42	45	59	17	No Impact	**Impact**
Rec 277	B	Residential	42	44	58	16	No Impact	**Impact**
Rec 278	B	Residential	42	45	57	15	No Impact	**Impact**
Rec 279	B	Residential	44	46	56	12	No Impact	No Impact
Rec 280	B	Residential	51	53	57	6	No Impact	No Impact
Rec 281	B	Residential	59	61	62	3	No Impact	No Impact
Rec 282	B	Residential	42	45	51	9	No Impact	No Impact

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 283	B	Residential	54	56	67	13	**Impact**	**Impact**
Rec 284	B	Residential	51	54	60	9	No Impact	No Impact
Rec 285	B	Residential	50	53	59	9	No Impact	No Impact
Rec 286	B	Residential	53	55	59	6	No Impact	No Impact
Rec 287	B	Residential	55	57	59	4	No Impact	No Impact
Rec 288/M22	B	Residential	47	50	61	14	No Impact	**Impact**
Rec 289	B	Residential	45	48	NA	NA	NA	NA
Rec 290	C	Commercial	44	47	56	12	No Impact	No Impact
Rec 291	B	Residential	46	49	67	21	**Impact**	**Impact**
Rec 292	B	Residential	51	53	59	8	No Impact	No Impact
Rec 293	B	Residential	44	48	62	18	No Impact	**Impact**
Rec 294	B	Residential	45	49	61	16	No Impact	**Impact**
Rec 295	B	Residential	49	52	NA	NA	NA	NA
Rec 296	B	Residential	61	64	64	3	No Impact	No Impact
Rec 297	B	Residential	63	66	65	2	No Impact	No Impact
Rec 298/M21	C	Commercial	68	71	69	1	No Impact	No Impact
Rec 299	B	Residential	46	48	49	3	No Impact	No Impact
Rec 300	B	Residential	47	49	50	3	No Impact	No Impact
Rec 301	B	Residential	46	48	48	2	No Impact	No Impact
Rec 302	B	Schoolhouse Museum	45	46	47	3	No Impact	No Impact
Rec 303	B	Schoolhouse Museum	44	45	46	2	No Impact	No Impact
Rec 304	B	Schoolhouse Museum	43	45	46	3	No Impact	No Impact
Rec 236-A	B	Residential	60	62	NA	NA	NA	NA
Rec 261-A	B	Residential	57	59	NA	NA	NA	NA

						IMPACT CRITERIA		
Noise Receptor Number Identification	**FHWA LAND USE Activity Category**	**Land Use at Receptor Location**	**2008 EXISTING Leq(H) dBA**	**2035 NO BUILD Leq(H) dBA**	**ALTERNATIVE D 2035 BUILD Leq(H) dBA**	**BUILD MINUS EXISTING DELTA (dBA)**	**PREDICTED BUILD NOISE LEVELS vs. FHWA NAC**	**PREDICTED BUILD vs. EXISTING NOISE LEVELS**
Rec 90-A	C	Commercial	64	67	65	1	No Impact	No Impact
Rec 97-A	B	Residential	55	59	57	2	No Impact	No Impact
Rec 98-A	B	Residential	60	63	61	1	No Impact	No Impact
Rec 99-A	B	Residential	60	64	62	2	No Impact	No Impact
Rec 100-A	B	Residential	62	66	65	3	No Impact	No Impact

APPENDIX B

TNM Input Data and Results
2008 Existing Conditions

APPENDIX C

TNM Input Data and Results
2035 No-Build Conditions

APPENDIX D

TNM Input Data and Results
2035 Build Conditions

APPENDIX D-1

Alternative A

TNM Input Data and Results
2035 Build Conditions

APPENDIX D-2

Alternative C

TNM Input Data and Results
2035 Build Conditions

APPENDIX D-3

Alternative D

TNM Input Data and Results
2035 Build Conditions

APPENDIX E

Barrier Analysis Results

Noise Wall Heights

WALL 1 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 1	97	24	Shoulder
point 2	100	24	Shoulder
point 3	100	24	Shoulder
point 4	98	24	Shoulder
point 5	100	24	Shoulder
point 6	90	24	Shoulder
point 7	100	24	Shoulder
point 8	100	24	Shoulder
point 9	100	24	Shoulder
point 10	100	24	Shoulder
point 11	101	24	Shoulder
point 12	100	24	Shoulder
point 13	100	24	Shoulder
point 14	100	24	Shoulder
point 15	100	24	Shoulder
point 16	97	24	Shoulder
point 17	100	24	Shoulder
point 18	100	24	Shoulder
point 19	100	24	Shoulder
point 20	100	24	Shoulder
point 21	100	24	Shoulder
point 22	100	24	Shoulder
point 23	100	24	Shoulder
point 24	100	24	Shoulder
point 25	100	24	Shoulder
point 26	100	24	Shoulder
point 27	100	24	Shoulder
point 28	100	24	Shoulder
point 29	100	24	Shoulder
point 30	100	24	Shoulder
point 31	100	24	Shoulder
point 32	100	24	Shoulder
point 33	100	24	Shoulder
point 34	100	24	Shoulder
point 35	100	24	Shoulder
point 36	100	24	Shoulder
point 37	100	24	Shoulder
point 38	100	24	Shoulder
point 39	100	24	Shoulder
point 40	100	24	Shoulder

point 41	100	24	Shoulder
point 42	100	24	Shoulder
point 43	99	24	Shoulder
point 44	101	24	Shoulder
point 45	100	24	Shoulder
point 46	101	24	Shoulder
point 47	95	24	Shoulder
point 48	100	24	Shoulder
point 49	99	24	Shoulder
point 50	100	24	Shoulder
point 51	100	24	Shoulder
point 52	99	24	Shoulder
point 53	101	24	Shoulder
point 54	100	24	Shoulder
point 55	100	24	Shoulder
point 56	99	24	Shoulder
point 57	101	24	Shoulder

TOTAL SF = **136272.0**

WALL 1 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 1	Residential	63	0	1		N/A
Rec 2	Residential	58	0	1	**1**	N/A
Rec 3	Residential	56	2	1	**1**	N/A
Rec 4	Residential	55	3	1	**1**	N/A
Rec 5	Residential	53	3	1	**1**	N/A
Rec 6	Residential	53	4	1	**1**	N/A
Rec 7\M1	Residential	53	7	1	**1**	**1**
Rec 8	Residential	53	6	1	**1**	**1**
Rec 9	Residential	53	6	1	**1**	**1**
Rec 10	Residential	52	6	1	**1**	**1**
Rec 11	Residential	52	3	1		N/A
Rec 12	Residential	53	6	1	**1**	**1**
Rec 13	Residential	53	5	1	**1**	**1**
Rec 14	Residential	51	6	1	**1**	**1**
Rec 15	Residential	51	6	1	**1**	**1**
Rec 16	Residential	51	5	1		**1**
Rec 17	Residential	50	5	1		**1**
Rec 19	Residential	50	5	1		**1**
Rec 33	Residential	52	6	1	**1**	**1**
Rec 34	Residential	58	13	1	**1**	**1**
Rec 35\M2	Residential	57	12	1	**1**	**1**
			Total	**21**	**16**	**14**

Square Footage of Barrier	136,272
Construction Cost @ $15/SF	$2,044,080.0

Impacted Dwellings = 16 @ $38,000/dwelling = $608,000.0

Reasonable Cost = $532,000.00
Estimated Cost of Barrier = $2,044,080.0

CONCLUSION – Noise Barrier Not Cost Effective

WALL 2 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 1	100	24	Shoulder
point 2	100	24	Shoulder
point 3	100	24	Shoulder
point 4	102	24	Shoulder
point 5	99	24	Shoulder
point 6	100	24	Shoulder
point 7	101	24	Shoulder
point 8	101	24	Shoulder
point 9	99	24	Shoulder
point 10	100	24	Shoulder
point 11	99	24	Shoulder
point 12	101	24	Shoulder
point 13	100	24	Shoulder
point 14	101	24	Shoulder
point 15	100	24	Shoulder
point 16	100	24	Shoulder
point 17	100	24	Shoulder
point 18	101	24	Shoulder
point 19	100	24	Shoulder
point 20	78	24	Shoulder
point 21	100	24	Shoulder
point 22	102	24	Shoulder
point 23	98	24	Shoulder
point 24	100	24	Shoulder
point 25	98	24	Shoulder
point 26	86	24	Shoulder
point 27	100	24	Shoulder
point 28	101	24	Shoulder
point 29	100	24	Shoulder
point 30	100	24	Shoulder
point 31	99	24	Shoulder
point 32	100	24	Shoulder
point 33	100	24	Shoulder
point 34	100	24	Shoulder
point 35	100	24	Shoulder
point 36	100	24	Shoulder
point 37	100	24	Shoulder
point 38	100	24	Shoulder
point 39	100	24	Shoulder
point 40	100	24	Shoulder
point 41	100	24	Shoulder
point 42	100	24	Shoulder
point 43	100	24	Shoulder
point 44	100	24	Shoulder
point 45	100	24	Shoulder

WALL 2 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 46	100	24	Shoulder
point 47	100	24	Shoulder
point 48	100	24	Shoulder
point 49	100	24	Shoulder
point 50	100	24	Shoulder
point 51	100	24	Shoulder
point 52	100	24	Shoulder
point 53	100	24	Shoulder
point 54	100	6	Shoulder
point 55	100	6	Shoulder
point 56	100	6	Shoulder
point 57	100	6	Shoulder
point 58	100	6	Shoulder
point 59	100	6	Shoulder
point 60	100	6	Shoulder
point 61	101	6	Shoulder
point 62	100	6	Shoulder
point 63	100	6	Shoulder
point 64	100	6	Shoulder
point 65	100	6	Shoulder
point 66	100	6	Shoulder
point 67	100	6	Shoulder
point 68	100	6	Shoulder
TOTAL SF =	**135390**		

WALL 2 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 36	Residential	51	3	1		N/A
Rec 37	Residential	51	6	1	1	**1**
Rec 38	Residential	51	6	1	1	**1**
Rec 39	Residential	52	6	1	1	**1**
Rec 40	Residential	52	6	1	1	**1**
Rec 41	Residential	52	6	1	1	**1**
Rec 42	Residential	55	6	1	1	**1**
Rec 43	Residential	55	6	1	1	**1**
Rec 44	Residential	53	6	1	1	**1**
Rec 45	Residential	52	5	1	1	**1**
Rec 46	Residential	53	6	1	1	**1**
Rec 47	Residential	53	6	1	1	**1**
Rec 48	Residential	56	8	1	1	**1**
Rec 49	Residential	54	5	1	1	**1**
Rec 50	Residential	53	3	1	1	N/A
Rec 54	Residential	54	3	1	1	N/A
Rec 55	Residential	55	2	1	1	N/A
Rec 56	Residential	60	1	1		N/A
			Total	**18**	**16**	**13**

Square Footage of Barrier	135,390
Construction Cost @ $15/SF	$2,030,850

Impacted Dwellings = 16 @ $38,000/dwelling = $608,000.0

Reasonable Cost = $494,000.00
Estimated Cost of Barrier = $2,030,850.0

CONCLUSION – Noise Barrier Not Cost Effective

WALL 3 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 1	100	24	Shoulder
point 2	100	24	Shoulder
point 3	100	24	Shoulder
point 4	100	24	Shoulder
point 5	100	24	Shoulder
point 6	100	24	Shoulder
point 7	100	24	Shoulder
point 8	100	24	Shoulder
point 9	100	24	Shoulder
point 10	100	24	Shoulder
point 11	100	24	Shoulder
point 12	100	24	Shoulder
point 13	100	24	Shoulder
point 14	100	24	Shoulder
point 15	100	24	Shoulder
point 16	100	24	Shoulder
point 17	100	24	Shoulder
point 18	99	24	Shoulder
point 19	101	24	Shoulder
point 20	100	24	Shoulder
point 21	100	24	Shoulder
point 22	100	24	Shoulder
point 23	100	24	Shoulder
point 24	100	24	Shoulder
point 25	100	24	Shoulder
point 26	100	24	Shoulder
point 27	100	24	Shoulder
TOTAL SF =	**64800.0**		

WALL 3 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 78	Residential	61	7	1	**1**	**1**
Rec 79	Residential	54	5	1	**1**	**1**
Rec 80	Residential	57	6	1	**1**	**1**
Rec 81	Residential	57	7	1	**1**	**1**
Rec 82	Residential	57	6	1	**1**	**1**
Rec 83	Residential	57	4	1	**1**	N/A
			Total	**6**	**6**	**5**

Square Footage of Barrier	64,800
Construction Cost @ $15/SF	$972,000.0

Impacted Dwellings = 6 @ $38,000/dwelling = $228,000.0

Reasonable Cost = $190,0000.00
Estimated Cost of Barrier = $972,000.0

CONCLUSION – Noise Barrier Not Cost Effective

WALL 4 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 1	100	24	Shoulder
point 2	100	24	Shoulder
point 3	100	24	Shoulder
point 4	100	24	Shoulder
point 5	100	24	Shoulder
point 6	100	24	Shoulder
point 7	99	24	Shoulder
point 8	102	24	Shoulder
point 9	98	24	Shoulder
point 10	100	24	Shoulder
point 11	100	24	Shoulder
point 12	100	24	Shoulder
point 13	100	24	Shoulder
point 14	99	24	Shoulder
point 15	101	24	Shoulder
point 16	99	24	Shoulder
point 17	100	24	Shoulder
point 18	100	24	Shoulder
point 19	100	24	Shoulder
point 20	100	24	Shoulder
point 21	100	24	Shoulder
point 22	100	24	Shoulder
point 23	100	24	Shoulder
point 24	100	24	Shoulder
point 25	50	24	Shoulder
point 26	100	24	Shoulder

TOTAL SF = 61152.0

WALL 4 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 84\M8	Residential	58	8	6	6	**6**
Rec 85	Residential	63	9	7	7	**7**
Rec 86	Residential	62	5	9	9	**9**
Rec 87	Residential	63	3	10	10	N/A
Rec 88	Residential	61	0	20	20	N/A
Rec 89	Residential	68	0	1	1	N/A
Rec 90	Residential	70	0	1	1	N/A
			Total	**54**	**54**	**22**

Square Footage of Barrier	61,152.0
Construction Cost @ $15/SF	$917,280.0

Impacted Dwellings = 54 @ $38,000/dwelling = $2,052,000.0

Reasonable Cost = $836,000.00
Estimated Cost of Barrier = $917,280.0

CONCLUSION – Noise Barrier Not Cost Effective

WALL 5 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 26	86	6	Shoulder
point 27	100	6	Shoulder
point 28	101	6	Shoulder
point 29	100	6	Shoulder
point 30	100	6	Shoulder
point 31	99	6	Shoulder
point 32	100	6	Shoulder
point 33	100	24	Shoulder
point 34	100	24	Shoulder
point 35	100	24	Shoulder
point 36	100	24	Shoulder
point 37	100	24	Shoulder
point 38	101	24	Shoulder
point 39	100	24	Shoulder
point 40	99	24	Shoulder
point 41	100	24	Shoulder
point 42	100	24	Shoulder
point 43	100	24	Shoulder
point 44	100	24	Shoulder
point 45	100	24	Shoulder
point 46	100	24	Shoulder
point 47	100	24	Shoulder
point 48	100	24	Shoulder
point 49	100	24	Shoulder
point 50	100	24	Shoulder
point 51	100	24	Shoulder
point 52	100	24	Shoulder
point 53	100	24	Shoulder
point 54	100	24	Shoulder
point 55	100	24	Shoulder
point 56	100	24	Shoulder
point 57	100	24	Shoulder
point 58	100	24	Shoulder
point 59	100	24	Shoulder
point 60	100	24	Shoulder
point 61	101	24	Shoulder
point 62	100	24	Shoulder
point 63	100	24	Shoulder
point 64	100	24	Shoulder
point 65	100	24	Shoulder
point 66	100	24	Shoulder

point 67	100	24	Shoulder
point 68	100	24	Shoulder

TOTAL SF = 90540.0

WALL 5 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 58	Residential	62	2	1		N/A
Rec 59	Residential	60	4	1	**1**	N/A
Rec 60	Residential	57	5	1	**1**	**1**
Rec 61	Residential	NA	NA	1		N/A
Rec 64	Residential	55	6	1	**1**	**1**
Rec 65	Residential	55	5	1	**1**	**1**
Rec 66\M4	Residential	57	3	1	**1**	N/A
Rec 67	Residential	64	8	1	**1**	**1**
			Total	**8**	**6**	**4**

Square Footage of Barrier	90,540.0
Construction Cost @ $15/SF	$1,358,100.0

Impacted Dwellings = 6 @ $38,000/dwelling = $228,000.0

Reasonable Cost = $152,000.00
Estimated Cost of Barrier = $1,358,100.0

CONCLUSION – Noise Barrier Not Cost Effective

WALL 6 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 1	100	6	Shoulder
point 2	100	24	Shoulder
point 3	100	24	Shoulder
point 4	100	24	Shoulder
point 5	100	24	Shoulder
point 6	99	24	Shoulder
point 7	100	24	Shoulder
point 8	100	24	Shoulder
point 9	100	24	Shoulder
point 10	100	24	Shoulder
point 11	100	24	Shoulder
point 12	100	24	Shoulder
point 13	100	24	Shoulder
point 14	100	24	Shoulder
point 15	99	24	Shoulder
point 16	101	24	Shoulder
point 17	99	24	Shoulder
point 18	99	24	Shoulder
point 19	100	24	Shoulder
point 20	101	24	Shoulder
point 21	100	24	Shoulder
point 22	100	24	Shoulder
point 23	100	24	Shoulder
point 24	100	24	Shoulder
point 25	100	24	Shoulder
point 26	100	24	Shoulder
point 27	100	24	Shoulder
point 28	100	24	Shoulder
point 29	100	24	Shoulder

TOTAL SF = 60552.0

WALL 6 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 264	Residential	53	1	1		N/A
Rec 265	Residential	50	3	1		N/A
Rec 266	Residential	51	7	1	**1**	**1**
Rec 267	Residential	53	6	1	**1**	**1**
Rec 268	Residential	53	7	1	**1**	**1**
Rec 269	Residential	53	5	1	**1**	**1**
Rec 270/M18	Residential	53	7	1	**1**	**1**
			Total	**7**	**5**	**5**

Square Footage of Barrier	60,552.0
Construction Cost @ $15/SF	$908,280.0

Impacted Dwellings = 5 @ $38,000/dwelling = $190,000.0

Reasonable Cost = $190,000.0
Estimated Cost of Barrier = $908,280.0

CONCLUSION – Noise Barrier Not Cost Effective

WALL 7 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 1	101	24	Shoulder
point 2	99	24	Shoulder
point 3	100	24	Shoulder
point 4	100	24	Shoulder
point 5	100	24	Shoulder
point 6	100	24	Shoulder
point 7	100	24	Shoulder
point 8	100	24	Shoulder
point 9	100	24	Shoulder
point 10	100	24	Shoulder
point 11	100	24	Shoulder
point 12	100	24	Shoulder
point 13	100	24	Shoulder
point 14	100	24	Shoulder
point 15	99	24	Shoulder
point 16	100	24	Shoulder
point 17	100	24	Shoulder
point 18	100	24	Shoulder
point 19	100	24	Shoulder
point 20	99	24	Shoulder
point 21	100	24	Shoulder
point 22	100	24	Shoulder
point 23	100	24	Shoulder
point 24	100	24	Shoulder
point 25	101	24	Shoulder

TOTAL SF = 59976.0

WALL 7 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 271	Residential	58	3	1		N/A
Rec 272	Residential	58	3	1	**1**	N/A
Rec 273	Residential	56	3	1	**1**	N/A
Rec 274	Residential	56	3	1	**1**	N/A
Rec 275	Residential	56	3	1	**1**	N/A
Rec 276	Residential	56	3	1	**1**	N/A
Rec 277	Residential	55	3	1	**1**	N/A
Rec 278	Residential	55	2	1	**1**	N/A
Rec 279	Residential	56	2	1	**1**	N/A
Rec 280	Residential	57	1	1	**1**	N/A
			Total	**10**	**9**	**0**

Square Footage of Barrier	59,976.0
Construction Cost @ $15/SF	$899,6400.0

Impacted Dwellings = 9 @ $38,000/dwelling = $342,000.0

Reasonable Cost = $0.00
Estimated Cost of Barrier = $899,640

CONCLUSION – Noise Barrier Not Cost Effective

WALL 9 – PRELIMINARY BARRIER DESIGN

BARRIER ID	LENGTH (Feet)	HEIGHT (Feet)	LOCATION
point 1	90	20	R/W
point 2	100	20	R/W
point 3	100	20	R/W
point 4	100	20	R/W
point 5	100	20	R/W
point 6	100	20	R/W
point 7	100	20	R/W
point 8	100	20	R/W
point 9	100	20	R/W
point 10	50	20	R/W
point 11	50	20	R/W
point 12	50	20	R/W
point 13	50	20	R/W
point 14	50	20	R/W
point 15	50	20	R/W
point 16	50	20	R/W
point 17	51	20	R/W
point 18	50	20	R/W
point 19	50	20	R/W
point 20	50	20	R/W
point 21	50	20	R/W

TOTAL SF = 29820.0

WALL 9 – NOISE BARRIER ANALYSIS

Receiver	Description	Calculated LEQ(H) with Barrier	I.L.	Dwelling Units	No. of Impacts	Benefited Receivers
Rec 271	Residential	56	5	1	**1**	**1**
Rec 272	Residential	57	12	1	**1**	**1**
Rec 273	Residential	54	7	1	**1**	**1**
Rec 274	Residential	53	8	1	**1**	**1**
Rec 275	Residential	53	7	1	**1**	**1**
Rec 276	Residential	52	7	1	**1**	**1**
Rec 277	Residential	51	6	1	**1**	**1**
Rec 278	Residential	51	5	1	**1**	**1**
Rec 279	Residential	52	5	1		**1**
Rec 280	Residential	55	2	1		
			Total	**10**	**8**	**9**

Square Footage of Barrier	29,820.0
Construction Cost @ $15/SF	$447,300.0

Impacted Dwellings = 8 @ $38,000/dwelling = $304,000.0

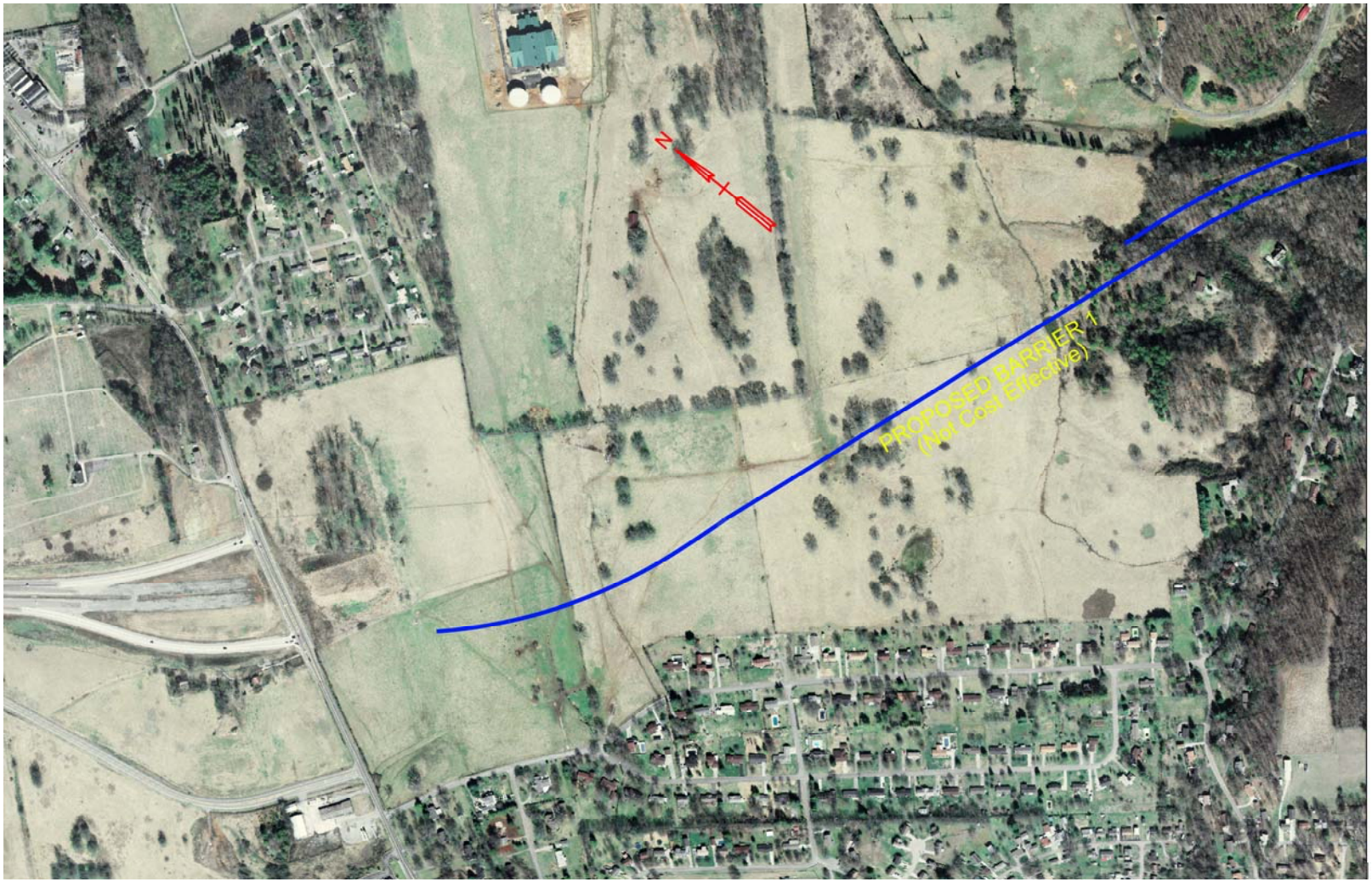
Reasonable Cost = $342,000.00
Estimated Cost of Barrier = $447,300.00

CONCLUSION – Noise Barrier Not Cost Effective

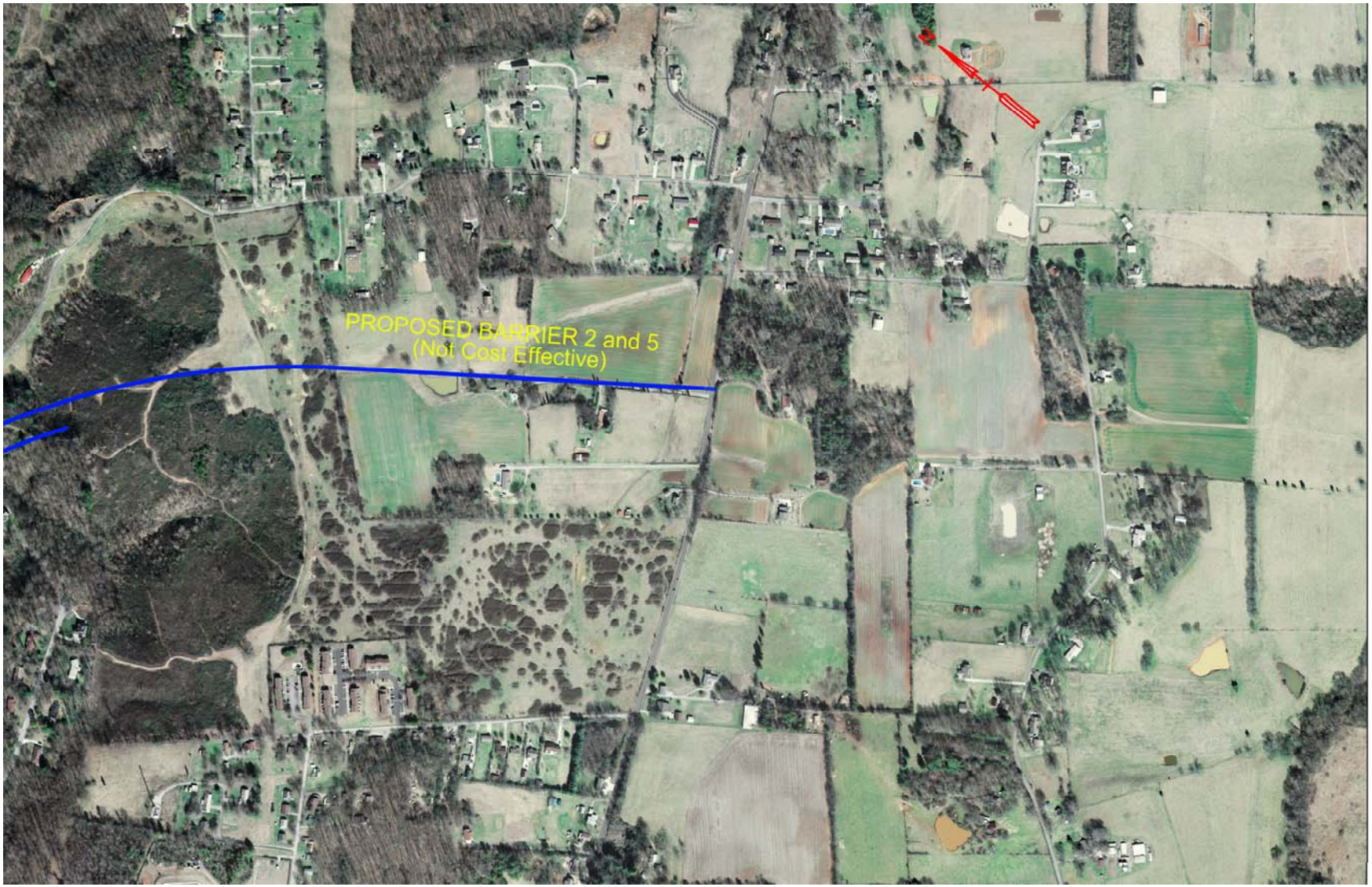
APPENDIX F

Proposed Noise Wall Locations

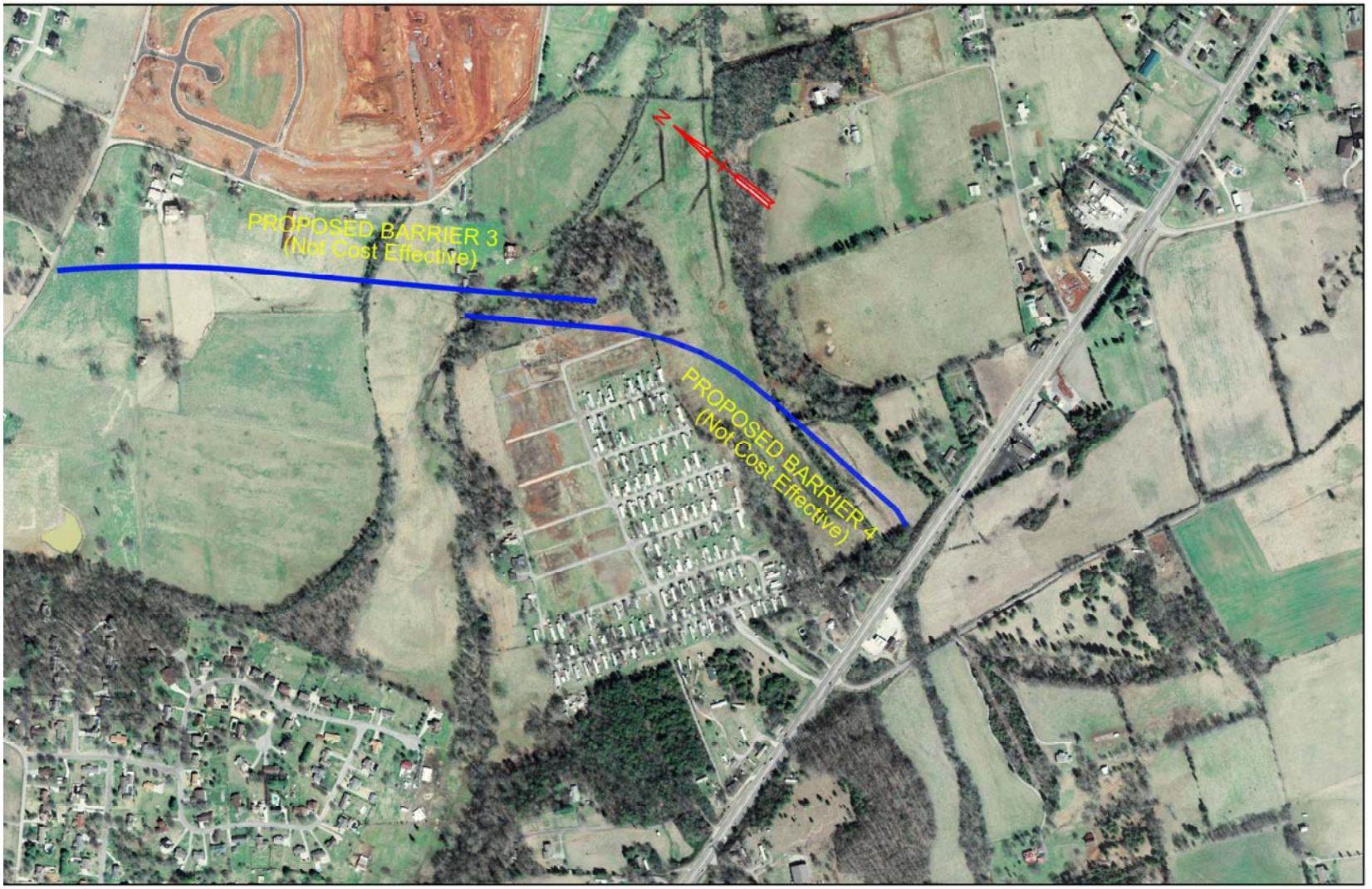
Potential Noise Wall #1



Potential Noise Walls #2 and #5



Potential Noise Walls #3 and #4



Potential Noise Walls #6 and #7

Potential Noise Wall #9

APPENDIX G

Existing and Future Traffic Projections

Existing and Future Traffic Projections

Alternate	Route	Existing ADT (2008)	%	Existing DHV (2008)	Build ADT (2035)	%	Build DHV (2035)	Truck %	MT	HT
Alt. A	SR 33 to SR 35	NA (New Location)	NA	NA (New Location)	63,380	0.13	8239	2.0	83	82
Alt. A	SR 35 to SR 73	NA (New Location)	NA	NA (New Location)	52,880	0.13	6874	2.0	69	68
Alt. C	SR 33 to SR 35	NA (New Location)	NA	NA (New Location)	63,380	0.13	8239	2.0	83	82
Alt. C	SR 35 to SR 73	NA (New Location)	NA	NA (New Location)	52,880	0.13	6874	2.0	69	68
Alt. D	SR 33 to Wildwood Road	9,750	0.10	975	20,720	0.10	2072	5.0	52	52
Alt. D	Wildwood Road to Sevierville Road	6,080	0.10	608	27,820	0.10	2782	5.0	70	69
Alt. D	Sevierville Road to Davis Ford Road	2,500	0.10	250	15,480	0.10	1548	5.0	34	33
Alt. D	Davis Ford Road to Lamar Alexander Pkwy	650	0.10	65	19,000	0.10	1900	5.0	48	47
All Alts.	SR 33	16,550	0.11	1821	65,850	0.11	7244	2.0	73	72
All Alts.	Jackson Hill Drive	1,300	0.10	130	130	0.10	130	0.0	0	0
All Alts.	Wildwood Road	5,040	0.11	554	4,720	0.11	519	2.0	6	5
All Alts.	Sevierville Road	8,300	0.10	830	13,610	0.10	1361	4.0	21	20

Alternate	Route	Existing ADT (2008)	%	Existing DHV (2008)	Build ADT (2035)	%	Build DHV (2035)	Truck %	MT	HT
All Alts.	Davis Ford Road	1,000	0.10	100	1,000	0.10	100	0.0	0	0
All Alts.	Centennial Church Road	200	0.10	20	200	0.10	20	0.0	0	0
All Alts.	Lamar Alexander Parkway	34,560	0.10	3456	18,030	0.10	1803	4.0	36	36