DRAFT

I-75 Oakland County
TRAFFIC NOISE TECHNICAL REPORT

April 2023

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1 Executive Summary

This report evaluates the potential noise impacts of the current configuration of I-75 in Oakland County, Michigan in conformance with corresponding Federal regulations and guidance, and the National Environmental Policy Act (NEPA). The determination of noise abatement measures and locations complies with the Federal Highway Administration's (FHWA's) *Procedures for Abatement of Highway Traffic Noise and Construction Noise* as presented in the Code of Federal Regulations, Title 23 Part 772 (23 CFR 722), and the Michigan Department of Transportation (MDOT): *Highway Noise Analysis and Abatement Handbook* (Handbook), dated July 2011. The Handbook complies with *the State Transportation Commission Policy 10136 Noise Abatement*, dated October 17, 2019.

This evaluation has been completed in response to a citizen-led request to investigate noise levels and the potential for additional noise barriers that might benefit noise impacted residents and property owners in the study area. This request was initiated after completion of the I-75 Modernization Project, which included a noise analysis completed in January 2005 in support of the Final Environmental Impact Statement (FEIS), a re-evaluation in 2015 with additional noise analysis, and a final design noise analysis for the re-evaluation completed in 2018. This new noise analysis maintains the previous analysis format of delineating the I-75 Modernization Corridor into defined corridor segments, focusing on segments 7 through 12 from the original 14 study area segments analyzed throughout the course of the project (See Section 4.2.1). The study area for this noise analysis includes a roughly 10-mile section of I-75 from approximately 13 Mile Road on the south end to Adams Road on the north end. The project's construction started in 2015 and has been progressing north to south. The project is expected to be complete by fall of 2023.

The findings in this study are not intended for comparison to results from the previous studies, as corridor conditions and MDOT noise abatement criteria have changed since the previous studies. The findings of the previous reports remain valid for the conditions under which those analyses were completed.

Existing noise level measurements were conducted on November 2 and 3, 2022. In total, existing noise level measurements were gathered at 14 representative sites in the study area. Of the 14 existing noise measurements conducted, 12 of the site locations were measured in order to calibrate the FHWA's Traffic Noise Model Version 2.5 (TNM) to predict future noise levels. Traffic was counted concurrently during each noise measurement and classified by vehicle type: cars, medium trucks (two axles), heavy trucks (three or more axles), buses and motorcycles. To validate TNM, the measured noise levels were compared to the modeled noise levels using the same traffic volumes, speeds, and vehicle types that were present during each field measurement. Existing noise measurements were gathered at two additional site locations to provide ambient noise level information at distances beyond 500 feet from I-75; FS-7a was gathered at approximately 900 feet from I-75, while FS-7b was gathered at approximately 1,800 feet from I-75. Fifteen-minute measurements were taken at each site. Measurement locations are shown as "field sites" on the figures in **Appendix A**. The modeled noise levels at the 12 sites used for TNM validation were within +/- three (3) A-weighted

decibels, or dB(A), of the measured levels, which satisfies the MDOT requirement for validating TNM.

TNM was used to model existing (2022) and future year (2040) worst-case traffic noise levels within the noise study area. The analysis modeled 1,147 noise receivers representing 2,447 receptors (or units), including 1,085 residential receivers (NAC B) representing 2,352 receptor units, 25 recreational (NAC C) receivers representing 55 dwelling unit equivalents (DUEs) and three parks[1], and 37 office, hotel or restaurant receivers (NAC E) representing 37 receptor units. The analysis provides existing and future noise levels, as well as identifies receptors that are impacted, that is, they approach or exceed the FHWA Noise Abatement Criteria (NAC). The analysis results indicate 126 receivers representing 238 receptor units, including 116 receivers representing 184 residential units (NAC B), six outdoor recreational receptors representing seven DUEs and one park (Firefighters Park) representing 44 DUEs[2] (NAC C), and three office outdoor use spaces (NAC E), are impacted based on future year predicted noise levels. No predicted future noise levels would substantially exceed predicted existing noise levels (10 dB(A) or greater increase between the existing noise level and the future year predicted noise level).

Noise abatement was analyzed for impacted receptors per MDOT policy, which follows FHWA regulations. State funding will be considered for noise abatement identified in this report as preliminarily feasible and reasonable per current MDOT criteria. Final design noise analysis is necessary to determine actual costs and identify constructability or safety issues that may preclude the ability to build noise abatement. Abatement measures considered in this report are dependent on the outcome of the final design process as well as funding availability.

Fourteen noise barriers have been identified in the study area. Two are existing noise barriers without predicted noise impact behind the barrier; therefore, no further noise abatement evaluation was completed. Six are existing noise barriers with noise impact predicted behind the barrier that were further evaluated against MDOT's feasibility and reasonableness criteria as built. Six potential noise barriers were evaluated in new locations to determine if MDOT's current feasibility and reasonableness criteria could be met based on the current highway configuration and latest roadway speed data. Of these six additional barriers, four barriers meet preliminary feasibility criteria, but do not meet reasonableness criteria as the estimated cost of these barriers per benefited receptor would exceed 3 percent above the allowable cost per benefited receptor unit (CPBU) of $52,248 in 2023 dollars (3 percent above results in a not to exceed cost of $53,815).[3] Two barriers meet MDOT's preliminary feasibility and reasonableness criteria with a cost per benefited receptor below the allowable cost per benefited receptor unit

[1] Dwelling unit equivalents (DUE) for the park locations are described in Sections 4 and 5 of this report.

[2] Based on DUE calculation for the impacted park area.

[3] Tom Zurburg, MDOT Noise Barrier Program Manager, email regarding "RE: MDOT 2023 CPBU", September 29, 2022.

(CPBU) of $52,248 in 2023 dollars (3 percent above results in a not to exceed cost of $53,815).

The noise barriers are summarized in **Table 1** and shown on the figures in **Appendix A**. The impacted office outdoor use spaces (NAC E) were not analyzed for noise abatement because they are isolated from other impacted areas.

Table 1. Noise Barrier Designs Analyzed

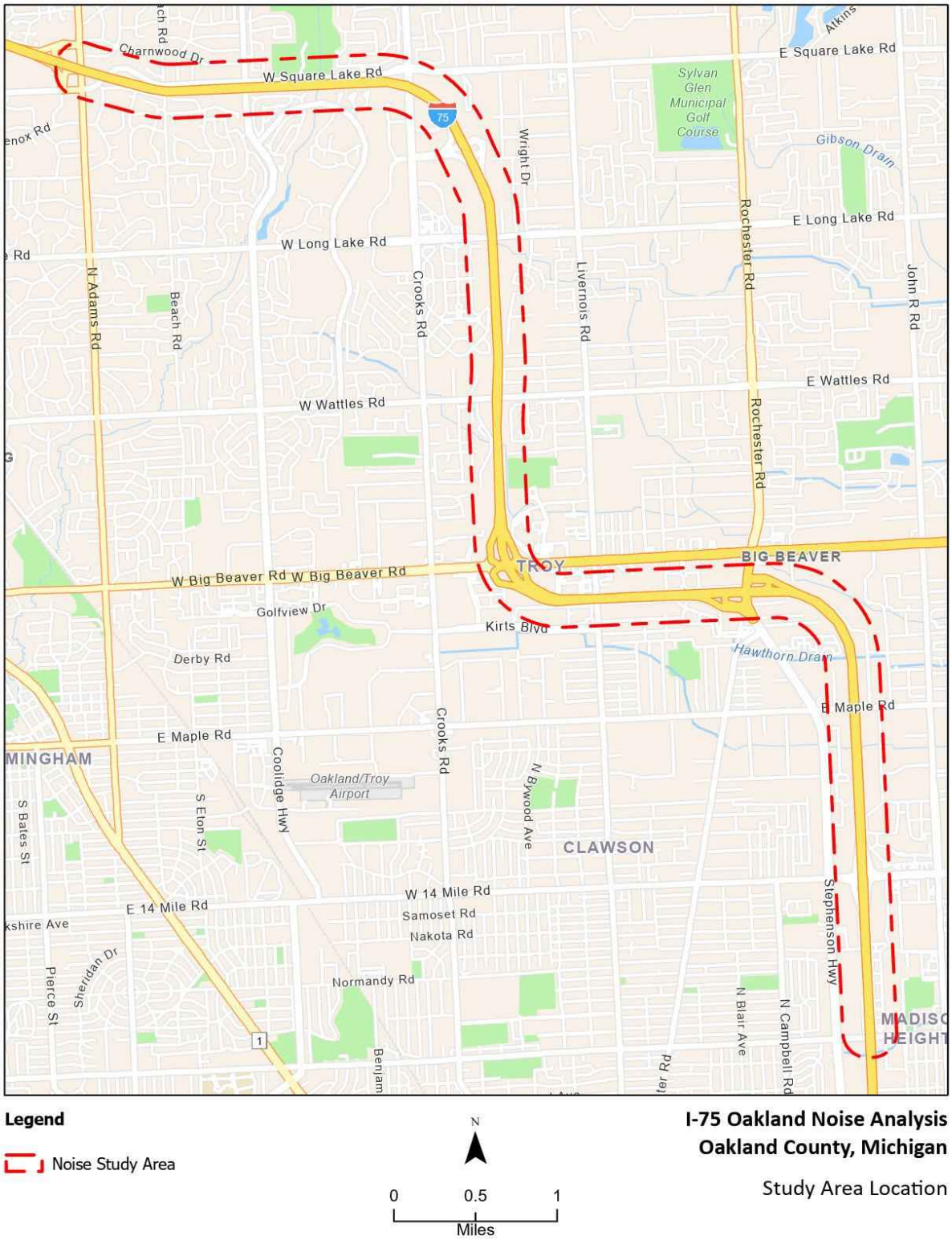
Barrier ID	Number of Attenuated Locations					Planning Cost ($45/sq. ft.)	Cost/Benefit	Feasible[a]	Reasonable[b]
	≥ 10 dB(A)	≥ 7 dB(A)		≥ 5 dB(A) (Benefited Receptors)					
		#	% of Benefited	#	% of Impacted			(Y/N)	(Y/N)
NB1[c]	21	170	71	238	92	$2,714,895	$11,407	Y	Y
NB2[c]	12	23	85	27	75	$928,440	$34,387	Y	Y
NB3[c]	0	32	46	70	76	$1,153,080	$16,473	Y	N[e]
NB4[c]	24	127	68	187	75	$2,436,525	$13,030	Y	Y
NB5	1	4	80	5	100	$1,894,770	$378,954	Y	N
NB6	1	11	42	26	100	$1,664,100	$64,004	Y	N
NB7[c]	8	62	78	79	92	$1,975,050	$25,001	Y	Y
NB8[d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NB9[d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NB10	1	28	50	56	100	$2,434,185	$43,468	Y	Y
NB11	1	71	62	115	95	$3,760,920	$32,704	Y	Y
NB12[c]	18	51	58	88	90	$2,595,600	$29,495	Y	Y
NB13	1	26	51	51	89	$7,953,660	$155,954	Y	N
NB14	1	11	27	41	100	$4,644,360	$113,277	Y	N

[a]) MDOT requires that noise barriers achieve a 5 dB(A) reduction at 75 percent of the impacted receptors. If a barrier cannot achieve this, abatement is considered to not be acoustically feasible. Noise barrier abatement also might not be feasible due to constructability or safety constraints.
[b]) The design year attenuation requirement for Michigan is to provide a noise reduction of 10 dB(A) for at least one benefited receptor and at least a 7 dB(A) reduction for 50 percent or more of the benefited receptor sites.
[c]) The noise barrier analysis for this existing noise barrier reflects future year noise level reductions without the barrier in place in order to show the feasibility and reasonableness results of the existing barrier. Note the figures in Appendix A show impacts with the barrier in place. Barrier analysis results by receiver, including benefits behind the existing barrier based on future year noise levels with and without the barrier in place, are given in in Appendix D.
[d]) No impact is predicted behind this existing barrier; therefore, no barrier analysis was completed.
[e]) The analysis for this existing barrier with the current highway configuration and latest roadway speed data is shown for informational purposes. Although the reasonableness noise reduction goals are not fully met, no further analysis or recommendations are intended given that there is no project being analyzed.

2 Purpose

This technical report evaluates the potential noise impacts and the potential for additional noise barriers that might benefit noise impacted residents and property owners in the study area based on existing and proposed traffic data and engineering designs for the current highway configuration. The study area includes segments 7 through 12 from the original 14 study area segments for the I-75 Modernization project. **Figure 1** shows the noise study area, which includes an 800-foot boundary around the study limits in order to capture additional receptors outside of the zone of impact that were not included in previous studies. Several additional receptors outside of 800 feet are also included in this study to provide predicted noise levels for informational purposes.

Figure 1. Study Area Location



3 Traffic Noise Concepts, Policy and Guidelines

3.1 Basic Noise Information

Noise is defined as unwanted sound. Sound is what we hear when there are variations in air pressure. The ear is sensitive to this pressure variation and perceives it as sound. The intensity of these pressure variations causes the ear to discern different levels of loudness. These pressure differences are most commonly measured in decibels.

The decibel (dB) is the unit of measurement for sound. The decibel scale audible to humans spans approximately 140 dB. A level of zero decibels corresponds to the lower limit of audibility, while 140 dB produces a sensation more akin to pain than sound. The decibel scale is a logarithmic representation of the actual sound pressure variations. Therefore, a 26 percent change in the energy level only changes the sound level 1-dB. The human ear would not detect this change except in an acoustical laboratory. A doubling of the energy level would result in a 3-dB increase, which would be barely perceptible in the natural environment. A tripling in energy sound level would result in a clearly noticeable change of 5-dB in the sound level. A change of ten times the energy level would result in a 10-dB change in the sound level. This would be perceived as a doubling (or halving) of the apparent loudness. Table 2 provides a comparison of sound level changes with relative loudness.

The human ear has a non-linear sensitivity to noise. To account for this in noise measurements, electronic weighting scales are used to define the relative loudness of different frequencies. The "A" weighting scale is widely used in environmental work because it closely resembles the non-linearity of human hearing. Therefore, the unit of measurement for an A-weighted noise level is dB(A).

Table 2. Logarithmic Nature of Sound

Change in $L_{eq(1h)}$ Sound Level	Relative Loudness in the Natural Environment
+/- 3 dB(A)	Barely Perceptible Change
+/- 5 dB(A)	Readily Perceptible Change
+/- 10 dB(A)	Considered Twice or Half as Loud

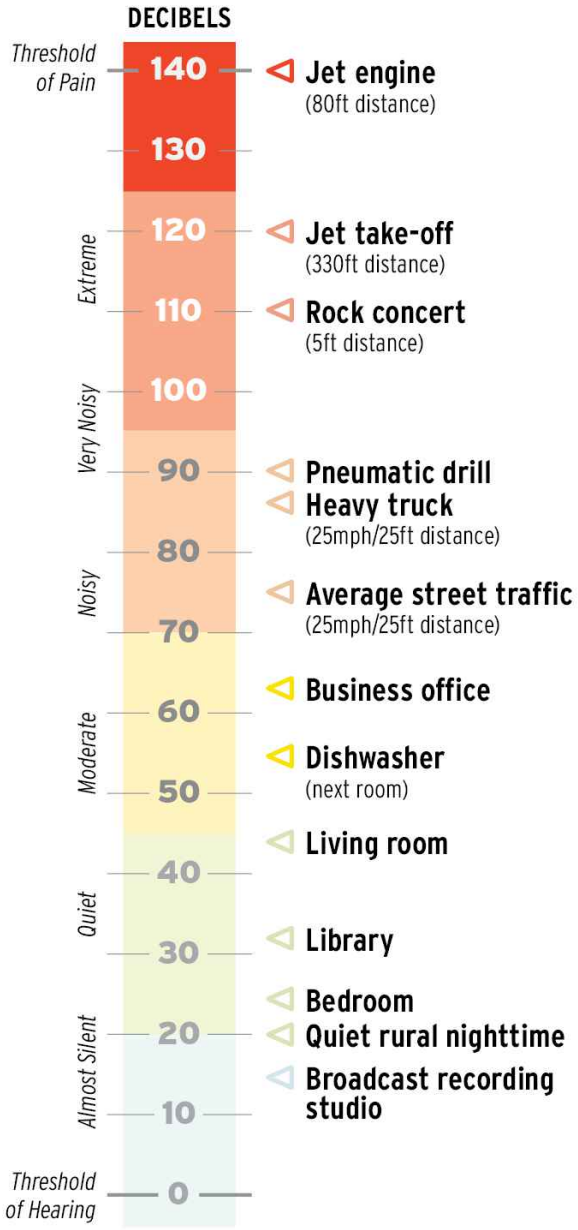
Traffic noise is not constant. It varies as each vehicle passes through a certain location. The time-varying characteristics of environmental noise are analyzed statistically to determine the duration and intensity of noise exposure. In an urban environment, noise is made up of two distinct components. One is ambient or background noise. Wind noise and distant traffic noise make up the ambient acoustical environment. These sounds are not readily recognized but combine to produce a non-irritating ambient sound level. This background sound level varies throughout the day, being lowest at night and highest during the day. The other component of urban noise is intermittent and louder than the background noise. Transportation noise and local industrial noise are examples

of this type of noise. It is for these reasons that environmental noise is analyzed statistically.

It is necessary to use a method of measurement that will account for the time-varying nature of sound when studying environmental noise. The equivalent sound pressure level (L_{eq}) is defined as the continuous steady sound level that would have the same total A-weighted sound energy as the real fluctuating sound measured over a given period of time. As a result, the three characteristics of noise combine to form a single descriptor (L_{eq} in dB(A)) that is used to evaluate human response to noise and has been chosen for use in this study. The time-period used to determine traffic noise levels is one hour and uses the descriptor $L_{eq(1h)}$.

Traffic noise at a receiver is influenced by the following major factors: distance from the traffic to the receiver, volume of traffic, speed of traffic, vehicle mix, and acoustical shielding. Tire sound levels increase with vehicle speed but also depend upon road surface, vehicle weight, tread design and wear. Change in any of these can vary noise levels. At lower speeds, especially in trucks and buses, the dominant noise source is the engine and related accessories. **Figure 2** provides sound levels of typical noise sources.

Figure 2. Sound Levels of Typical Noise Sources



Source: Adopted from "Environmental Criteria for Road Traffic Noise", Environmental Protection Authority, South Sydney, NSW, May 1999, Page 38.

3.2 Federal Regulations and Guidance

The Federal Highway Administration (FHWA) *Procedures for Abatement of Highway Traffic Noise and Construction Noise* are presented in the Code of Federal Regulations, Title 23 Part 772 (23 CFR 772), July 2010. This regulation, plus other guidance documents written to explain the regulation, sets forth the process for performing a traffic noise analysis.

The process includes the following:

1. Identification of highway traffic noise impacts;
2. Examination of potential abatement measures;
3. Gathering of public input approval for reasonable and feasible abatement measures;
4. Incorporation of reasonable and feasible highway traffic noise abatement measures into the highway project;
5. Coordination with local officials to provide helpful information on compatible land use planning and control; and
6. Identification and incorporation of necessary measures to abate construction noise.

The highway traffic noise impact identification process involves a review of the existing land use activity categories that parallel the highway corridor and determining existing and future noise levels within those areas. Existing land use of developed lands is identified by inspecting aerial photography and performing site reconnaissance. Highway traffic noise analyses are also performed for undeveloped lands that have received a building permit.

After the existing and proposed land uses are established, noise levels are measured along the corridor with simultaneous traffic counts. The measured noise levels are then compared to modeled noise levels based on the traffic counts. The model is validated if measured highway traffic noise levels and predicted highway traffic noise levels for the existing conditions are within +/- 3 dB(A).[4] This modeling, as required by the FHWA, is performed with Traffic Noise Model Version 2.5 (TNM). Once the model is validated, TNM is used to model the existing and the future loudest hour traffic noise levels at receptors in the project area.

The FHWA Noise Abatement Criteria (NAC), which are presented in 23 CFR 772, establish the NAC for various land uses and are presented in **Table 3**. A traffic noise impact is defined as a future noise level that approaches or exceeds the NAC, or a future noise level that creates a substantial noise increase over existing noise levels. An approaching noise level is defined as being at least 1 dB(A) less than the noise level value listed in the NAC for Activity Category A through G. For Activity Category C/D land uses, NAC C is applied if an exterior use is present, and NAC D is applied if there is no exterior use or if abatement (e.g., a noise barrier) for NAC C is not feasible and reasonable. The FHWA allows states to define a substantial noise increase as an increase of anywhere between 5 and 15 dB(A).

After traffic noise impacts are identified, potential abatement alternatives are examined. The following abatement alternatives, which are listed in 23 CFR 772.15(c) are permitted and can be evaluated where applicable:

[4] Highway Noise Analysis and Abatement Handbook, Michigan Department of Transportation, 2011, page 16.

1. Construction of noise barriers including acquisition of property rights, either within or outside the highway right-of-way;
2. Traffic management measures;
3. Alteration of horizontal and vertical alignments;
4. Acquisition of real property or interests therein to serve as a buffer zone to preempt development; and
5. Noise insulation of Activity Category D land use activities listed in **Table 3**.

At a minimum, state highway agencies are required to consider noise abatement in the form of noise barriers.

FHWA defines feasible highway traffic noise abatement as objective engineering considerations (e.g., can a barrier be built given the topography of the location; can a substantial noise reduction be achieved given certain access, drainage, safety, or maintenance requirements; are other noise sources present in the area, etc.). An abatement measure must achieve a noise reduction of at least 5 dB(A) to be considered feasible, according to 23 CFR 772.13 (d)(1)(i). MDOT's feasibility criteria are provided in Section 5.1 of this document.

The FHWA lists three required reasonableness factors when considering noise barriers: cost effectiveness, viewpoints of benefiting receptors, and achievement of noise reduction design goals. For reasonableness, 23 CFR 772.13 (d)(2)(iii) requires state Departments of Transportation to define design year reduction goals somewhere between 7 and 10 dB(A). FHWA lists optional reasonableness factors that can be added to but not overrule the required reasonableness factors.

Table 3. Noise Abatement Criteria (NAC)

Activity Category	Activity Criteria[a,b] $L_{eq(h)}$[c]	Activity Criteria[a,b] $L_{10(h)}$[d]	Evaluation Location	Activity Description
A	57	60	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 purpose.
B[e]	67	70	Exterior	Residential
C[e]	67	70	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	55	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[e]	72	75	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	N/A	N/A	N/A	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	N/A	N/A	N/A	Undeveloped lands that are not permitted.

Source: Highway Noise Analysis and Abatement Handbook, Michigan Department of Transportation, 2011.

[a]) MDOT defines a noise impact as a 10 dB(A) increase between the existing noise level to the design year predicted noise level, OR a predicted design year noise level that is 1 dB(A) less than the levels Table 3 shows.

[b]) Either $L_{eq(h)}$ or $L_{10(h)}$ (but not both) may be used on a project. MDOT uses $L_{eq(h)}$. The $L_{eq(h)}$ and $L_{10(h)}$ Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.

[c]) L_{eq} is the equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with $L_{eq(h)}$ being the hourly value of L_{eq}.

[d]) L_{10} is the sound level that is exceeded 10 percent of the time (90th percentile) for the period under consideration, with L_{10} being the hourly value of L_{10}.

[e]) Includes undeveloped lands permitted for this activity category.

3.3 State Rules and Procedures

The MDOT *Highway Noise Analysis and Abatement Handbook* (Handbook), dated July 2011, is the State's tool for implementing 23 CFR 772. The Handbook expands on 23 CFR 772 by refining definitions and establishing milestones within the design phase for the completion of noise impact analysis and mitigation development.

The Handbook includes the following definitions:

Noise Impact: A substantial noise increase or a predicted design year noise level that is one dB(A) less, equal to, or greater than the NAC level.

Common Noise Environment (CNE): A group of receptors within the same Activity Category that are exposed to similar noise sources and levels; traffic volumes, traffic mix, and speed; and topographic features. Generally, common noise environments occur between two secondary noise sources, such as interchanges, intersections, and cross-roads.

Substantial Noise Increase: A 10 dB(A) or greater increase between the existing noise level and the design year predicted noise level.

Feasible Noise Barrier: A barrier that has no construction impediments, meets safety requirements for the traveling public, and provides at least 5 dB(A) noise reduction at 75 percent of the impacted receptors.

Reasonable Noise Barrier: A barrier that is cost effective, favorable to the majority of benefited receptors, and achieves noise reduction design goals by meeting or exceeding the reasonableness factors.

Cost Effective Noise Barrier: A noise barrier analyzed for environmental clearance with a preliminary construction cost that is not more than 3 percent above the allowable cost per benefited receptor unit (CPBU) of $52,248[5] in 2023 dollars (3 percent above results in a not to exceed cost of $53,815), assuming a $45.00 per square foot noise barrier construction cost. This barrier construction cost is an estimate, and actual construction costs may be significantly higher.

Benefited Receptor: A receptor that receives a 5 dB(A) or greater traffic noise reduction as a result of a proposed noise barrier.

Design Year Attenuation Requirement: Design year traffic noise reduction goal of 10 dB(A) for at least one benefited receptor and 7 dB(A) reduction for 50 percent or more of the benefited receptor sites.

Permitted Development: Any presently undeveloped lands that have received a building permit from the local township or city.

[5] Tom Zurburg, MDOT Noise Barrier Program Manager, email regarding "RE: MDOT 2023 CPBU", September 29, 2022.

Dwelling Unit Equivalent (DUE): The receptor count for public use areas such as parks, schools, libraries, and churches.

3.4 Highway Traffic Induced Vibration

Automobiles, trucks and buses do not typically generate enough vibration to be a concern, except under specific situations, such as pavement irregularities adjacent to sensitive locations. Studies to assess the impact of operational traffic induced vibrations have shown that both measured and predicted vibration levels are less than any known criteria for structural damage to buildings. Normal living activities (e.g., closing doors, walking across floors, operating appliances) within a building have been shown to create greater levels of vibration than highway traffic. There are no Federal requirements directed specifically to highway traffic induced vibration.

4 Noise Analysis

4.1 FHWA Traffic Noise Model (TNM)

TNM Version 2.5 is FHWA's approved computer model for highway traffic noise prediction and analysis. The following parameters are used in this model to calculate an hourly $L_{eq(1h)}$ at a specific receiver location:

- Distance between roadway and receiver
- Relative elevations of roadway and receiver
- Hourly traffic volume in light-duty (two axles, four tires), medium-duty (two axles, six tires), and heavy-duty (three or more axles) vehicles
- Vehicle speed
- Ground absorption
- Topographic features, including retaining walls and berms

Highway noise sources have been divided into five types of vehicles; automobiles, medium trucks, heavy trucks, buses and motorcycles. Each vehicle type is defined as follows[6]:

- Automobiles – all vehicles with two axles and four tires, includes passenger vehicles and light trucks, less than 10,000 pounds
- Medium trucks – all vehicles having two axles and six tires, vehicle weight between 10,000 and 26,000 pounds
- Heavy trucks – all vehicles having three or more axles, vehicle weight greater than 26,000 pounds
- Buses – all vehicles designed to carry more than nine passengers
- Motorcycles – all vehicles with two or three tires and an open-air driver/passenger compartment

Noise levels produced by highway vehicles can be attributed to three major categories:

- Running gear and accessories (tires, drive train, fan and other auxiliary equipment)
- Engine (intake and exhaust noise, radiation from engine casing)
- Aerodynamic and body noise

[6] G.S. Anderson, C.S.Y. Lee, G.G. Fleming and C. Menge, "FHWA Traffic Noise Model®, Version 1.0 User's Guide", Federal Highway Administration, January 1998, p.60.

4.2 Analysis

4.2.1 Land Use and Field Measurement Levels

The I-75 noise analysis study area includes residential single-family properties, including those at Troy Villa mobile home park, and multi-family dwellings at Howard House, Lexington Village Apartments, Charter Square Apartments, the Gables of Troy, the Alcove Troy, Wattles Creek Condominiums, Weston Downs, Three Oaks Apartments, Northfield Parkway Homes, and Belmar Oakland Assisted Living. The study area also included non-residential land use, such as Lamphere High School, Phillip J. Huber Park, Firefighters Park, Troy Family Aquatic Center, Kingdom Hall of Jehovah's Witnesses, and other office, hotel and restaurant properties with areas of outdoor use. A request was submitted to the City of Troy as well as other municipalities within the study area to obtain proposed or permitted development information. The only permitted development information received was from the City of Troy for a new hotel (SpringHill Suites) in CNE 8 off Owendale Drive.

The criteria stated in **Table 3** help to determine if future noise levels will approach or exceed the NAC for the noise-sensitive land use throughout the corridor. The corridor was divided into seven segments, or common noise environments (CNEs), to facilitate the analysis of highway noise in areas of like land uses. The CNE boundaries are illustrated in **Figure 3** and identified in **Table 4**.

Figure 3. Study Area Common Noise Environments (CNE)

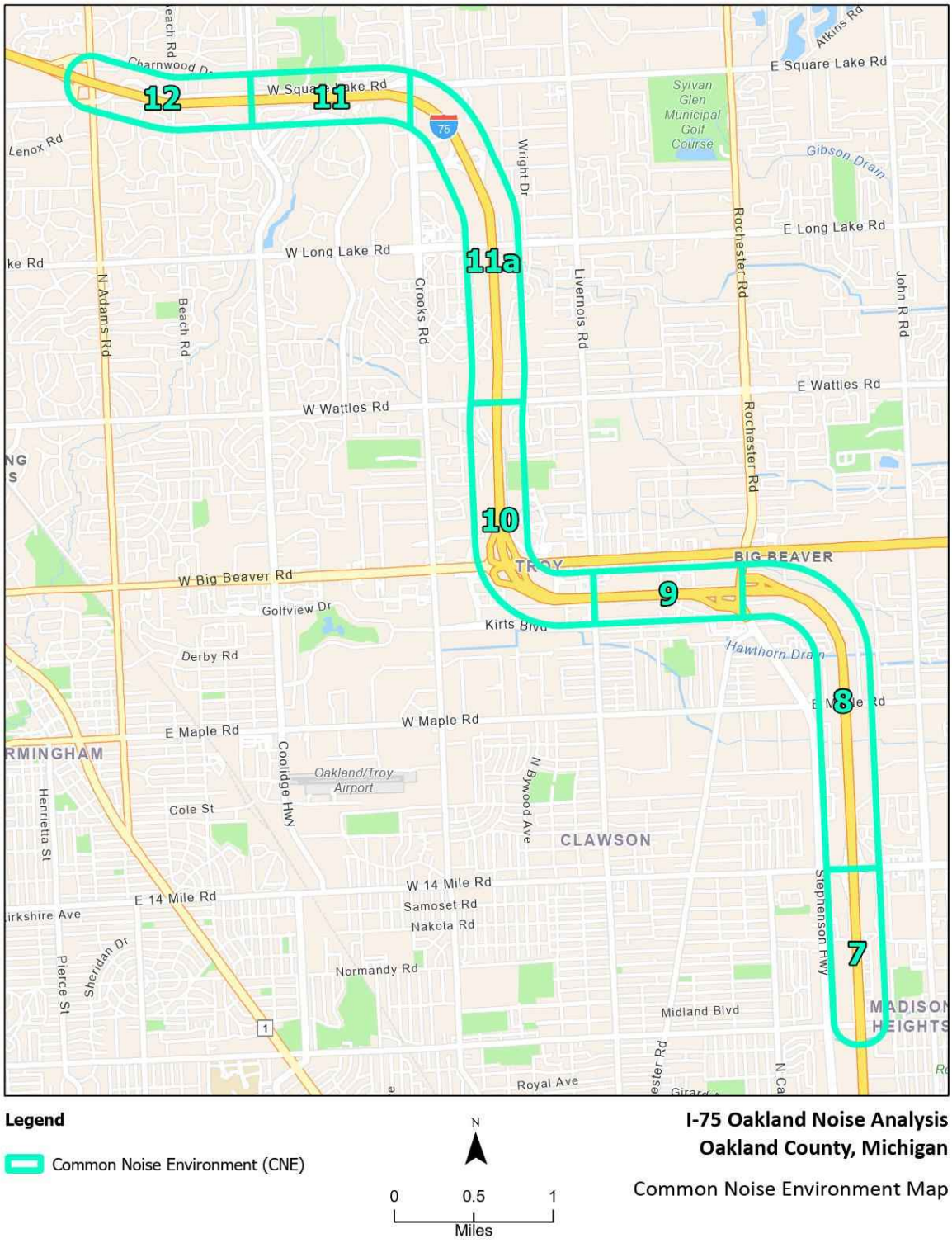


Table 4. Study Area Common Noise Environments (CNE)

CNE	Site Description
7	**From 13 Mile Road to 14 Mile Road**, includes residential (Howard House, Lexington Village Apartments) properties behind an existing noise barrier on the east side of I-75, as well as Lamphere High School. Hotels are located west of I-75.
8	**From 14 Mile Road to Rochester Road**, includes residential properties and recreational areas behind an existing noise barrier at Troy Villa mobile home park on the west side of I-75. Hotels and business offices are also located west of I-75. A permitted hotel (Springhill Suites) and residences are located north of I-75 immediately east of Rochester Road off Owendale Drive and Henrietta Avenue.
9	**From Rochester Road to Livernois Road**, includes multi-family residential properties (Charter Square Apartments, the Gables of Troy, the Alcove Troy) behind existing noise barriers on both sides of I-75. A hotel is also located on the south side of I-75.
10	**From Livernois Road to Wattles Road**, includes single family residences, hotels, restaurants and offices south of Big Beaver Road. Includes single and multi-family residential properties (Wattles Creek Condominiums, Weston Downs) north of Big Beaver Road, as well as Phillip J. Huber Park and Troy Family Aquatic Center. Hotels, restaurants and offices are also located west of I-75 north of Big Beaver Road, along with outdoor use at Oakland County District Court east of I-75. Residences north of Big Beaver Road and west of I-75 are behind an existing noise barrier.
11a	**From Wattle Road to Crooks Road**, includes single and multi-family residential properties (Three Oaks Apartments), Kingdom Hall of Jehovah's Witnesses, offices, restaurants and hotels. Residences north of Wattles Road are behind existing noise barriers on both sides of I-75. The residences on the east side of I-75 are not fully covered by the existing noise barrier. Note that White Chapel Memorial Park Cemetery is also in this CNE; while a cemetery is a noise-sensitive land use, previous studies have identified no further analysis is needed for this property.
11	**From Crooks Road to Coolidge Highway**, includes single and multi-family residential properties (Northfield Parkway Homes) and Firefighters Park. Residences south of I-75 are behind an existing noise barrier.
12	**From Coolidge Highway to Adams Road**, includes single-family residential properties and Belmar Oakland Assisted Living.

Existing noise level measurements were conducted on November 2 and 3, 2022. In total, existing noise level measurements were gathered at 14 representative sites in the study area. The existing noise measurements were conducted at 12 of the site locations in

order to calibrate the FHWA's TNM to predict future noise levels. Traffic was counted concurrently during each noise measurement and classified by vehicle type: cars, medium trucks (two axles), heavy trucks (three or more axles), buses and motorcycles. Vehicle speeds were determined from field observation. To validate TNM, the measured noise levels were compared to the modeled noise levels using the same traffic volumes, speeds, and vehicle types that were present during each field measurement. Existing noise measurements were gathered at two additional site locations to provide ambient noise level information at distances beyond 500 feet from I-75; FS-7a was gathered at approximately 900 feet from I-75, while FS-7b was gathered at approximately 1,800 feet from I-75. Fifteen-minute measurements were taken at each site. The measurements were made in accordance with MDOT guidelines using an integrating sound level analyzer meeting American National Standards Institute (ANSI) and International Electrotechnical Commission (IEC) Type 1 specifications. The locations of the field measurement sites are presented in **Appendix A**. Sound level analyzer calibration certification documentation and field data sheets are provided in **Appendix B**. The data collected at the 14 sites are presented in **Table 5**.

Table 5. Measured Existing Noise Levels

Field Site #	Site Description	Date	Start Time	Traffic Count Duration[a]	Traffic							Noise Level, dB(A) $L_{eq(1h)}$
					Direction	Auto	Med. Truck	Heavy Truck	Buses	MC	Speed, mph	
FS-1	North of W 13 Mile Rd. off of Concord Dr. near multi-family homes	11/03/2022	1:56pm	15-minute	I-75 NB	622	26	42	2	0	70	61.2
					I-75 SB	672	24	41	0	0	70	
					Concord Dr. NB	2	0	0	0	0	25	
					Concord Dr. SB	2	0	0	0	0	25	
FS-2	West side of I-75 in front of Troy Villa single-family homes	11/03/2022	12:46pm	15-minute	I-75 NB	630	15	46	0	0	70	67.3
					I-75 SB	580	15	50	0	0	70	
FS-3	East side of I-75 on Kirk Ln.	11/02/2022	4:24pm	15-minute	I-75 NB	1063	11	15	0	1	70	63.5
					I-75 SB	712	17	35	1	0	70	
FS-4	West side of I-75 just south of Wattles Rd.	11/02/2022	3:48pm	15-minute	I-75 NB	915	18	27	0	3	70	66.7
					I-75 SB	664	18	36	1	0	70	
					Wattles Rd. EB	160	2	0	0	0	40	
					Wattles Rd. WB	133	1	0	0	0	40	
FS-5	West side of I-75 at Three Oaks Apartments	11/02/2022	3:07pm	15-minute	I-75 NB	924	19	28	1	2	70	61.2
					I-75 SB	686	20	32	1	2	70	
FS-6	East side of I-75 off Hedgewood Dr. at single-family homes	11/02/2022	2:33pm	15-minute	I-75 NB	823	20	50	2	1	70	65.4
					I-75 SB	601	28	44	0	0	70	
					Hedgewood Dr. NB	2	0	0	0	0	25	
					Hedgewood Dr. SB	2	0	0	0	0	25	

Field Site #	Site Description	Date	Start Time	Traffic Count Duration[a]	Traffic							Noise Level, dB(A) $L_{eq(1h)}$
					Direction	Auto	Med. Truck	Heavy Truck	Buses	MC	Speed, mph	
FS-7	North side of I-75 at Firefighters Park just north of Square Lake Rd.	11/02/2022	9:09am	15-minute	I-75 NB	482	22	46	0	0	70	73.2
					I-75 SB	638	26	40	2	0	70	
					Square Lake Rd. EB	75	0	0	0	0	45	
					Square Lake Rd. WB	43	0	0	1	0	45	
FS-7a	North end of Firefighters Park parking lot	11/03/2022	11:06am	15-minute	I-75 NB	409	16	43	0	1	70	64.4
					I-75 SB	434	15	48	0	0	70	
					Square Lake Rd. EB	36	0	0	0	0	45	
					Square Lake Rd. WB	37	0	0	0	0	45	
FS-7b	North Side of I-75 at Firefighters Memorial	11/03/2022	11:35am	15-minute	I-75 NB	452	23	40	0	0	70	56.4
					I-75 SB	462	19	46	0	0	70	
					Square Lake Rd. EB	33	0	0	0	0	45	
					Square Lake Rd. WB	31	0	0	0	0	45	
FS-8	South side of I-75 at Northfield Parkway Apartments	11/02/2022	12:24pm	15-minute	I-75 NB	458	22	38	0	0	70	62.5
					I-75 SB	487	23	60	0	1	70	
FS-9	North side of I-75 Drive between Square Lake Rd. and Coolidge Hwy. at single-family home	11/02/2022	9:55am	15-minute	I-75 NB	371	21	47	0	0	70	71.1
					I-75 SB	445	18	39	0	0	70	
					Square Lake Rd. EB	34	0	0	0	0	45	
					Square Lake Rd. WB	34	0	0	0	0	45	

Field Site #	Site Description	Date	Start Time	Traffic Count Duration[a]	Traffic							Noise Level, dB(A) $L_{eq(1h)}$
					Direction	Auto	Med. Truck	Heavy Truck	Buses	MC	Speed, mph	
FS-10	South Side of I-75 at the Belmont Ct. cul-du-sac near single-family homes	11/02/2022	11:24am	15-minute	I-75 NB	409	11	45	1	0	70	61.5
					I-75 SB	462	19	40	1	0	70	
FS-11	North side of I-75 between Glyndebourne Dr. and Beach Rd. near single-family homes	11/02/2022	11:52am	15-minute	I-75 NB	409	18	50	0	0	70	69.5
					I-75 SB	477	20	60	1	0	70	
					Square Lake Rd. EB	41	3	1	0	0	45	
					Square Lake Rd. WB	49	1	0	0	0	45	
FS-12	South side of I-75 off Arlund Way at single-family home	11/02/2022	10:48am	15-minute	I-75 NB	384	17	52	2	0	70	68.4
					I-75 SB	507	16	50	0	1	70	
					Arlund Way EB	6	0	0	0	0	30	
					Arlund Way WB	11	0	0	0	0	30	

[a]) All noise measurements were conducted for a duration of 15 minutes.

4.2.2 Field Measurements versus Modeled Noise Levels

Comparing the modeled noise levels to the measured noise levels validates TNM for use on the specific study. Traffic counts were taken concurrently with the noise measurements at the sites and classified by vehicle type: cars, medium trucks (two axles), heavy trucks (three or more axles), buses and motorcycles. The traffic counts taken during each measurement were converted to hourly volumes and entered in the model. The modeled noise levels at the 12 sites used for TNM validation compared within 3 dB(A) of the measured levels, which satisfies the MDOT requirement for validating TNM. The site-by-site comparison is presented in **Table 6**.

Table 6. Comparison of Measured and Modeled Noise Levels

Field Site	Appendix A Map Page #	Noise Level, dB(A) $L_{eq(1h)}$		Difference in Noise Level, dB(A) $L_{eq(1h)}$ (Modeled Minus Measured)[a]
		Measured	Modeled	
FS-1	A-2	61	58	-3
FS-2	A-5	67	64	-3
FS-3	A-9	64	61	-3
FS-4	A-10	67	64	-2
FS-5	A-10	61	58	-3
FS-6	A-10	65	67	2
FS-7	A-13	73	70	-3
FS-8	A-13	63	60	-2
FS-9	A-14	71	68	-3
FS-10	A-15	62	59	-2
FS-11	A-15	70	71	1
FS-12	A-15	65	66	1

[a]) Difference may appear incorrect due to rounding.

4.2.3 Traffic Noise Levels and Noise Impact Analysis

FHWA's TNM Version 2.5 was used to model existing (2022) and future year (2040) worst-case traffic noise levels within the I-75 noise analysis study area. Modeled receptors were placed in accordance with FHWA requirements in areas with evidence of frequent human use. This area is typically located between the highway and any structure, such as a residence. MDOT considers the area within 35 feet from the back of a residence as the backyard area. Balconies in apartment buildings are included when the balcony faces the highway and there are no ground-level areas of frequent human use between the highway and the building.

When predicting traffic noise levels and assessing noise impact, traffic characteristics that would yield the loudest hour conditions should be used, which generally would be when traffic is moving at the highest speeds and highest volumes possible, also known as Level-of-Service (LOS) C. FHWA's *Recommended Best Practices for the Use of the FHWA Traffic Noise Model (TNM)* states, "The loudest hour of the day is dependent upon traffic conditions – vehicle volume, operating speed, and number of trucks – that

combine to produce the highest hourly noise levels adjacent to the highway corridor. According to FHWA guidance, the 'worst hourly traffic noise impact' usually occurs at a time when truck volumes and vehicle speeds are the greatest, typically when traffic is free flowing and at or near LOS C conditions. Based on this guidance, the use of traffic data that are based on LOS is the preferred approach."[7]

The traffic data used in this analysis was based on recent MDOT traffic counts in the corridor projected out to 2040 and compared with the 2040 future year traffic forecast used in the previous 2018 study. The worst-case volumes from that comparison were used for the future year, along with posted speeds. The worst-case 2040 volumes were scaled down to the existing year (2022) with a 0.3 percent growth rate. Posted speed limits were used on I-75 and adjacent roadways in the noise model for both the existing and future conditions, with the truck speeds updated to 65 miles per hour (mph) to reflect current posted speeds compared to the 60-mph posted speed assumed with the 2018 study. The High-Occupancy Vehicle (HOV) lanes were modeled with automobile, medium truck and bus volumes in both directions of travel. No heavy trucks were modeled in the HOV lanes.

Within the seven identified CNEs, a total 1,147 noise receivers were modeled representing 2,447 receptors (or units), including 1,085 residential receivers (NAC B) representing 2,352 receptor units, 25 recreational receivers (NAC C) representing 55 dwelling unit equivalents (DUEs) and three parks, and 37 office, hotel or restaurant receivers (NAC E) representing 37 receptor units. Each receiver represents a single point in the noise model and is representative of the noise receptors being analyzed. One receiver can represent multiple receptors in the noise analysis, such as a single receptor point representing multiple residential units or single receptor points representing recreational spaces that are assigned Dwelling Unit Equivalents (DUEs). The existing and future year noise levels at the modeled receivers are presented in **Appendix C**, along with a land use description, the FHWA NAC, and the number of receptor units or DUEs represented by each receiver. The modeled receivers are shown on the figures in **Appendix A**.

4.3 Impact Assessment

A traffic noise impact is defined as a future noise level that approaches[8] or exceeds the NAC; or a future noise level that creates a substantial noise increase over existing noise levels.[9] MDOT identifies a noise impact as a 10 dB(A) increase between the existing noise level to the future year predicted traffic noise level, or a future year condition noise level that approaches (equal to 1 dB(A) less than the NAC) or exceeds the NAC level for the future condition.

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[7] FHWA, *Recommended Best Practices for the Use of the FHWA Traffic Noise Model (TNM), TNM Object Input, Noise Barrier Optimization, and Quality Assurance*, Final Report, December 8, 2015.

[8] A noise level 'approaches' when the noise level is one dB(A) less than the NAC standard.

[9] Substantial Noise Increase: A 10 dB(A) or greater increase between the existing noise level and the design year predicted noise level.

One noise receiver at Kingdom Hall of Jehovah's Witnesses (R-11a-74) was modeled as NAC C with NAC D (interior) noise levels calculated because no observable exterior area of frequent human use was identified. Table 6[10] in FHWA's *Highway Traffic Noise: Analysis and Abatement Guidance* provides values to help estimate interior noise levels. A building noise reduction factor of 20 dB was used as a conservative estimate for a light frame building with ordinary sash windows. The building noise reduction factor was applied to the modeled exterior noise level to determine the interior noise level, and no noise impact is predicted based on the estimated interior noise levels.

Per guidance in Appendix D of the Handbook, usage information or typical residential lot size adjacent to impacted NAC C receivers was used to determine the DUEs. Note that a similar method as described in Appendix D was also used to estimate number of units per outdoor space at NAC B receivers for Belmar Oakland Assisted Living (R-12-134, R-12-135, R-12-137, R-12-138). For the four outdoor spaces at Belmar Oakland, it was assumed the building has a capacity of 25 users per space and is open for 12 hours a day, seven days a week, resulting in a usage factor of 0.5 (12 [hours of Daily Hours Used] ÷ 24 [Hours per day]). The usage factor of 0.5 multiplied by 25 users per space is equal to 12.5 units; therefore, this was rounded up to 13 units per outdoor space at Belmar Oakland.

Per guidance in Appendix D of the Handbook, the following information and calculations were applied to determine the DUEs for the following NAC C receptors:

- DUE calculations based on usage use the following formula from the Handbook:
  - DUE = Number of Occupants ÷ (Average persons per household) x Usage
  - DUE calculations use 3 average persons per household[11]
- Troy Villa Mobile Home Park various outdoor spaces (Receiver IDs: R-8-31, R-8-44, R-8-55, R-8-66, R-8-72)
  - Based on 282 residences in Troy Villa Mobile Home Park, it was estimated that 10 percent of residences may be using the various outdoor spaces at any given time, resulting in 28.2 users.
  - The outdoor spaces are open for 12 hours per day, seven days per week.
  - Usage = 0.5 (12 [hours of Daily Hours Used] ÷ 24 [Hours per day])
  - Average persons per household = 3
  - DUE = 28.2 [users] ÷ 3 [Average persons per household] x 0.5 [Usage] = 5
    - The five DUEs were spread evenly across the various outdoor space receptors, resulting in one DUE per representative receptor.
- The Gables of Troy Pickleball Court (Receiver IDs: R-9-97)
  - For the pickleball court, the number of DUEs is based on what was used in previous studies and an assumption of how many users might be at the

[10] FHWA Noise Analysis and Abatement Guidelines, https://www.fhwa.dot.gov/Environment/noise/regulations_and_guidance/analysis_and_abatement_guidance/polguide02.cfm

[11] QuickFacts, Oakland County, Michigan, United States Census Bureau, https://www.census.gov/quickfacts/oaklandcountymichigan, accessed January 2023.

courts at any given time; therefore, two units were assigned to the representative receptor.

- The Gables of Troy Playground (Receiver IDs: R-9-94)
  - The playground has a capacity of 20 users
  - It is open year-round (365 days per year).
  - It is open for 12 hours per day, seven days per week.
  - Usage = 0.5 (12 [hours of Daily Hours Used] ÷ 24 [Hours per day])
  - Average persons per household = 3
  - DUE = 20 [Occupants] ÷ 3 [Average persons per household] x 0.5 [Usage] = 3.33
    - The calculated DUE of 3.33 was rounded up to four DUEs for the representative receptor.
- The Gables of Troy Pool (Receiver IDs: R-9-98)
  - The pool has a capacity of 119 users
  - It is open from Memorial Day to Labor Day (102 days per year).
  - It is open for 13 hours per day, seven days per week.
  - Usage = 0.15 (13 [hours of Daily Hours Used] ÷ 24 [Hours per day] x 102 [Days Used per Year] ÷ 365 [Days per Year])
  - Average persons per household = 3
  - DUE = 119 [Occupants] ÷ 3 [Average persons per household] x 0.15 [Usage] = 6
    - The calculated DUE of six was used for the representative receptor.
- The Alcove Troy Pool (Receiver IDs: R-9-214)
  - The pool has a capacity of 60 users
  - It is open for six months out of the year (183 days per year).
  - It is open for 12 hours per day, seven days per week.
  - Usage = 0.25 (12 [hours of Daily Hours Used] ÷ 24 [Hours per day] x 6 [Months Used per Year] ÷ 12 [Months per Year])
  - Average persons per household = 3
  - DUE = 60 [Occupants] ÷ 3 [Average persons per household] x 0.25[Usage] = 5
    - The calculated DUE of five was used for the representative receptor.
- The Alcove Troy Tennis Court (Receiver IDs: R-9-207)
  - For the tennis courts, the number of DUEs is based on what was used in previous studies and an assumption of how many users might be at the courts at any given time; therefore, two units were assigned to the representative receptor.
- Wattles Creek Condominiums Pool (Receiver IDs: R-10-123)
  - The pool has a capacity of 60 users
  - It is open for six months out of the year (183 days per year).
  - It is open for 12 hours per day, seven days per week.
  - Usage = 0.25 (12 [hours of Daily Hours Used] ÷ 24 [Hours per day] x 6 [Months Used per Year] ÷ 12 [Months per Year])
  - Average persons per household = 3
  - DUE = 60 [Occupants] ÷ 3 [Average persons per household] x 0.25 [Usage] = 5

        - The calculated DUE of five was used for the representative receptor.
- Wattles Creek Condominiums Tennis Courts (Receiver IDs: R-10-160)
    - For the tennis courts, the number of DUEs is based on what was used in previous studies and an assumption of how many users might be at the courts at any given time; therefore, two units were assigned to the representative receptor.
- Troy Aquatic Center (Receiver IDs: R-10-16)
    - The method of dividing the impacted area of a park by the typical residential lot size to determine DUEs would be applied. No impact is predicted in Troy Aquatic Center; therefore, one unit was assigned to the representative receptor.
- Phillip J. Huber Park (Receiver IDs: R-10-17)
    - The method of dividing the impacted area of a park by the typical residential lot size to determine DUEs would be applied. No impact is predicted in Phillip J. Huber Park; therefore, one unit was assigned to the representative receptor.
- Three Oaks Apartments Pool (Receiver IDs: R-11a-47)
    - The pool has a capacity of 60 users
    - It is open for six months out of the year (183 days per year).
    - It is open for 12 hours per day, seven days per week.
    - Usage = 0.25 (12 [hours of Daily Hours Used] ÷ 24 [Hours per day] x 6 [Months Used per Year] ÷ 12 [Months per Year])
    - Average persons per household = 3
    - DUE = 60 [Occupants] ÷ 3 [Average persons per household] x 0.25 [Usage] = 5
        - The calculated DUE of five was used for the representative receptor.
- Three Oaks Apartments Tennis Courts (Receiver IDs: R-11a-48)
    - For the tennis courts, the number of DUEs is based on what was used in previous studies and an assumption of how many users might be at the courts at any given time; therefore, four units were assigned to the representative receptor.
- Three Oaks Apartments Playground (Receiver IDs: R-11a-59)
    - For the playground, the number of DUEs is based on what was used in previous studies and an assumption of how many users might be at the playground at any given time; therefore, six units were assigned to the representative receptor.
- Kingdom Hall of Jehovah's Witnesses (Receiver IDs: R-11a-74)
    - The building has a capacity of 120 users (based on parking spots)
    - It is open for 6 hours per day, two days per week.
    - Usage = 0.07 (6 [hours of Daily Hours Used] ÷ 24 [Hours per day] x 2 [Days per week] ÷ 7 [days per week])
    - Average persons per household = 3
    - DUE = 120 [Occupants] ÷ 3 [Average persons per household] x 0.07[Usage] = 2.86

        - The calculated DUE of 2.86 was rounded up to three DUEs for the representative receptor.
- Firefighters Park (Receiver IDs: R-11-47)
    - The method of dividing the impacted area of a park by the typical residential lot size to determine DUEs was be applied. A dense grid of receptors placed 100 feet apart was used to determine noise levels and define the impacted area.
    - The typical lot size in the adjacent or nearest residential development is 13,500 square feet.
    - Noise modeling predicts noise impacts to a distance of approximately 450 feet from I-75, over an area of 591,782 square feet in Firefighters Park.
    - Dividing the total impacted area by the typical lot size (591,782 ÷ 13,500) equals 43.84.
    - The calculated DUE of 43.84 was rounded up to 44 DUEs for the representative receptor for Firefighters Park.
    - Note the DUEs for Firefighters Park were also calculated based on noise barrier reduction to obtain DUEs for reasonableness calculations. Those calculations are described in Section 5.2. Firefighters Park (R-11-47) is shown by impacted and benefited park area in the figures in **Appendix A**.

Note that NAC E and other non-impacted NAC C receivers (such as Lamphere High School outdoor uses at R-7-26, R-7-32, R-7-43 and R-7-49 and Charter Square Apartments pool at R-9-35) were assigned 1 unit (or DUE) per property or outdoor space being represented (see **Table C-1** in **Appendix C**).

Predicted existing year (2022) exterior traffic noise levels for modeled receivers range from 45 to 76 dB(A) $L_{eq(1h)}$.

4.3.1 Future Year

Predicted future year (2040) exterior traffic noise levels adjacent to I-75 range from 45 to 77 dB(A) $L_{eq(1h)}$ and would approach or exceed the NAC at 126 receivers representing 238 receptor units, including 116 receivers representing 184 residential units (NAC B), six outdoor recreational receivers representing seven DUEs and one park (Firefighters Park) representing 44 DUEs[12] (NAC C), and three office outdoor use spaces (NAC E). No predicted future noise levels would substantially exceed predicted existing noise levels.

The noise levels at these 238 impacted receptor units would range from 66 to 77 dB(A) $L_{eq(1h)}$ in the future year. The noise levels already approach or exceed the NAC in the existing year (2022) at 181 residential units (NAC B), the seven outdoor recreational receptors and one park (Firefighters Park) representing 44 DUEs (NAC C), and two of the office outdoor use spaces (NAC E).

[12] Dwelling unit equivalent (DUE) calculations for Firefighters Park for the noise abatement analysis are described in Section 5 of this report.

Changes in $L_{eq(1h)}$ noise levels under the future year will range from 0 to 1 dB(A) compared to existing conditions. Therefore, none of the predicted future noise levels would substantially exceed existing noise levels.

5 Noise Abatement Measures

5.1 Federal and State Abatement Guidance

The Handbook has established the criteria for determining where noise abatement must be provided.[13]

The policy is summarized as follows:

- Where adverse noise impacts are expected to occur, noise abatement will be considered and will be implemented if found feasible and reasonable for existing developments and future developments that were approved before the date of public knowledge of the project. Approved means that a building permit has been received. After the date of public knowledge, MDOT is not responsible for providing noise abatement for new developments. The date of public knowledge is the date on which the project's environmental documentation (e.g., the date of the Record of Decision for an Environmental Impact Statement) is approved. The provision of noise abatement for new developments becomes the responsibility of local governments and private developers.
- All sites will be considered; however, it is generally known that NAC E sites prefer that there be no interference with the view to their establishments. Only residential land use that is converted or zoned commercial before the Date of Public Knowledge will be given the option on abatement.
- Feasible – This refers to engineering considerations such as: constructability of a noise barrier on the existing topography; achievement of substantial noise reductions; the presence of other noise sources in the area; and the ability to maintain access, drainage, safety, utilities in the area. While every reasonable effort should be made to obtain a substantial noise reduction, a noise abatement measure is not feasible if it cannot achieve at least a 5 dB(A) noise reduction for 75 percent of impacted receptors during future year traffic noise.
- Reasonable – Noise mitigation will be considered reasonable if:
    - During the environmental clearance phase, the preliminary cost per benefiting unit is less than 3 percent above the allowable cost per benefited receptor unit (CPBU) of $52,248 in 2023 dollars (3 percent above results in a not to exceed cost of $53,815);
    - The public viewpoint reasonableness factor for the environmental clearance phase receives generally positive comments from the benefiting units; and
    - The noise barrier provides a design year traffic noise reduction of 10 dB(A) for at least one benefited unit and at least a 7 dB(A) for 50 percent or more of the benefited units.

[13] The Handbook and other MDOT resources can be found at https://www.michigan.gov/mdot/0,4616,7-151-9621_11041_25846---,00.html.

23 CFR 772.15(c) lists abatement alternatives. The following list summarizes the considered abatement alternatives:

1. Construction of noise barriers including acquisition of property rights, either within or outside the highway right-of-way;
2. Traffic management measures;
3. Alteration of horizontal and vertical alignments;
4. Acquisition of real property or interests therein to serve as a buffer zone to preempt development;
5. Noise insulation of Activity Category D land use facilities listed in **Table 3**.

Upon review of the listed abatement alternatives, it has been determined that:

- Reductions of speed limits, although acoustically beneficial, are seldom practical unless the design speed of the proposed roadway is also reduced;
- Restriction or prohibition of trucks is extremely undesirable;
- Design criteria, the existing alignment and land uses preclude substantial horizontal and vertical alignment shifts that could potentially produce noticeable changes in the projected acoustical environment;
- Cost restrictions typically prohibit the acquisition of property;
- The construction of noise berms is neither feasible nor reasonable because of the amount of space that would be required; and
- Noise impact is not predicted at Activity Category D land uses.

Therefore, the construction of noise barriers within the existing right-of-way was the only mitigation measure that received in-depth evaluation.

5.2 Abatement Analysis

At a minimum, the Handbook requires that noise barriers be analyzed as a noise abatement measure. Seven CNEs were identified within the study area. Impacts are predicted in each of the seven CNEs, including behind existing noise barriers in CNEs 7, 8, 9, 10 and 11. There are also scattered office (NAC E) impacts throughout the corridor that were not analyzed for noise abatement because they are isolated from other impacted areas.

Fourteen noise barriers (NB) have been evaluated in the study area. Noise barrier locations are shown in **Appendix A**. Two are existing noise barriers (NB8 and NB9) without predicted noise impact behind the barrier; therefore, no further noise abatement evaluation was completed. Six are existing noise barriers with noise impact predicted behind the barrier that were further evaluated against MDOT's feasibility and reasonableness criteria as built. Per FHWA guidance, if noise impact is identified behind an existing noise barrier, an analysis should be completed to determine if the barrier is still feasible and reasonable.[14] The future year noise levels are determined with and

[14] FHWA, Consideration of Existing Noise Barrier in a Type I Noise Analysis, https://www.fhwa.dot.gov/environment/noise/noise_barriers/abatement/existing.cfm

without the existing noise barrier for this analysis. If the existing noise barrier is feasible and reasonable as built, no further analysis is required. For this study, the analysis for existing barrier NB3 with the current highway configuration and latest roadway speed data is shown for informational purposes. Although the reasonableness noise reduction goals are not fully met, no further analysis or recommendations are intended given that there is no project being analyzed. Note that the figures in **Appendix A** show the existing noise barriers and the impacted receptors with the existing barrier in place.

Six potential noise barriers were evaluated in new locations to determine if MDOT's current feasibility and reasonableness criteria could be met based on the current highway configuration and latest roadway speed data. Of the six new noise barriers evaluated, four barriers meet preliminary feasibility criteria, but do not meet reasonableness criteria as the estimated cost of these barriers per benefited receptor would exceed 3 percent above the allowable cost per benefited receptor unit (CPBU) of $52,248 in 2023 dollars (3 percent above results in a not to exceed cost of $53,815).[15] Two barriers meet MDOT's preliminary feasibility and reasonableness criteria with a cost per benefited receptor below the allowable cost per benefited receptor unit (CPBU) of $52,248 in 2023 dollars (3 percent above results in a not to exceed cost of $53,815).

As described below, shorter length noise barriers were also evaluated in some CNEs to confirm if any barrier designs for areas where receptors are denser or receiving more benefit from noise barrier abatement could achieve all of MDOT's feasibility and reasonableness criteria; however, none of the shorter length noise barriers were found to meet MDOT's feasibility and reasonableness criteria or come near to 3 percent above the allowable CPBU of $52,248 in 2023 dollars.

To summarize the noise barriers analyzed:

- NB1 (existing barrier) is located on the east side of I-75 from approximately 300 feet south of 13 Mile Road to 1,000 feet south of 14 Mile Road. NB1 is shown on Pages A-2 and A-3 in **Appendix A**. NB1 was evaluated as an existing noise barrier per FHWA guidance. NB1 ranges in height from 7 feet to 16 feet. Following the guidance outlined in FHWA-HEP-12-051, *Consideration of Existing Noise Barrier in a Type I Noise Analysis*, NB1 was re-analyzed at its existing height compared to a "no barrier" scenario to determine if the barrier achieves the MDOT feasibility and reasonableness requirements. At its existing height, NB1 is acoustically feasible, as 92 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 71 percent of benefited receptors achieving 7 dB(A) noise reduction and 21 benefited receptors achieving 10 dB(A) noise reduction. The estimated cost per benefited receptor ($11,407) is less than the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB1 is both feasible and reasonable as built.

[15] Tom Zurburg, MDOT Noise Barrier Program Manager, email regarding "RE: MDOT 2023 CPBU", September 29, 2022.

- NB2 (existing barrier) is located on the west side of I-75 from approximately 400 feet south of Elaine Drive to 400 feet north of Dorre Drive. NB2 is shown on Page A-4 and A-5 in **Appendix A**. NB2 was evaluated as an existing noise barrier per FHWA guidance. NB2 ranges in height from 10 feet to 16 feet. Following the guidance outlined in FHWA-HEP-12-051, *Consideration of Existing Noise Barrier in a Type I Noise Analysis*, NB2 was re-analyzed at its existing height compared to a "no barrier" scenario to determine if the barrier achieves the MDOT feasibility and reasonableness requirements. At its existing height, NB2 is acoustically feasible, as 75 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 85 percent of benefited receptors achieving 7 dB(A) noise reduction and 12 benefited receptors achieving 10 dB(A) noise reduction. The estimated cost per benefited receptor ($34,387) is less than the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB2 is both feasible and reasonable as built.

- NB3 (existing barrier) is located on the north side of I-75 from approximately Rochester Road to 100 feet west of Charter Drive. NB3 is shown on Pages A-6 and A-7 in **Appendix A**. NB3 was evaluated as an existing noise barrier per FHWA guidance. NB3 ranges in height from 6 feet to 12 feet. Following the guidance outlined in FHWA-HEP-12-051, *Consideration of Existing Noise Barrier in a Type I Noise Analysis*, NB3 was re-analyzed at its existing height compared to a "no barrier" scenario to determine if the barrier achieves the MDOT feasibility and reasonableness requirements. At its existing height, NB3 is acoustically feasible, as 76 percent of the impacted receptors achieve a 5 dB(A) reduction; however, the attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are not being met, with 46 percent of benefited receptors achieving 7 dB(A) noise reduction and zero benefited receptors achieving 10 dB(A) noise reduction. The estimated cost per benefited receptor ($16,473) is less than the allowable cost per benefited receptor ($52,248 in 2023 dollars). Although the reasonableness noise reduction goals are not fully met for NB3, no further analysis or recommendations are intended given that there is no project being analyzed. This analysis with the current highway configuration and latest roadway speed data is shown for informational purposes in this study.

- NB4 (existing barrier) is located on the south side of I-75 from approximately Colony Drive to Livernois Road. NB4 is shown on Pages A-6 and A-7 in **Appendix A**. NB4 was evaluated as an existing noise barrier per FHWA guidance. NB4 ranges in height from 10 feet to 14 feet. Following the guidance outlined in FHWA-HEP-12-051, *Consideration of Existing Noise Barrier in a Type I Noise Analysis*, NB4 was re-analyzed at its existing height compared to a "no barrier" scenario to determine if the barrier achieves the MDOT feasibility and reasonableness requirements. At its existing height, NB4 is acoustically feasible, as 75 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 68 percent of

benefited receptors achieving 7 dB(A) noise reduction and 24 benefited receptors achieving 10 dB(A) noise reduction. The estimated cost per benefited receptor ($13,030) is less than the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB4 is both feasible and reasonable as built.

- NB5 is located on the south side of I-75 from approximately 600 feet west of Livernois Road to 800 feet south of Big Beaver Road. NB5 is shown on Pages A-7 and A-8 in **Appendix A**. NB5 is acoustically feasible, as 100 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 80 percent of benefited receptors achieving 7 dB(A) noise reduction and one benefited receptor achieving 10 dB(A) noise reduction. However, the estimated cost per benefited receptor ($378,954) would exceed 3 percent above the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB5 is not reasonable per MDOT criteria.

- NB6 is located on the east side of I-75 from approximately Kirk Lane to Wattles Road. NB6 is shown on Pages A-9 and A-10 in **Appendix A**. NB6 is acoustically feasible, as 100 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirement of 10 dB(A) for at least one benefited receptor is met with one benefited receptor achieving 10 dB(A) noise reduction. However, the attenuation requirement of 7 dB(A) for 50 percent or more of the benefited receptors is not met, with only 42 percent of benefited receptors achieving 7 dB(A) noise reduction. In addition, the estimated cost per benefited receptor ($64,004) would exceed 3 percent above the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB6 is not reasonable per MDOT criteria.

- NB7 (existing barrier) is located on the west side of I-75 from approximately 2,300 feet north of Big Beaver Road to Wattles Road. NB7 is shown on Pages A-9 and A-10 in **Appendix A**. NB7 was evaluated as an existing noise barrier per FHWA guidance. NB7 ranges in height from 12 feet to 18 feet. Following the guidance outlined in FHWA-HEP-12-051, *Consideration of Existing Noise Barrier in a Type I Noise Analysis*, NB7 was re-analyzed at its existing height compared to a "no barrier" scenario to determine if the barrier achieves the MDOT feasibility and reasonableness requirements. At its existing height, NB7 is acoustically feasible, as 92 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 78 percent of benefited receptors achieving 7 dB(A) noise reduction and eight benefited receptors achieving 10 dB(A) noise reduction. The estimated cost per benefited receptor ($25,001) is less than the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB7 is both feasible and reasonable as built.

- NB8 (existing barrier), located on the east side of I-75 from Wattles Road to approximately 600 feet north of Paragon Avenue, and NB9 (existing barrier), located on the west side of I-75 from Wattles Road to approximately 400 feet north of Paragon Avenue, were not evaluated as no impact is predicted behind these barriers. NB8 and NB9 are shown on Page A-10 in **Appendix A**. Note these barriers were constructed with absorptive material on the roadway side.

- NB10 is located on the east side of I-75 from approximately 600 feet north of Paragon Avenue to 600 feet south of Long Lake Road. NB10 is shown on Pages A-10 and A-11 in **Appendix A**. NB10 is acoustically feasible, as 100 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 50 percent of benefited receptors achieving 7 dB(A) noise reduction and one benefited receptor achieving 10 dB(A) noise reduction. In addition, the estimated cost per benefited receptor ($43,468) is below MDOT's current allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB10 is feasible and reasonable based on current MDOT criteria.

- NB11 is located on the north side of I-75 from approximately 1,000 feet west of Crooks Road to Coolidge Highway. NB11 is shown on Pages A-12, A-13 and A-14 in **Appendix A**. NB11 is acoustically feasible, as 95 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 62 percent of benefited receptors achieving 7 dB(A) noise reduction and one benefited receptor achieving 10 dB(A) noise reduction. In addition, the estimated cost per benefited receptor ($32,704) is below MDOT's current allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB11 is feasible and reasonable based on current MDOT criteria.

  Note that this barrier is currently designed on the existing berm east of Firefighters Park and south of Square Lake Road. Geotechnical investigation would be needed to confirm if a barrier could be built on this existing berm; however, an alternate design along the I-75 shoulder in this area would also meet MDOT's current feasibility and reasonableness requirements. Firefighters Park (R-11-47) is located behind this barrier, and the area of the park receiving benefit (5 dB(A) noise reduction), 7 dB(A) noise reduction, and 10 dB(A) noise reduction was calculated to determine the appropriate DUEs for reasonableness calculations. A dense grid of receptors placed 100 feet apart was used to determine noise levels and define these areas. The following calculations were determined using the typical lot size in the adjacent or nearest residential development of 13,500 square feet:

  - Benefit (5 dB(A) noise reduction)
    - Noise modeling predicts 5 dB(A) noise reduction to a distance of approximately 800 feet from I-75, over an area of 1,180,634 square feet in Firefighters Park.

        - Dividing the total benefited area by the typical lot size (1,180,634 ÷ 13,500) equals 87.45.
        - The calculated DUE of 87.45 was rounded up to 88 DUEs for Firefighters Park for the cost per benefited receptor calculation.
    - 7 dB(A) noise reduction
        - An area of approximately 800,000 square feet was found to receive 7 dB(A) noise reduction.
        - Dividing the total 7 dB(A) reduction area by the typical lot size (800,000 ÷ 13,500) equals 59.26.
        - The calculated DUE of 59.26 was rounded up to 60 DUEs for Firefighters Park for the 7 dB(A) noise reduction calculation.
    - 10 dB(A) noise reduction
        - Noise modeling predicts one receptor in the 100-foot grid used to determine area in Firefighters Park would receive 10 dB(A) noise reduction.
        - Assuming a 100 x 100-foot area, dividing the total 10 dB(A) reduction area by the typical lot size (10,000 ÷ 13,500) equals 0.74.
        - The calculated DUE of 0.74 was rounded up to 1 DUE for Firefighters Park achieving the 10 dB(A) noise reduction.

- NB12 (existing barrier) is located on the south side of I-75 from approximately 1,000 feet west of Crooks Road to Coolidge Highway. NB12 is shown on Pages A-13 and A-14 in **Appendix A**. NB12 was evaluated as an existing noise barrier per FHWA guidance. NB12 ranges in height from eight feet to 18 feet. Following the guidance outlined in FHWA-HEP-12-051, *Consideration of Existing Noise Barrier in a Type I Noise Analysis*, NB12 was re-analyzed at its existing height compared to a "no barrier" scenario to determine if the barrier achieves the MDOT feasibility and reasonableness requirements. At its existing height, NB12 is acoustically feasible, as 90 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 58 percent of benefited receptors achieving 7 dB(A) noise reduction and 18 benefited receptors achieving 10 dB(A) noise reduction. The estimated cost per benefited receptor ($29,495) is less than the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB12 is both feasible and reasonable as built.

- NB13 is located on the north side of I-75 from Coolidge Highway to Adams Road to I-75 NB onramp. NB13 is shown on Pages A-14, A-15 and A-16 in **Appendix A**. NB13 is acoustically feasible, as 89 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirements of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors are also met with 51 percent of benefited receptors achieving 7 dB(A) noise reduction and one benefited receptor achieving 10 dB(A) noise reduction. However, the estimated cost per benefited receptor ($155,954) would exceed 3 percent above the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB13 is not reasonable per MDOT criteria.

Note this analyzed barrier includes segments of noise barrier on bridges at 20-foot height. These segments were included in the analysis to confirm whether or not a feasible and reasonable barrier could be achieved with additional shielding from barriers on bridges; however, a design nearer to the allowable CPBU could not be achieved. Shorter lengths of this barrier were also evaluated to confirm if any barriers designs for areas where receptors are denser or receiving more benefit from noise barrier abatement could achieve all of MDOT's feasibility and reasonableness criteria; however, shorter length barriers were not meeting MDOT's noise reduction design goals of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors, nor were they coming closer to 3 percent above the allowable CPBU of $52,248 in 2023 dollars.

- NB14 is located on the south side of I-75 from Coolidge Highway to approximately Adams Road. NB14 is shown on Pages A-14, A-15 and A-16 in **Appendix A**. NB14 is acoustically feasible, as 100 percent of the impacted receptors achieve a 5 dB(A) reduction. The attenuation requirement of 10 dB(A) for at least one benefited receptor is met with one benefited receptor achieving 10 dB(A) noise reduction. However, the attenuation requirement of 7 dB(A) for 50 percent or more of the benefited receptors is not met, with only 27 percent of benefited receptors achieving 7 dB(A) noise reduction. In addition, the estimated cost per benefited receptor ($113,277) would exceed 3 percent above the allowable cost per benefited receptor ($52,248 in 2023 dollars). Therefore, NB14 is not reasonable per MDOT criteria.

  Note this analyzed barrier includes segments of noise barrier on bridges at 20-foot height. These segments were included in the analysis to confirm whether or not a feasible and reasonable barrier could be achieved with additional shielding from barriers on bridges; however, a design nearer to the allowable CPBU could not be achieved. Shorter lengths of this barrier were also evaluated to confirm if any barriers designs for areas where receptors are denser or receiving more benefit from noise barrier abatement could achieve all of MDOT's feasibility and reasonableness criteria; however, shorter length barriers were not meeting MDOT's noise reduction design goals of 10 dB(A) for at least one benefited receptor and 7 dB(A) for 50 percent or more of the benefited receptors, nor were they coming closer to 3 percent above the allowable CPBU of $52,248 in 2023 dollars. One barrier design of significantly shorter length (2,560 feet) from approximately Beach Road to Adams Road as able to achieve MDOT's noise reduction design goals but was still well over the allowable CPBU at with an estimated cost per benefited receptor of $138,555.

The results of the evaluated noise barriers, including future $L_{eq(1h)}$ noise levels without and with the barrier, barrier length and height, and the noise reduction provided by the barrier, are presented in **Table 7**. Whether the barrier meets the design goal, total estimated cost (based on $45.00 per square foot), the number of benefited receptors (i.e., residential, commercial, or equivalent), the cost per benefited receptor, feasibility determination, and reasonableness determination for the barrier is presented in **Table**

8. The future year noise levels with and without the incorporation of a noise barrier for the modeled sites are presented in **Appendix D**.

Table 7. Evaluated Noise Barriers

Noise Barrier ID	Receiver IDs	Existing Noise Levels dB(A)	Future Noise Levels dB(A)		Noise Reduction dB(A)	Barrier Length (ft)	Barrier Height (ft)
			W/O Barrier	W/ Barrier			
NB1[a]	R-7-1 – R-7-90	53 – 66	56 – 77	53 – 66	1 – 12	4,323	7 – 16
NB2[a]	R-8-12 – R-8-79	56 – 67	56 – 78	56 – 67	0 – 12	1,450	10 – 16
NB3[a]	R-9-1 – R-9-50	52 – 68	52 – 73	52 – 68	0 – 8	2,616	6 – 12
NB4[a]	R-9-51 – R-9-223	46 – 70	46 – 77	45 – 70	0 – 12	4,100	10 – 14
NB5	R-10-1 – R-10-6	62 – 69	62 – 68	57 – 64	0 – 10	1,897	12 – 24
NB6	R-10-18 – R-10-78[c]	53 – 68	56 – 69	50 – 62	0 – 10	1,800	17 – 23
NB7[a]	R-10-80 – R-10-161	50 – 66	50 – 77	50 – 67	0 – 11	2,953	12 – 18
NB8[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NB9[b]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NB10	R-11a-123 – R-11a-190[c]	52 – 69	52 – 69	48 – 60	1 – 10	2,600	17 – 22
NB11	R-11-26 – R-11-68[c]	52 – 73	52 – 73	49 – 66	0 – 10	4,256	10 – 20
NB12[a]	R-11-69 – R-11-226[c]	48 – 66	48 – 76	48 – 67	0 – 14	4,295	8 – 18
NB13	R-12-1 – R-12-53[c]	54 – 71	54 – 72	50 – 65	1 – 10	6,888	20 – 26
NB14	R-12-54 – R-12-139[c]	50 – 75	50 – 76	48 – 68	1 – 10	5,258	14 – 22

[a]) Future noise levels and noise reductions reported for the existing noise barrier reflect future year noise levels with and without the barrier in place in order to show the feasibility and reasonableness of the existing barrier. Note the figures in Appendix A show impacts based on future noise levels with the barrier in place, and barrier analysis results by receiver, including benefits behind the existing barrier based on future year noise levels with and without the barrier in place, are given in Appendix D.

[b]) No impact is predicted behind this existing barrier; therefore, no barrier analysis was completed.

[c]) Receivers beyond the 800-foot study area are not included in the barrier analysis results.

Table 8. Noise Barrier Designs Analyzed

Barrier ID	Number of Attenuated Locations					Planning Cost ($45/sq. ft.)	Cost/Benefit	Feasible[a]	Reasonable[b]
	≥ 10 dB(A)	≥ 7 dB(A)		≥ 5 dB(A) (Benefited Receptors)					
		#	% of Benefited	#	% of Impacted			(Y/N)	(Y/N)
NB1[c]	21	170	71	238	92	$2,714,895	$11,407	Y	Y
NB2[c]	12	23	85	27	75	$928,440	$34,387	Y	Y
NB3[c]	0	32	46	70	76	$1,153,080	$16,473	Y	N[e]
NB4[c]	24	127	68	187	75	$2,436,525	$13,030	Y	Y
NB5	1	4	80	5	100	$1,894,770	$378,954	Y	N
NB6	1	11	42	26	100	$1,664,100	$64,004	Y	N
NB7[c]	8	62	78	79	92	$1,975,050	$25,001	Y	Y
NB8[d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NB9[d]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NB10	1	28	50	56	100	$2,434,185	$43,468	Y	Y
NB11	1	71	62	115	95	$3,760,920	$32,704	Y	Y
NB12[c]	18	51	58	88	90	$2,595,600	$29,495	Y	Y
NB13	1	26	51	51	89	$7,953,660	$155,954	Y	N
NB14	1	11	27	41	100	$4,644,360	$113,277	Y	N

[a]) MDOT requires that noise barriers achieve a 5 dB(A) reduction at 75 percent of the impacted receptors. If a barrier cannot achieve this, abatement is considered to not be acoustically feasible. Noise barrier abatement also might not be feasible due to constructability or safety constraints.
[b]) The design year attenuation requirement for Michigan is to provide a noise reduction of 10 dB(A) for at least one benefited receptor and at least a 7 dB(A) reduction for 50 percent or more of the benefited receptor sites.
[c]) The noise barrier analysis for this existing noise barrier reflects future year noise level reductions without the barrier in place in order to show the feasibility and reasonableness results of the existing barrier. Note the figures in Appendix A show impacts with the barrier in place. Barrier analysis results by receiver, including benefits behind the existing barrier based on future year noise levels with and without the barrier in place, are given in Appendix D.
[d]) No impact is predicted behind this existing barrier; therefore, no barrier analysis was completed.
[e]) The analysis for this existing barrier with the current highway configuration and latest roadway speed data is shown for informational purposes. Although the reasonableness noise reduction goals are not fully met, no further analysis or recommendations are intended given that there is no project being analyzed.

6 Undeveloped Lands

The distances to 66 dB(A) and 71 dB(A) $L_{eq(1h)}$, which vary along the corridor due to changing traffic volumes and topography, were developed to assist local planning authorities in developing land use control over the remaining undeveloped lands along the corridor to prevent further development of incompatible land uses. Although the study area is largely developed, there are areas of open land in CNE 11a.

Appendix A provides setback distances for 66 dB(A) and 71 dB(A) in areas where receptors sites are not modeled. It is recommended that any future development proposed in the study area be modeled with accurate survey data to avoid creating incompatible land uses adjacent to the roadway.

7 Conclusions and Recommendations

The analysis results indicate 126 receivers representing 238 receptor units, including 116 receivers representing 184 residential units (NAC B), six outdoor recreational receivers representing seven DUEs and one park (Firefighters Park) representing 44 DUEs (NAC C), and three office outdoor use spaces (NAC E), are impacted based on future year predicted noise levels. Fourteen noise barriers have been evaluated for this noise study. Two are existing noise barriers without predicted noise impact behind the barrier; therefore, no further noise abatement evaluation was completed. Six are existing noise barriers with noise impact predicted behind the barrier that were further evaluated against MDOT's feasibility and reasonableness criteria as built.

Six potential noise barriers were evaluated in new locations to determine if MDOT's current feasibility and reasonableness criteria could be met based on the current highway configuration and latest roadway speed data. Of these six additional barriers, four barriers meet preliminary feasibility criteria, but do not meet reasonableness criteria as the estimated cost of these barriers per benefited receptor would exceed 3 percent above the allowable cost per benefited receptor unit (CPBU) of $52,248 in 2023 dollars (3 percent above results in a not to exceed cost of $53,815). Two barriers, NB10 and NB11, meet MDOT's preliminary feasibility and reasonableness criteria with a cost per benefited receptor below the allowable cost per benefited receptor unit (CPBU) of $52,248 in 2023 dollars (3 percent above results in a not to exceed cost of $53,815).

7.1 Construction Noise and Vibration

In addition to noise from traffic, construction activities themselves can produce increased noise and vibration of a temporary nature. If noise abatement structure construction becomes programmed, construction noise and vibration will be discussed for specific locations with a future analysis. Considering the relatively short-term nature of construction noise and vibration, impacts are not expected to be substantial. The transmission loss characteristics of nearby structures are believed to be sufficient to moderate the effects of intrusive construction noise.

8 References

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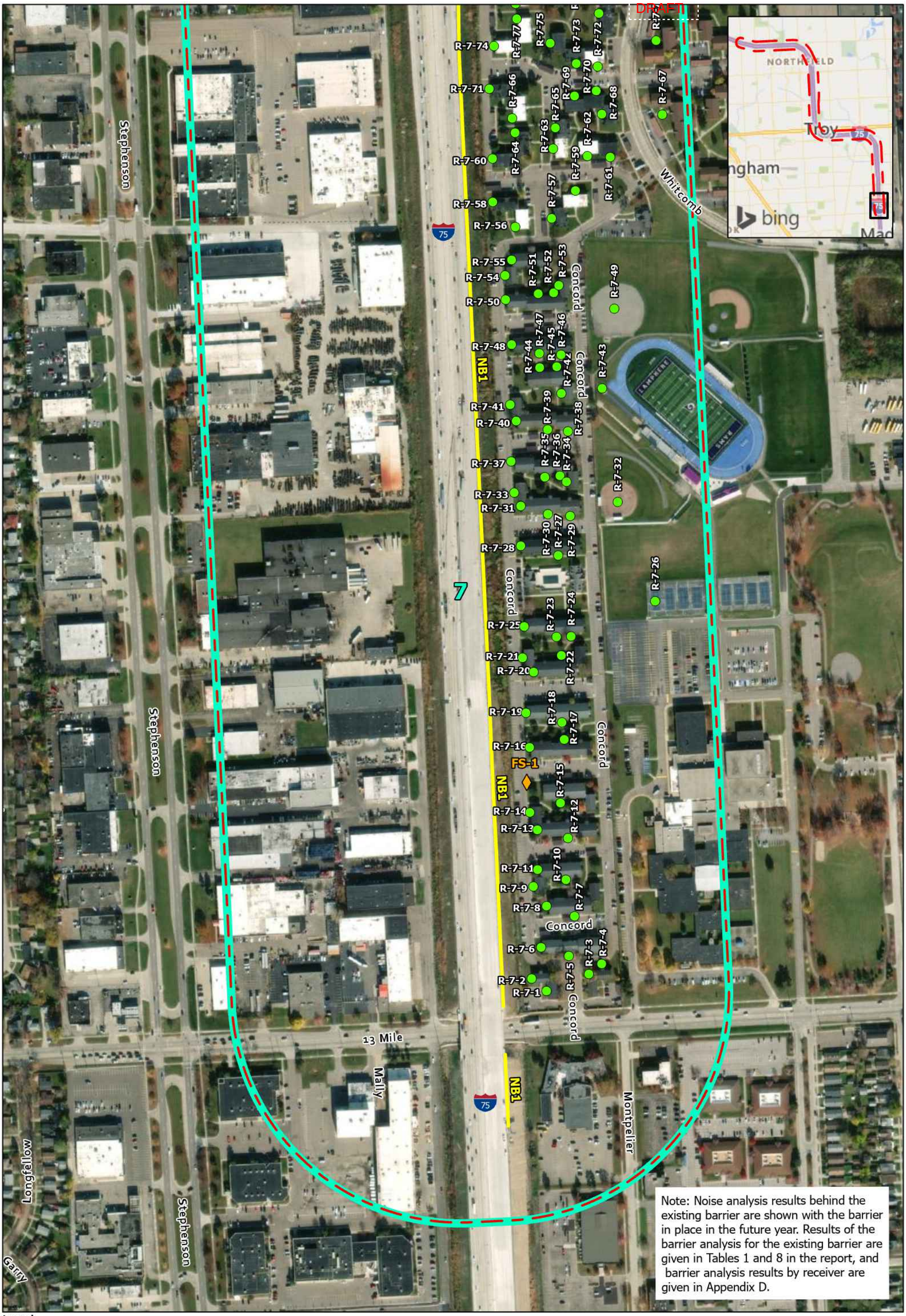
Zurburg, Tom, Email regarding "RE: MDOT 2023 CPBU", MDOT Noise Barrier Program Manager, September 29, 2022.

APPENDIX A: Traffic Noise Study Exhibits

DRAFT



Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.

Legend

- Field Sites

Receivers
- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Evaluated Noise Barriers
- Existing Noise Barrier
- Feasible Not Reasonable
- Feasible and Reasonable
- Study Area
- Common Noise Environment (CNE)

Contour Lines
- 66 dBA
- 71 dBA

Park Area Impacts
- Benefited
- Impacted

N

0 100 200

Feet

Note: Receiver location may represent multiple receptor units.

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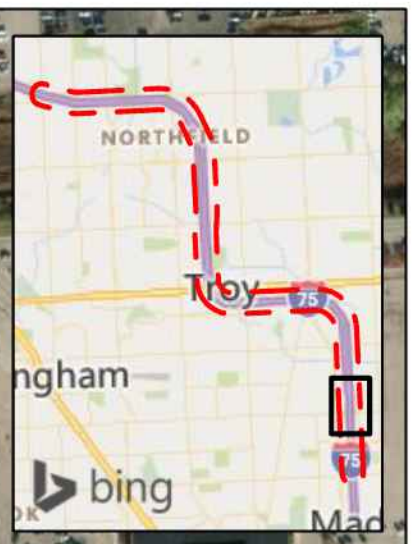

R-8-6
R-8-5
75
Elliot
8
R-8-4
R-8-3
R-8-2
R-8-1
14 Mile
14 Mile
Stephenson
R-7-95
75
Barrington
7
Concord
R-7-94
R-7-93
R-7-92
R-7-91
R-7-90
R-7-89
R-7-88
R-7-87
R-7-86
R-7-85
R-7-84
R-7-82
R-7-80
R-7-79
R-7-83
R-7-78
R-7-81
Mandoline
R-7-77
R-7-75
R-7-73
R-7-72
R-7-76
R-7-74
NB1

Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.

Legend

- Field Sites

Receivers
- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Evaluated Noise Barriers
- Existing Noise Barrier
- Feasible Not Reasonable
- Feasible and Reasonable
- Study Area
- Common Noise Environment (CNE)

Contour Lines
- 66 dBA
- 71 dBA

Park Area Impacts
- Benefited
- Impacted

N

0 100 200

Feet

Note: Receiver location may represent multiple receptor units.

I-75 Oakland Noise Analysis
Oakland County, Michigan

Legend

- Field Sites

Receivers

- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Evaluated Noise Barriers

- Existing Noise Barrier
- Feasible Not Reasonable
- Feasible and Reasonable
- Study Area
- Common Noise Environment (CNE)

Contour Lines

- 66 dBA
- 71 dBA

Park Area Impacts

- Benefited
- Impacted

N

0 100 200

Feet

Note: Receiver location may represent multiple receptor units.

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Oakland County, Michigan

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Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.

Legend

Field Sites

Receivers
- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Contour Lines
- 66 dBA
- 71 dBA

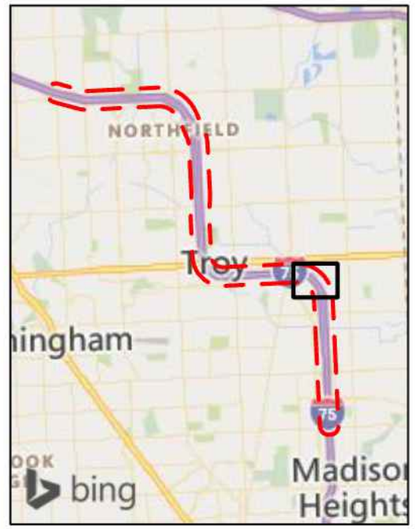
Evaluated Noise Barriers
- Exising Noise Barriers
- Feasible Not Reasonable
- Feasible and Reasonable
- Common Noise Environment (CNE)
- Study Area

Park Area Impacts
- Benefited
- Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200
Feet



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Oakland County, Michigan

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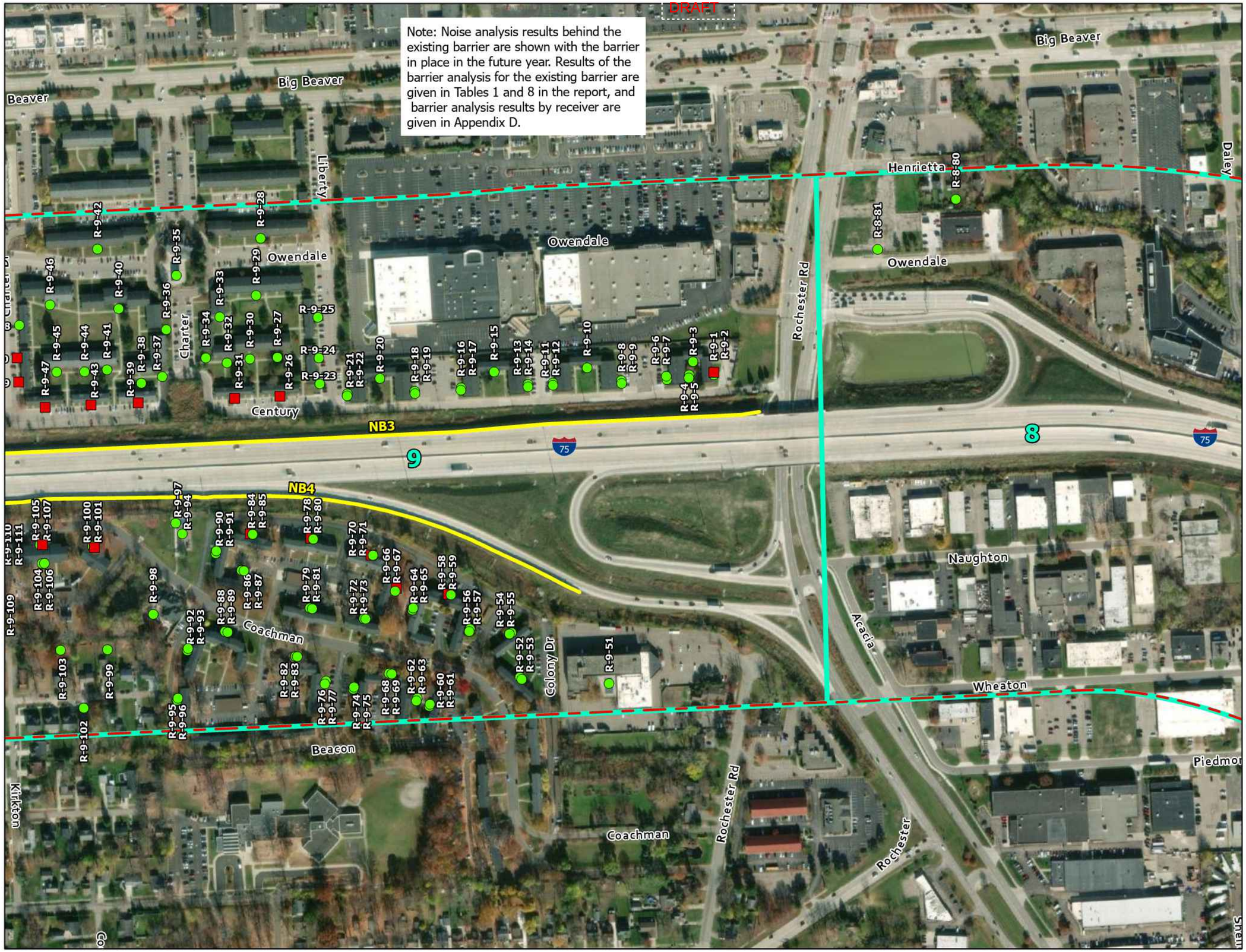
Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.



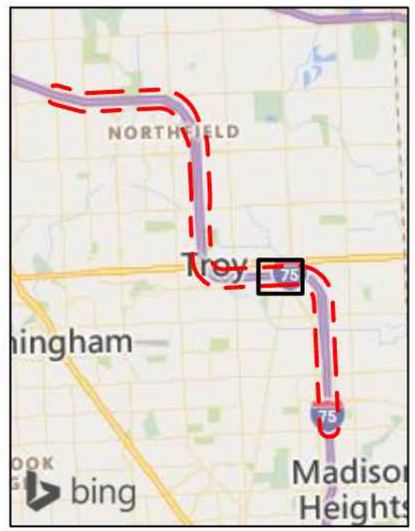
Legend

- Field Sites
- Receivers
  - Impacted, Not Benefited
  - Impacted, Benefited
  - Not Impacted, Not Benefited
  - Not Impacted, Benefited
- Contour Lines
  - 66 dBA
  - 71 dBA
- Evaluated Noise Barriers
  - Exising Noise Barriers
  - Feasible Not Reasonable
  - Feasible and Reasonable
  - Common Noise Environment (CNE)
  - Study Area
- Park Area Impacts
  - Benefited
  - Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200
Feet



I-75 Oakland Noise Analysis
Oakland County, Michigan

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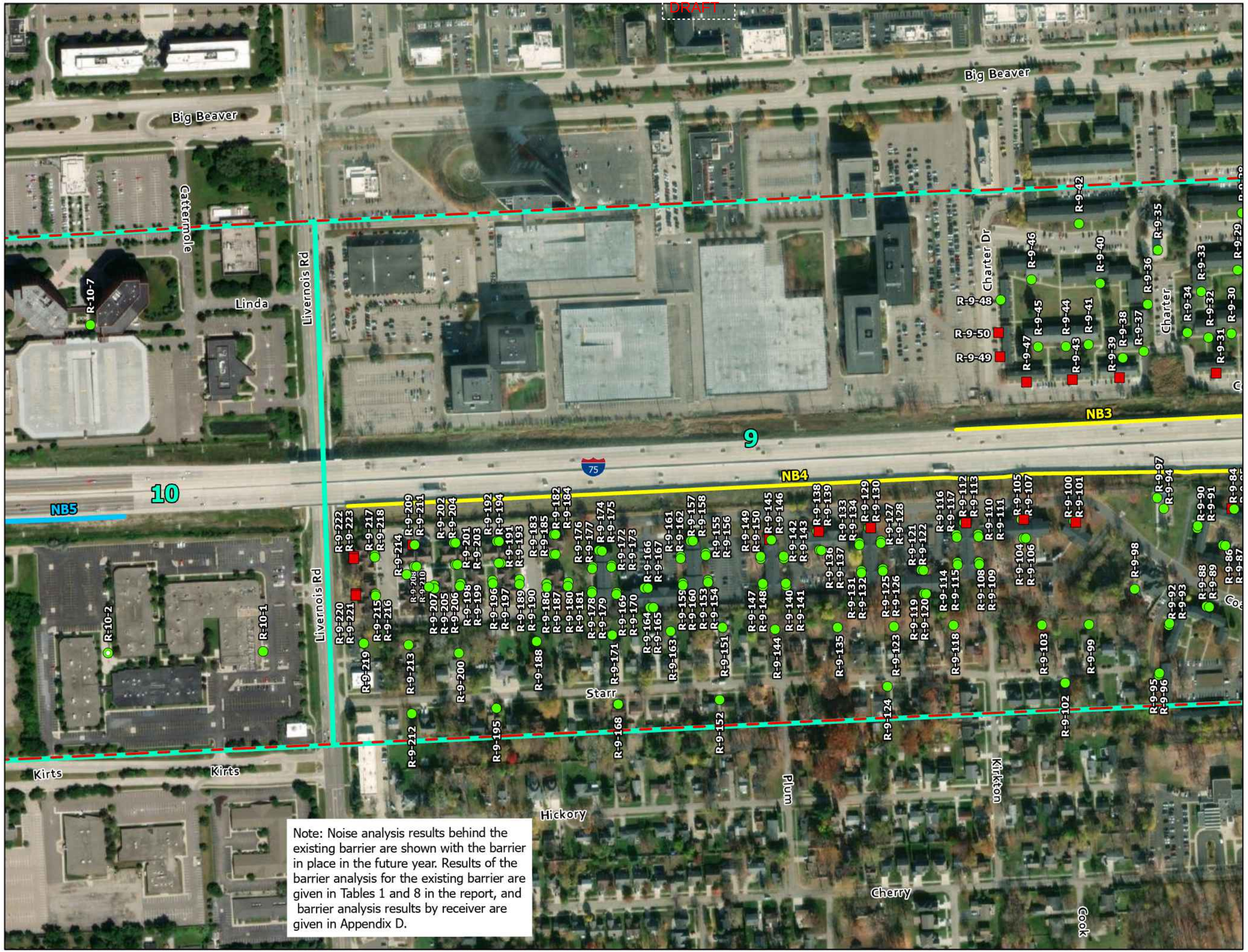


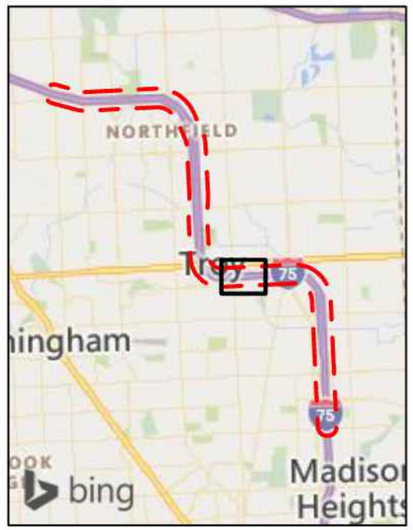
Legend

- Field Sites
- Receivers
  - Impacted, Not Benefited
  - Impacted, Benefited
  - Not Impacted, Not Benefited
  - Not Impacted, Benefited
- Contour Lines
  - 66 dBA
  - 71 dBA
- Evaluated Noise Barriers
  - Exising Noise Barriers
  - Feasible Not Reasonable
  - Feasible and Reasonable
  - Common Noise Environment (CNE)
  - Study Area
- Park Area Impacts
  - Benefited
  - Impacted

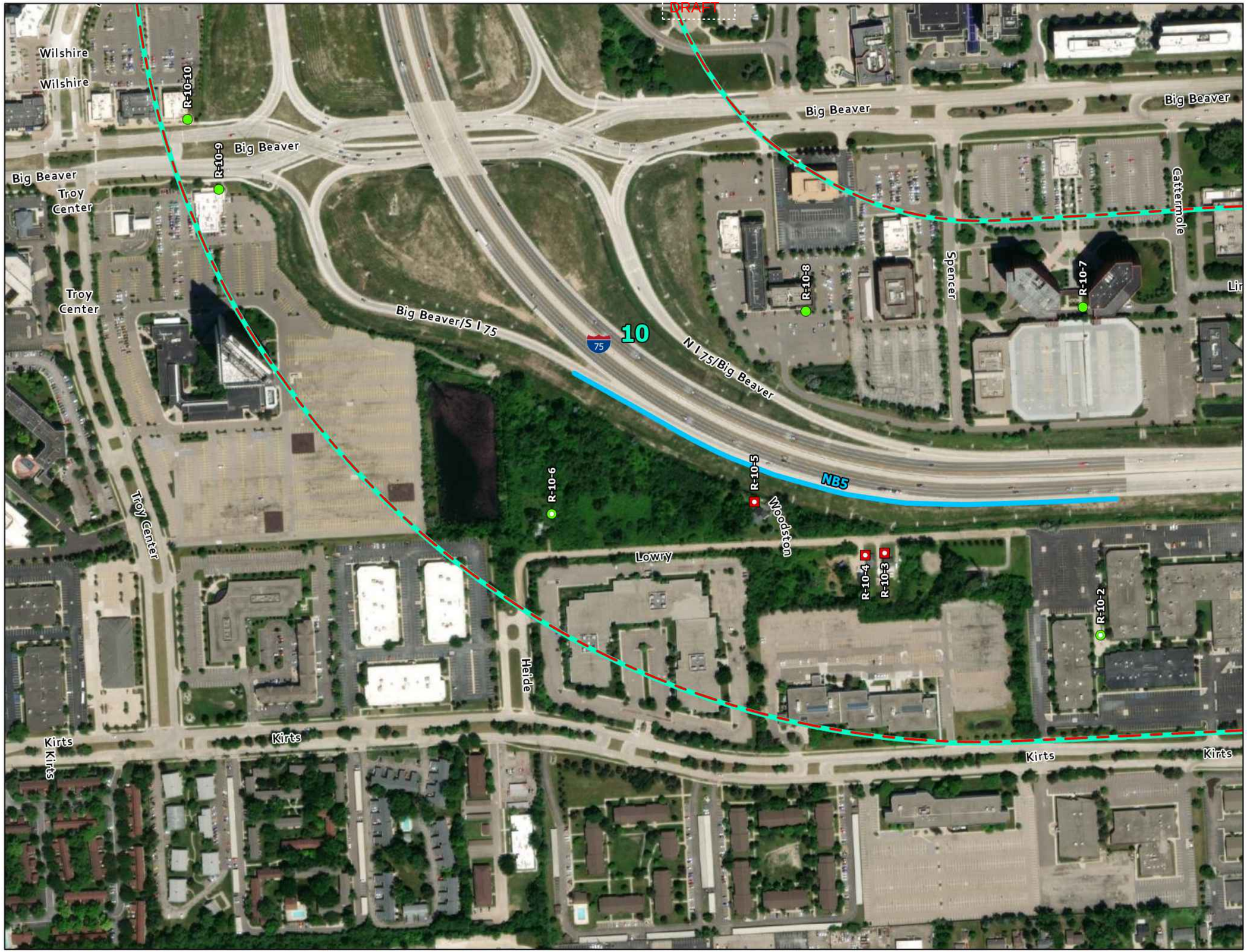
Note: Receiver location may represent multiple receptor units.

N

0 100 200
Feet



I-75 Oakland Noise Analysis
Oakland County, Michigan



Legend

Field Sites

Receivers

- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Contour Lines

- 66 dBA
- 71 dBA

Evaluated Noise Barriers

- Exising Noise Barriers
- Feasible Not Reasonable
- Feasible and Reasonable
- Common Noise Environment (CNE)
- Study Area

Park Area Impacts

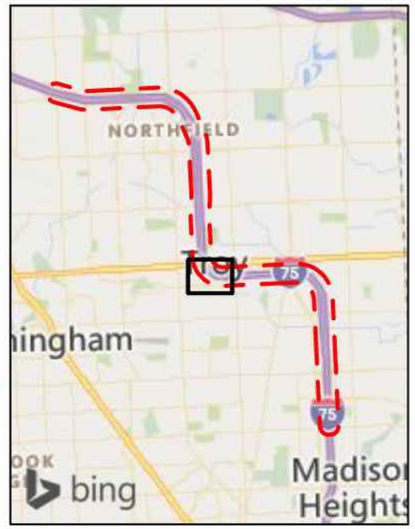
- Benefited
- Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200

Feet



I-75 Oakland Noise Analysis
Oakland County, Michigan

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Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.

Legend

- Field Sites
- Receivers
  - Impacted, Not Benefited
  - Impacted, Benefited
  - Not Impacted, Not Benefited
  - Not Impacted, Benefited
- Evaluated Noise Barriers
  - Existing Noise Barrier
  - Feasible Not Reasonable
  - Feasible and Reasonable
  - Study Area
  - Common Noise Environment (CNE)
- Contour Lines
  - 66 dBA
  - 71 dBA
- Park Area Impacts
  - Benefited
  - Impacted

N

0 100 200

Feet

Note: Receiver location may represent multiple receptor units.

I-75 Oakland Noise Analysis
Oakland County, Michigan

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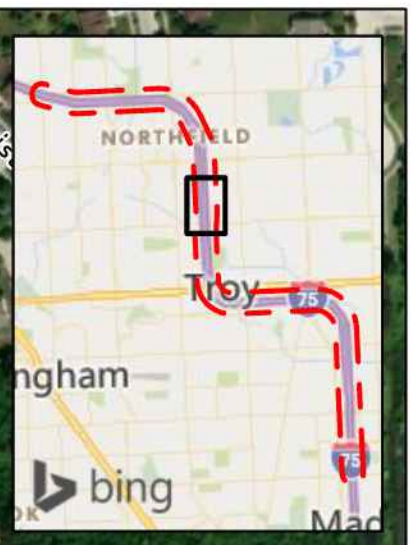
Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.

Note: Newly built homes in this area are included in the unit count at adjacent receptors.



Legend

- Field Sites
- Receivers
  - Impacted, Not Benefited
  - Impacted, Benefited
  - Not Impacted, Not Benefited
  - Not Impacted, Benefited
- Evaluated Noise Barriers
  - Existing Noise Barrier
  - Feasible Not Reasonable
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  - 71 dBA
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  - Benefited
  - Impacted

N

0 100 200

Feet

Note: Receiver location may represent multiple receptor units.

I-75 Oakland Noise Analysis
Oakland County, Michigan

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R-11a-208
R-11a-2
R-11a-207
R-11a-206
R-11a-212
R-11a-205
R-11a-204
R-11a-203
R-11a-202
R-11a-201
R-11a-199
R-11a-200
R-11a-198
R-11a-197
R-11a-196
R-11a-195
R-11a-211
R-11a-210
R-11a-194
R-11a-193
R-11a-192
R-11a-191
R-11a-189
R-11a-190
R-11a-188
R-11a-186
R-11a-187
R-11a-185
R-11a-184
R-11a-183
R-11a-182
R-11a-181
R-11a-180
R-11a-179
R-11a-178
R-11a-176
R-11a-175
R-11a-177
R-11a-173
R-11a-171
R-11a-170
R-11a-169
R-11a-168
R-11a-172
R-11a-165
R-11a-167
R-11a-166
R-11a-164

11a
NB10
75
Wright
Virgilia
Daniels
Deinmore
Harrington
Long Lake Rd
Candace
Falling Brook
Carlson
Ivy
Troy
bing

Legend

- Field Sites

Receivers
- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Evaluated Noise Barriers
- Existing Noise Barrier
- Feasible Not Reasonable
- Feasible and Reasonable
- Study Area
- Common Noise Environment (CNE)

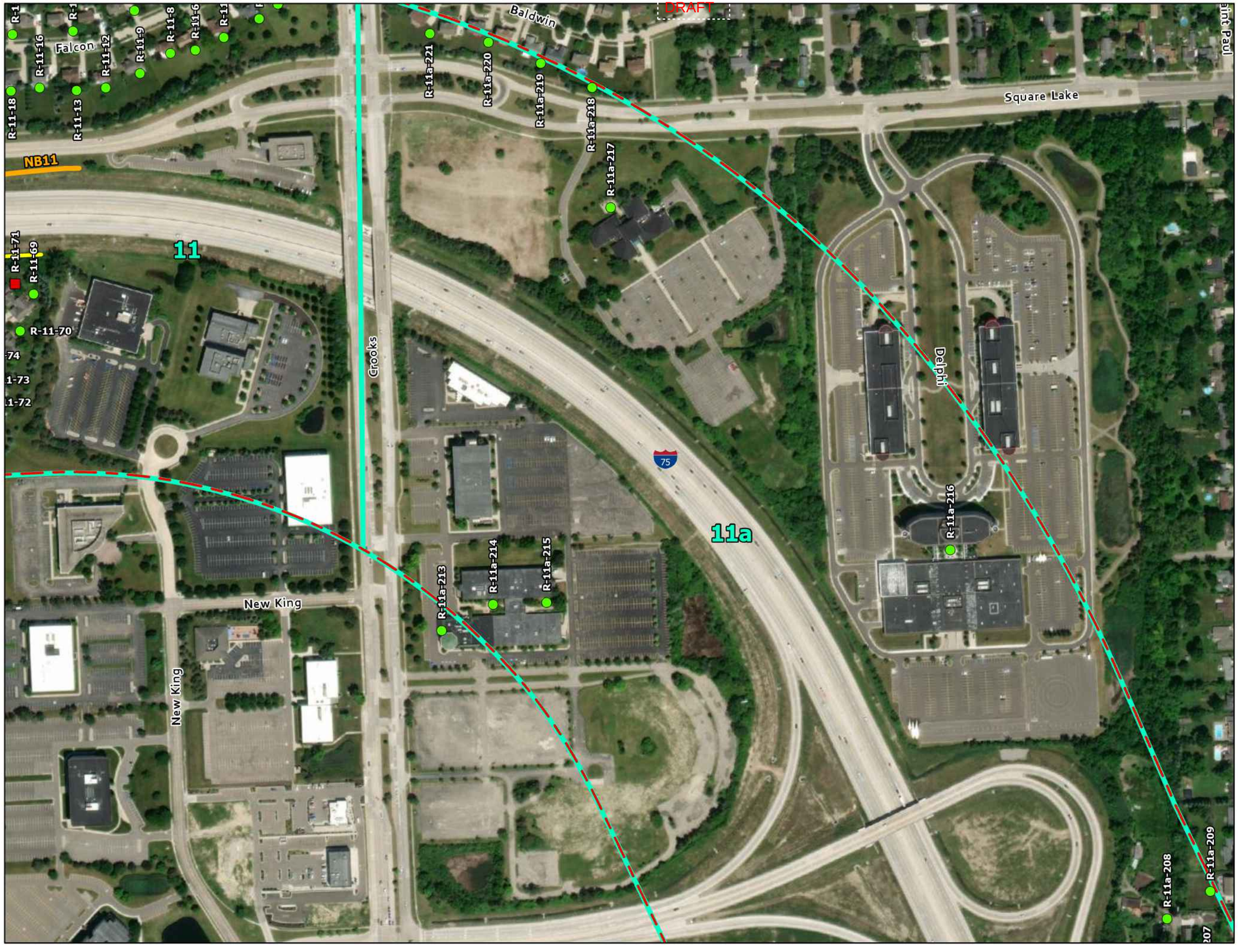
Contour Lines
- 66 dBA
- 71 dBA

Park Area Impacts
- Benefited
- Impacted

N
0 100 200
Feet

Note: Receiver location may represent multiple receptor units.

I-75 Oakland Noise Analysis
Oakland County, Michigan



Legend

- Field Sites

Receivers

- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Contour Lines

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- 71 dBA

Evaluated Noise Barriers

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- Common Noise Environment (CNE)
- Study Area

Park Area Impacts

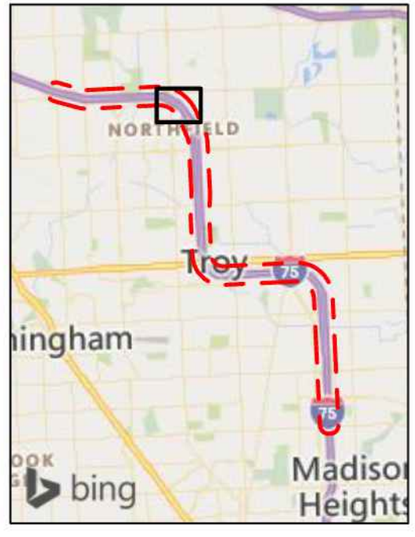
- Benefited
- Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200

Feet



I-75 Oakland Noise Analysis
Oakland County, Michigan

DRAFT

Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.

Legend

Field Sites

Receivers
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- Feasible and Reasonable
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- Study Area

Park Area Impacts
- Benefited
- Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200
Feet

I-75 Oakland Noise Analysis
Oakland County, Michigan

DRAFT

Glyderbourn
Dalesford
Coolidge
Country Ridge
Carriage
Windrush
Belmont
Haverford
Hidden Forest
Greenhill
Clearview
Fleetwood
Hearthside
Fairchester
Farmbrook
Fordham
Northfield
Flint
Freemont
Square Lake
Firefighters Park
Troy
NORTHFIELD
Madison Heights

FS-7a
FS-9
FS-11

11
12
NB11
NB12
NB13
NB14
75

R-11-47 (Park Are
Impacted = 44 D.U
Benefited = 88 D.U
7 dB(A) Reduction = 6
10 dB(A) Reduction =

Note: Noise analysis results behind the existing barrier are shown with the barrier in place in the future year. Results of the barrier analysis for the existing barrier are given in Tables 1 and 8 in the report, and barrier analysis results by receiver are given in Appendix D.

Legend

Field Sites

Receivers
- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Contour Lines
- 66 dBA
- 71 dBA

Evaluated Noise Barriers
- Exising Noise Barriers
- Feasible Not Reasonable
- Feasible and Reasonable
- Common Noise Environment (CNE)
- Study Area

Park Area Impacts
- Benefited
- Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200
Feet

I-75 Oakland Noise Analysis
Oakland County, Michigan

DRAFT

Legend

Field Sites

Receivers

- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

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- 66 dBA
- 71 dBA

Evaluated Noise Barriers

- Exising Noise Barriers
- Feasible Not Reasonable
- Feasible and Reasonable
- Common Noise Environment (CNE)
- Study Area

Park Area Impacts

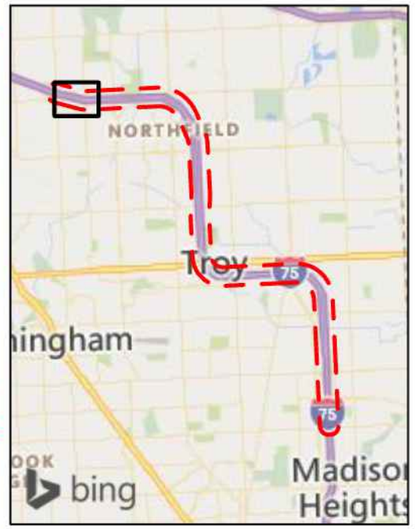
- Benefited
- Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200

Feet



I-75 Oakland Noise Analysis
Oakland County, Michigan

DRAFT

Hillpointe
Timberview
Manorwood
Bretby
Tutbury
Anslow
Malvern
Adams
Square Lake
Arlund
Vhay
Andover

NB13
NB14
75
12

R-12-52
R-12-51
R-12-48
R-12-46
R-12-53
R-12-50
R-12-49
R-12-47
R-12-45
R-12-44
R-12-43
R-12-42
R-12-140
R-12-139
R-12-138
R-12-135
R-12-137
R-12-134
R-12-136
R-12-133
R-12-132
R-12-128
R-12-131
R-12-130
R-12-129
R-12-127
R-12-126
R-12-125
R-12-124
R-12-123
R-12-120
R-12-119
R-12-118
R-12-117
R-12-116
R-12-115
R-12-112
R-12-113
R-12-122
R-12-114
FS-12

Legend

Field Sites

Receivers
- Impacted, Not Benefited
- Impacted, Benefited
- Not Impacted, Not Benefited
- Not Impacted, Benefited

Contour Lines
- 66 dBA
- 71 dBA

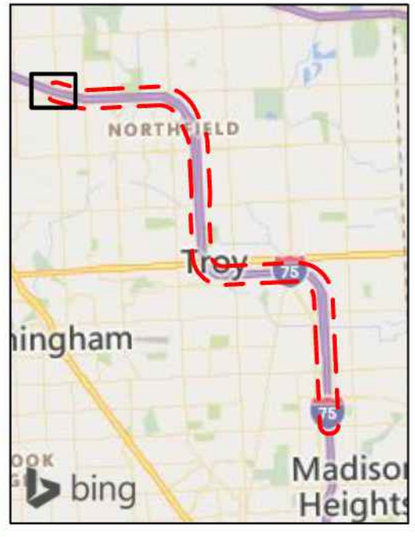
Evaluated Noise Barriers
- Exising Noise Barriers
- Feasible Not Reasonable
- Feasible and Reasonable
- Common Noise Environment (CNE)
- Study Area

Park Area Impacts
- Benefited
- Impacted

Note: Receiver location may represent multiple receptor units.

N

0 100 200
Feet



I-75 Oakland Noise Analysis
Oakland County, Michigan

APPENDIX B: Calibration Certificates and Data Sheets

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Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.47438

Instrument: **Sound Level Meter**
Model: **Sound Track LxT1L**
Manufacturer: **Larson Davis**
Serial number: **0006277**
Tested with: **Microphone 377B02 s/n 325784**
Preamplifier PRMLXT1L s/n
Type (class): **1**
Customer: **HNTB Corporation**
Tel/Fax: **612-358-8938**

Date Calibrated: **1/28/2022** *Cal Due:*

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: ___Yes _X_ No
Calibration service: ___ Basic _X_ Standard
Address: **250E Wisconsin Ave #2000, Milwaukee, WI 53202**

Tested in accordance with the following procedures and standards:
Calibration of Sound Level Meters, Scantek Inc., Rev. 6/26/2015
SLM & Dosimeters – Acoustical Tests, Scantek Inc., Rev. 7/6/2011

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 8, 2021	Scantek, Inc./ NVLAP	Nov 8, 2022
DS-360-SRS	Function Generator	88077	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Feb 4, 2021	ACR Env. / A2LA	Feb 4, 2022
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 10, 2021	ACR Env./ A2LA	Sept 10, 2022
PC Program 1019 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1251-Norsonic	Calibrator	30878	Oct 27, 2021	Scantek, Inc./ NVLAP	Oct 27, 2022

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK).

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
23.4	100.68	30.8

Calibrated by:	Bailey Partoza	**Authorized signatory:**	William Gallagher
Signature		Signature	
Date	1/28/22	Date	2/04/2022

Document stored Y:\Calibration Lab\SLM 2022\LDLXT1L_0006277_M1.doc

Results summary: Device complies with following clauses of mentioned specifications:

CLAUSES[1] FROM IEC/ANSI STANDARDS REFERENCED IN PROCEDURES:	RESULT[2,3]	EXPANDED UNCERTAINTY (coverage factor 2) [dB]
INDICATION AT THE CALIBRATION CHECK FREQUENCY - IEC61672-3 ED.2 CLAUSE 10	Passed	0.15
SELF-GENERATED NOISE - IEC 61672-3 ED.2 CLAUSE 11	Passed	0.3
FREQUENCY WEIGHTINGS: A NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: C NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY WEIGHTINGS: Z NETWORK - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	0.20
FREQUENCY AND TIME WEIGHTINGS AT 1 KHZ IEC 61672-3 ED.2.0 CLAUSE 14	Passed	0.20
LEVEL LINEARITY ON THE REFERENCE LEVEL RANGE - IEC 61672-3 ED.2 CLAUSE 16	Passed	0.25
TONEBURST RESPONSE - IEC 61672-3 ED.2.0 CLAUSE 18	Passed	0.30
PEAK C SOUND LEVEL - IEC 61672-3 ED.2.0 CLAUSE 19	Passed	0.35
OVERLOAD INDICATION - IEC 61672-3 ED.2.0 CLAUSE 20	Passed	0.25
HIGH LEVEL STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 21	Passed	0.10
LONG TERM STABILITY TEST - IEC 61672-3 ED.2.0 CLAUSE 15	Passed	0.10
FILTER TEST 1/1OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
FILTER TEST 1/3OCTAVE: RELATIVE ATTENUATION - IEC 61260, CLAUSE 4.4 & #5.3	Passed	0.25
COMBINED ELECTRICAL AND ACOUSTICAL TEST - IEC 61672-3 ED.2.0 CLAUSE 13	Passed	See test report

1 The results of this calibration apply only to the instrument type with serial number identified in this report.

2 Parameters are certified at actual environmental conditions.

3 The tests marked with (*) are not covered by the current NVLAP accreditation.

Comments: The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3, for the environmental conditions under which the tests were performed. As public evidence was available, from an independent testing organization responsible for approving the results of pattern evaluation tests performed in accordance with IEC 61672-2, to demonstrate that the model of sound level meter fully conforms to the requirements in the IEC 61672-2, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Tests made with the following attachments to the instrument:

Microphone: PCB Piezotronics 377B02 s/n 325784 for acoustical test
Preamplifier: PCB PRMLXT1L s/n for all tests
Other: line adaptor ADP005 (18pF) for electrical tests
Accompanying acoustical calibrator: Larson Davis CAL200 s/n 17856
Windscreen: none

Measured Data: in Test Report # 47438 of 9 +1 pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

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Scantek, Inc.
CALIBRATION LABORATORY
ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.47440

Instrument:	**Acoustical Calibrator**
Model:	**CAL200**
Manufacturer:	**Larson Davis**
Serial number:	**17856**
Class (IEC 60942):	**1**
Barometer type:	
Barometer s/n:	
Customer:	**HNTB Corporation**
Tel/Fax:	**612-358-8938 /**

Date Calibrated: **1/27/2022** *Cal Due:*

	Received	Sent
Status:		
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: __Yes _X_ No

Address: **250E Wisconsin Ave #2000, Milwaukee, WI 53202**

Tested in accordance with the following procedures and standards:
Calibration of Acoustical Calibrators, Scantek Inc., Rev. 10/1/2010

Instrumentation used for calibration: Nor-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 8, 2021	Scantek, Inc./ NVLAP	Nov 8, 2022
DS-360-SRS	Function Generator	88077	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Feb 4, 2021	ACR Env. / A2LA	Feb 4, 2022
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 10, 2021	ACR Env./ A2LA	Sept 10, 2022
140-Norsonic	Real Time Analyzer	1406423	Nov 8, 2021	Scantek / NVLAP	Nov 8, 2022
PC Program 1018 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
4134-Brüel&Kjær	Microphone	173368	Nov 8, 2021	Scantek, Inc. / NVLAP	Nov 8, 2022
1203-Norsonic	Preamplifier	14059	March 3, 2021	Scantek, Inc./ NVLAP	March 3, 2022

Instrumentation and test results are traceable to SI (International System of Units) through standards maintained by NIST (USA) and NPL (UK)

Calibrated by:	Bailey Partoza	**Authorized signatory:**	William Gallagher
Signature		Signature	
Date	1/27/22	Date	2/03/2022

Document stored as: Y:\Calibration Lab\Cal 2022\LDCAL200_17856_M2.doc

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES[1] FROM STANDARDS REFERENCED IN PROCEDURES:	MET[2]	NOT MET	COMMENTS
Manufacturer specifications			
Manufacturer specifications: Sound pressure level	X		
Manufacturer specifications: Frequency	X		
Manufacturer specifications: Total harmonic distortion	X		
Current standards			
ANSI S1.40:2006 B.3 / IEC 60942: 2003 B.2 - Preliminary inspection	X		
ANSI S1.40:2006 B.4.4 / IEC 60942: 2003 B.3.4 - Sound pressure level	X		
ANSI S1.40:2006 A.5.4 / IEC 60942: 2003 A.4.4 - Sound pressure level stability	-	-	
ANSI S1.40:2006 B.4.5 / IEC 60942: 2003 B.3.5 - Frequency	X		
ANSI S1.40:2006 B.4.6 / IEC 60942: 2003 B.3.6 - Total harmonic distortion	X		

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] The tests marked with (*) are not covered by the current NVLAP accreditation.

Main measured parameters [3]:

Measured[4]/Acceptable[5] Tone frequency (Hz):	Measured[4]/Acceptable[5] Total Harmonic Distortion (%):	Measured [4]/Acceptable Level[5] (dB):
999.99 ± 1.0/1000.0 ± 10.0	0.43 ± 0.10/ < 3	113.89 ± 0.12/114.0 ± 0.4
999.98 ± 1.0/1000.0 ± 10.0	0.36 ± 0.10/ < 3	93.87 ± 0.12/94.0 ± 0.4

[3] The stated level is valid at measurement conditions.

[4] The above expanded uncertainties for frequency and distortion are calculated with a coverage factor k=2; for level k=2.00

[5] Acceptable parameters values are from the current standards

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.9 ± 1.0	101.65 ± 0.000	39.9 ± 2.0

Tests made with following attachments to instrument:

Calibrator ½" Adaptor Type:
Other:

Adjustments: Unit was not adjusted.
Comments: The instrument was tested and met all specifications found in the referenced procedures.

Note: The instrument was tested for the parameters listed in the table above, using the test methods described in the listed standards. All tests were performed around the reference conditions. The test results were compared with the manufacturer's or with the standard's specifications, whichever are larger. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Measured Data: in Acoustical Calibrator Test Report # 47440 of two pages.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA
Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

DRAFT

Scantek, Inc.
CALIBRATION LABORATORY

ISO 17025: 2017, ANSI/NCSL Z540:1994 Part 1
ACCREDITED by NVLAP (an ILAC MRA signatory)

NVLAP®
CALIBRATION
NVLAP Lab Code: 200625-0

Calibration Certificate No.47439

Instrument: **Microphone**
Model: **377B02**
Manufacturer: **PCB Piezotronics**
Serial number: **325784**
Composed of:

Customer: **HNTB Corporation**
Tel/Fax: **612-358-8938/**

Date Calibrated: **1/27/2022** *Cal Due:*

Status:	Received	Sent
In tolerance:	X	X
Out of tolerance:		
See comments:		

Contains non-accredited tests: ___Yes _X_ No

Address: **250E Wisconsin Ave #2000, Milwaukee, WI 53202**

Tested in accordance with the following procedures and standards:
Calibration of Measurement Microphones, Scantek, Inc., Rev. 2/25/2015

Instrumentation used for calibration: N-1504 Norsonic Test System:

Instrument - Manufacturer	Description	S/N	Cal. Date	Traceability evidence Cal. Lab / Accreditation	Cal. Due
483B-Norsonic	SME Cal Unit	31052	Nov 8, 2021	Scantek, Inc./ NVLAP	Nov 8, 2022
DS-360-SRS	Function Generator	88077	Dec 3, 2020	ACR Env./ A2LA	Dec 3, 2022
34401A-Agilent Technologies	Digital Voltmeter	MY47011118	Feb 4, 2021	ACR Env. / A2LA	Feb 4, 2022
PTU300-Vaisala	EnvironmentalMonitor	P5011262	Sept 10, 2021	ACR Env./ A2LA	Sept 10, 2022
PC Program 1017 Norsonic	Calibration software	v.6.1T	Validated Nov 2014	Scantek, Inc.	-
1253-Norsonic	Calibrator	28326	Oct 27, 2021	Scantek, Inc./ NVLAP	Oct 27, 2022
1203-Norsonic	Preamplifier	14059	March 3, 2021	Scantek, Inc./ NVLAP	March 3, 2022
4180-Brüel&Kjær	Microphone	2246115	Oct 6, 2021	DPLA / DANAK	Oct 6, 2023

Instrumentation and test results are traceable to SI - BIPM through standards maintained by NPL (UK) and NIST (USA)

Calibrated by:	Bailey Partoza	**Authorized signatory:**	William Gallagher
Signature		Signature	
Date	1/27/22	Date	2/03/2022

Document stored as: Y:\Calibration Lab\Mic 2022\PCB377B02_325784_M1.doc

Results summary: Device was tested and complies with following clauses of mentioned specifications:

CLAUSES / METHODS[1] FROM PROCEDURES		MET[2,3]	NOT MET	NOT TESTED	MEASUREMENT EXPANDED UNCERTAINTY (coverage factor 2)
Open circuit sensitivity (insert voltage method, 250 Hz)		X			See below
Frequency response	Actuator response	X			63 – 200Hz: 0.3 dB 200 – 8000 Hz: 0.2 dB 8 – 10 kHz: 0.5 dB 10 – 20 kHz: 0.7 dB 20 – 50 kHz: 0.9 dB 50 – 100 kHz: 1.2 dB
	FF/Diffuse field responses	X			63 – 200Hz: 0.3 dB 200 – 4000 Hz: 0.2 dB 4 – 10 kHz: 0.6 dB 10 – 20 kHz: 0.9 dB 20 – 50 kHz: 2.2 dB 50 – 100 kHz: 4.4 dB
	Scantek, Inc. acoustical method			X	31.5 – 125 Hz: 0.16 dB 250, 1000 Hz: 0.12 dB 2 – 8 kHz: 0.8 dB 12.5 – 16 kHz: 2.4 dB

[1] The results of this calibration apply only to the instrument type with serial number identified in this report.

[2] Results are normalized to the reference conditions.

[3] The tests marked with (*) are not covered by the current NVLAP accreditation.

Note: The free field/diffuse field characteristics were calculated based on the measured actuator response and adjustment coefficients as provided by the manufacturer. The measurement results are reported as Pass / Fail simple acceptance; measured values are in the tolerance interval.

Comments: The instrument was tested and met all specifications found in the referenced procedures.

Environmental conditions:

Temperature (°C)	Barometric pressure (kPa)	Relative Humidity (%)
21.5 ± 1.0	101.45 ± 0.020	45.1 ± 2.0

Main measured parameters:

Tone frequency (Hz)	Measured[4] /Acceptable Open circuit sensitivity (dB re 1V/Pa)	Sensitivity (mV/Pa)
250	-26.00 ± 0.12/ -26.0 ±1.5	50.10

[4] The reported expanded uncertainty is calculated with a coverage factor k=2.00

Tests made with following attachments to instrument and auxiliary devices:

Protection grid mounted for sensitivity measurements
Actuator type: G.R.A.S. RA0014

Measured Data: Found on Microphone Test Report # 47439 of one page.

Place of Calibration: Scantek, Inc.
6430 Dobbin Road, Suite C
Columbia, MD 21045 USA

Ph/Fax: 410-290-7726/ -9167
callab@scantekinc.com

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mostus

SITE: FS-1 DATE: 11/3/2022 TIME: 1:55 pm

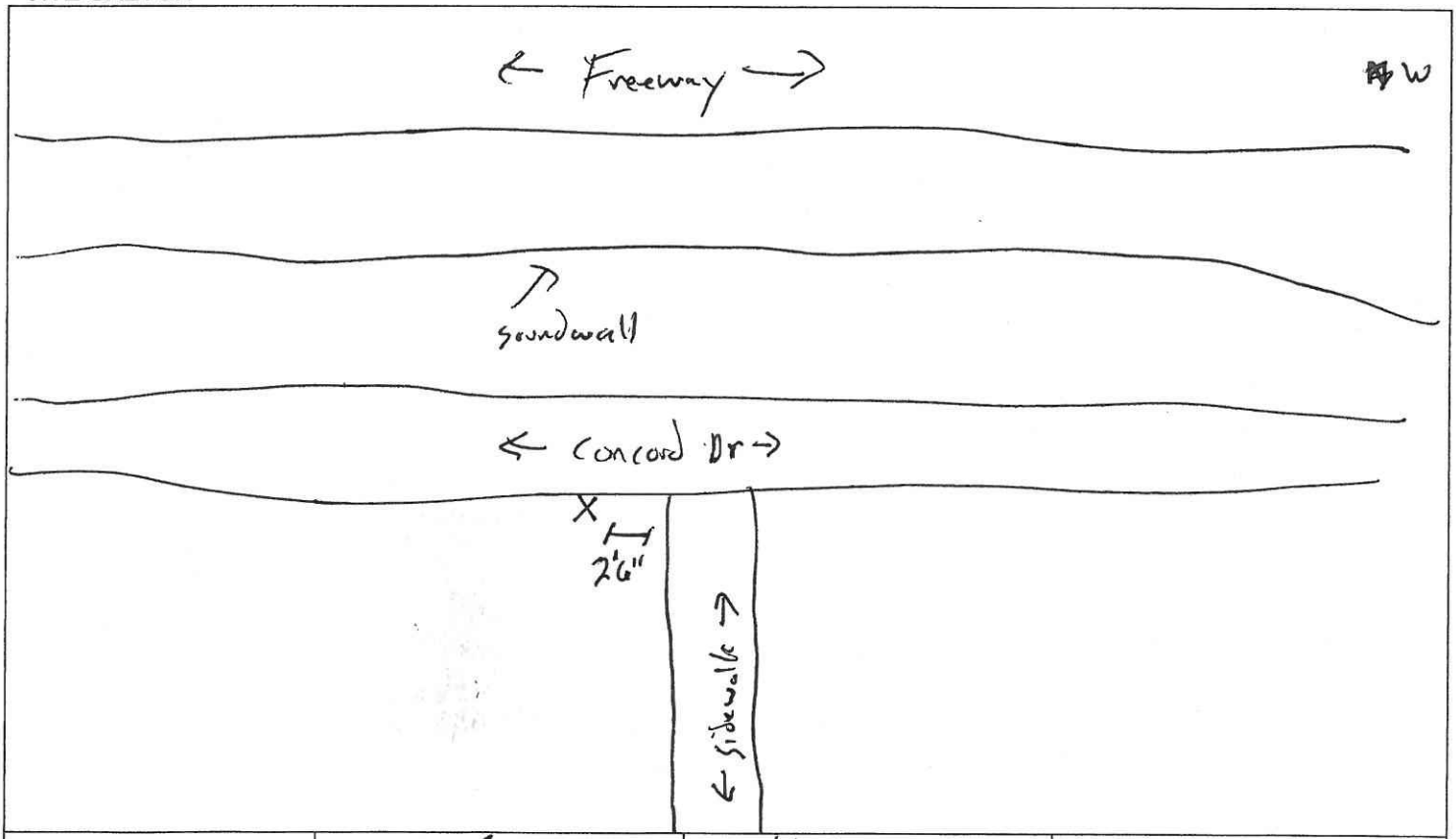
CALIBRATION: 114.0 at 1k Hz dB. Offset: -0.06 File: .032

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	I-75 NB		I-75 SB
ROAD (Name/Dir)	NB Concord Dr	I-75	SB Concord Dr	I-75
AUTOS	11 (2)	622	11 (2)	672
MED TRKS		26		24
HVY TRKS		42		41
BUS		2		0
MOTORCYCLE		0		0
SPEED	25	70	25	35

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 61.2	

WEATHER DATA WIND SPEED (MPH) 8 DIR. S TEMP. 64 HUMIDITY 68% CLOUD COVER clear

BACKGROUND NOISE

MAJOR SOURCES Traffic on I-75

UNUSUAL EVENTS rumble strip on NB I-75 is fairly audible throughout

OTHER NOTES

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	1:56	60.8		
2	1:57	61.7		
3	1:58	61.1		
4	1:59	58.5		
5	2:00	59.2		
6	2:01	58.9		
7	2:02	59.2		
8	2:03	63.6		auto passby on SB Concord
9	2:04	61.3		
10	2:05	59.6		
11	2:06	62.0		auto passby on SB Concord
12	2:07	59.9		
13	2:08	59.1		
14	2:09	62.8		auto on NB Concord
15	2:10	64.2		auto on NB Concord
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	NB CONCORD DR	SB CONCORD DR
AUTOS	11	11
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		
SPEED		

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Moskus

SITE: FS-2 DATE: 11/3/2022 TIME: 12:45 pm

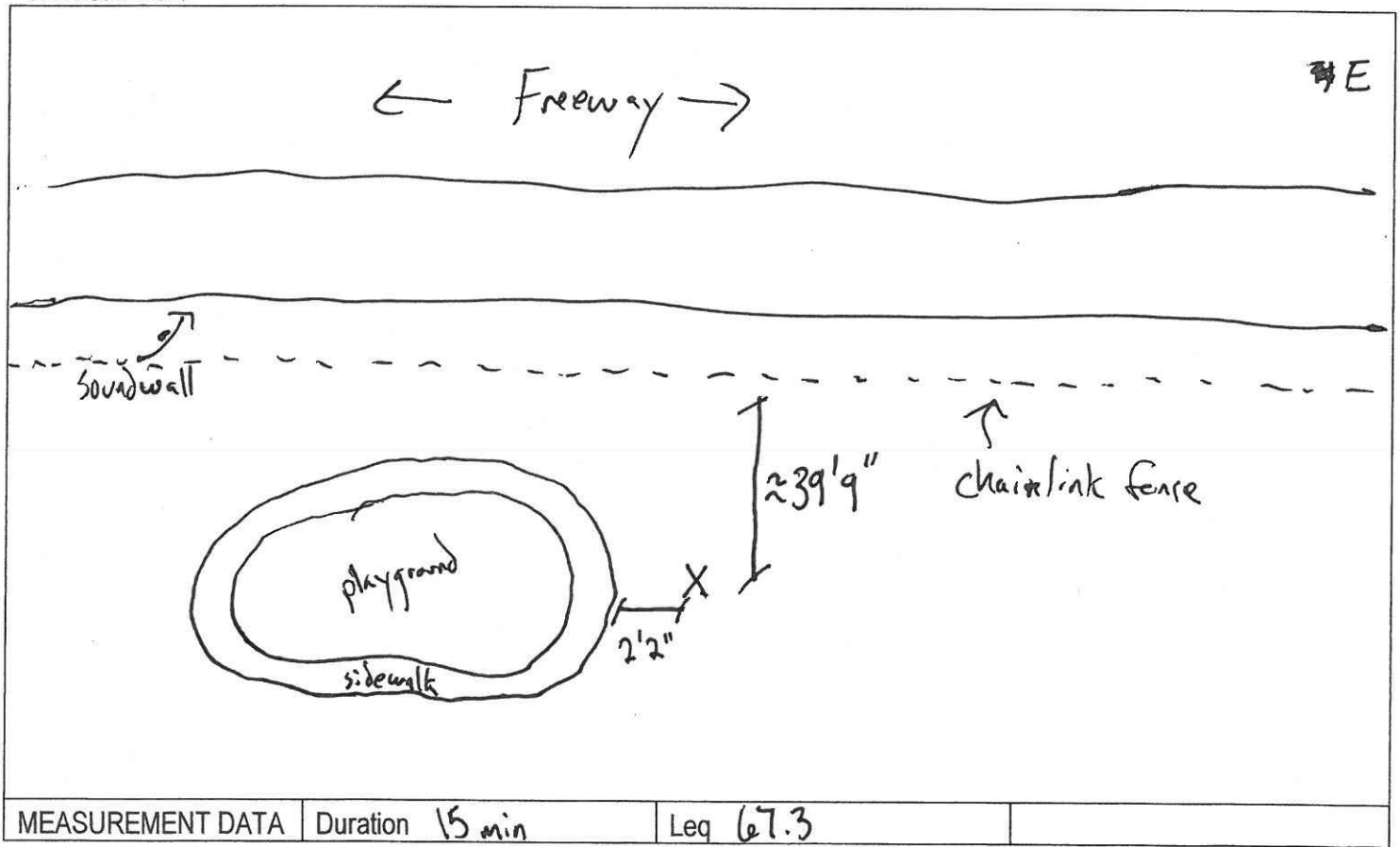
CALIBRATION: 114.0 at 1k Hz dB. Offset: -0.03 File: .031

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I75 NB	I75 SB
AUTOS	630	580
MED TRKS	15	15
HVY TRKS	46	50
BUS	0	0
MOTORCYCLE	0	0
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 67.3	

WEATHER DATA WIND SPEED (MPH) 7 DIR. S TEMP. 59 HUMIDITY 82% CLOUD COVER clear

BACKGROUND NOISE

MAJOR SOURCES Traffic on I-75

UNUSUAL EVENTS

OTHER NOTES

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	12:46	67.4		
2	12:47	67.2		
3	12:48	68.1		
4	12:49	68.8		
5	12:50	69.8		loud motorcycle on I-75 (could have been a car)
6	12:51	66.9		
7	12:52	66.5		
8	12:53	67.6		
9	12:54	66.0		
10	12:55	66.3		
11	12:56	67.1		
12	12:57	68.0		sounds like another loud motorcycle
13	12:58	66.5		
14	12:59	65.8		
15	1:00	65.7		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)		
AUTOS		
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		
SPEED		

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Moskus

SITE: FS-3 DATE: 11/2/2022 TIME: 4:24 pm

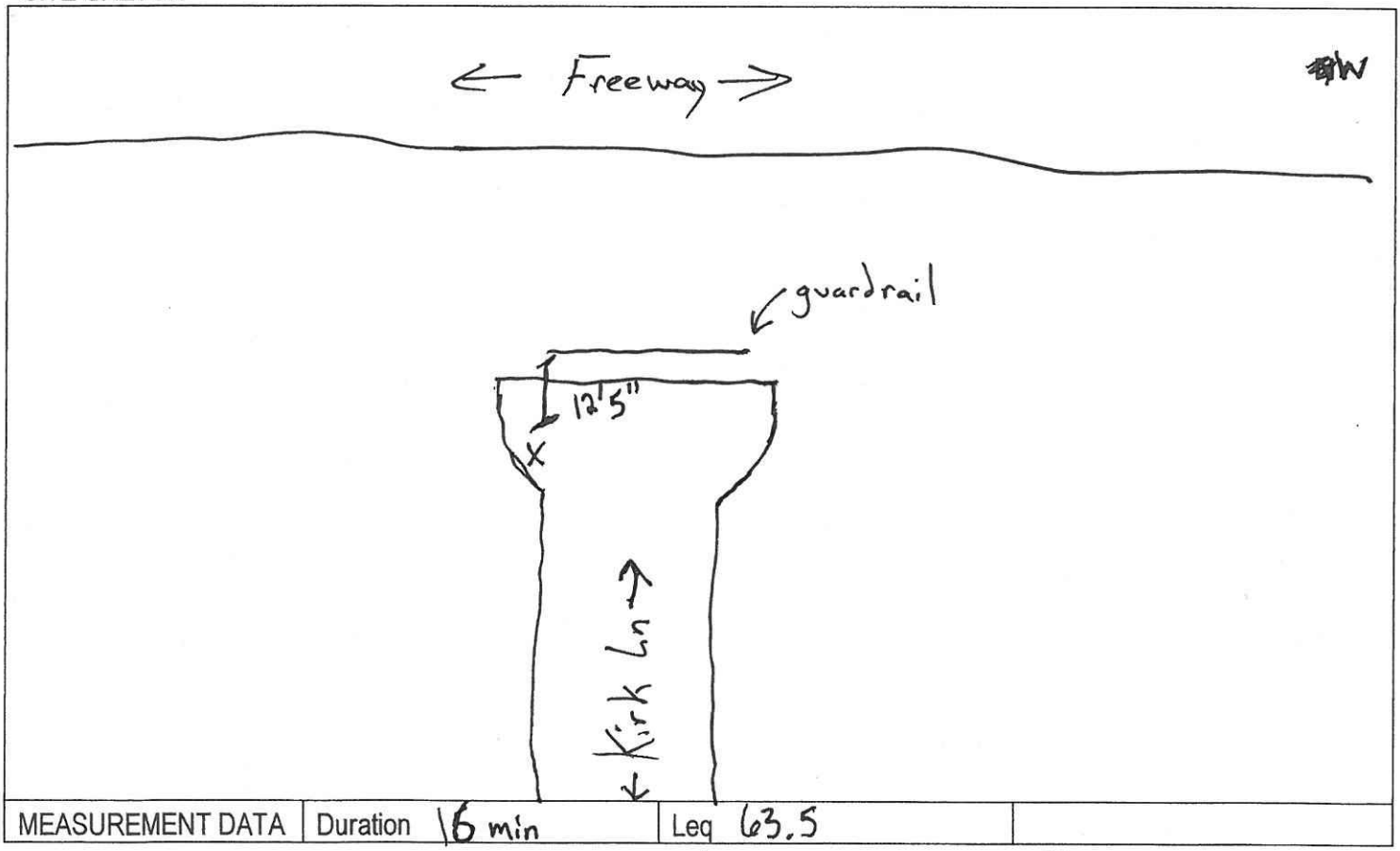
CALIBRATION: 114.0 at 1k Hz dB. Offset: -0.07 File: .028

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	1063	712
MED TRKS	11	17
HVY TRKS	15	35
BUS	0	1
MOTORCYCLE	1	0
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 16 min	Leq 63.5	

WEATHER DATA WIND SPEED (MPH) 3 DIR. S TEMP. 68 HUMIDITY 41% CLOUD COVER clear

BACKGROUND NOISE Birds, bugs

MAJOR SOURCES Traffic from I-75

UNUSUAL EVENTS

OTHER NOTES

FS-3

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	4:25	64.3		
2	4:26	63.1		
3	4:27	62.5		
4	4:28	64.0		
5	4:29	62.9		
6	4:30	62.9		
7	4:31	63.1		
8	4:32	63.6		
9	4:33	64.2		
10	4:34	63.8		
11	4:35	62.9		
12	4:36	63.1		audible plane flyover @ end of this min
13	4:37	64.4		audible plane flyover @ beginning
14	4:38	63.0		loud car
15	4:39	63.3		
16	4:40	64.0		
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)		
AUTOS		
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mosteus

SITE: FS-4 DATE: 11/2/2022 TIME: ~~3:38 pm~~ 3:48 pm

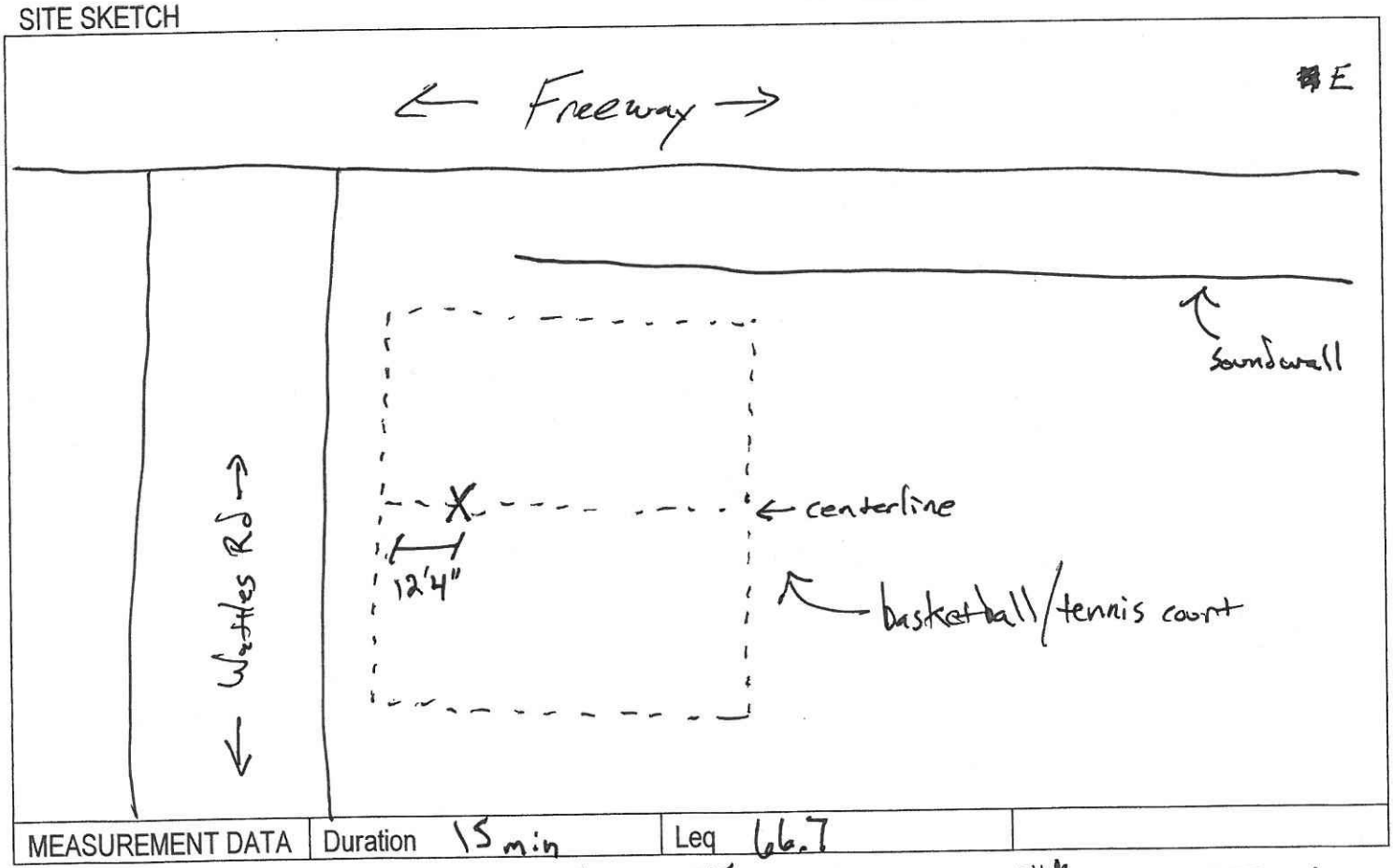
CALIBRATION: 114.0 at 1k Hz dB. Offset: 0.00 File: .027

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	915	664
MED TRKS	18	18
HVY TRKS	27	36
BUS	~~0~~	1
MOTORCYCLE	3	~~0~~
SPEED	~~70~~	~~70~~

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 66.7	

WEATHER DATA WIND SPEED (MPH) 5 DIR. SSE TEMP. 68 HUMIDITY 41% CLOUD COVER clear

BACKGROUND NOISE

MAJOR SOURCES Traffic from I-75/ Wattles

UNUSUAL EVENTS

OTHER NOTES

FS-4

DRAFT

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	3:49	65.2		
2	3:50	66.6		
3	3:51	66.1		
4	3:52	66.6		
5	3:53	67.7		loud vehicle on freeway
6	3:54	66.4		
7	3:55	67.3		
8	3:56	67.6		
9	3:57	66.8		
10	3:58	67.9		
11	3:59	67.8		
12	4:00	66.3		loud car on freeway
13	4:01	65.5		
14	4:02	65.9		
15	4:03	66.3		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	WATTLES RD EB	WATTLES RD WB
AUTOS	160	~~130~~ 133
MED TRKS	2	1
HVY TRKS	~~0~~	~~0~~
BUS	~~0~~	~~0~~
MOTORCYCLE	~~0~~	~~0~~
SPEED	~~40~~	~~40~~

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mostus

SITE: FS-5 DATE: 11/2/2022 TIME: 3:06 pm

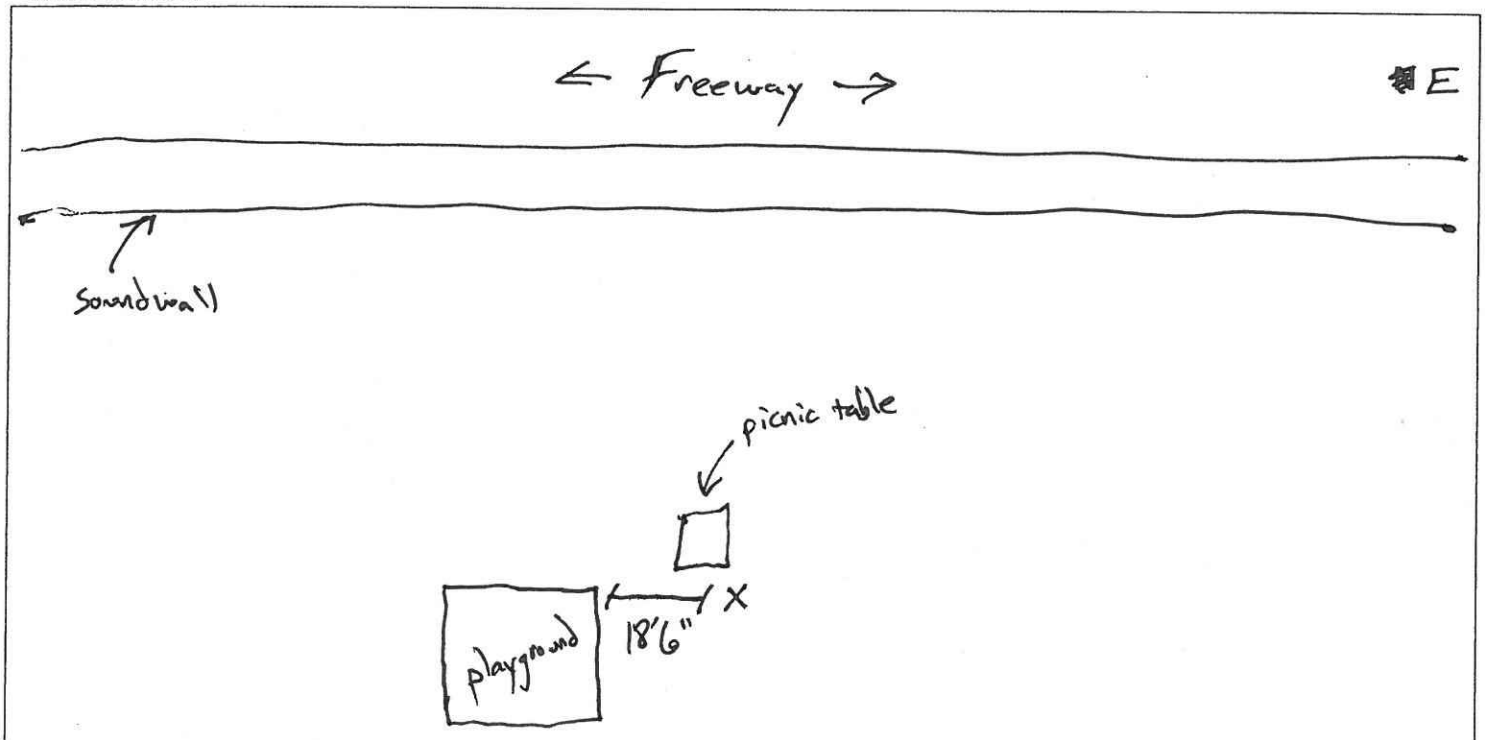
CALIBRATION: 114.0 at 1k Hz dB. Offset: +0.03 File: .026

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	924	686
MED TRKS	19	20
HVY TRKS	28	32
BUS	1	1
MOTORCYCLE	2	2
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq [redacted] 61.2	

WEATHER DATA WIND SPEED (MPH) 5 DIR. S TEMP. 67 HUMIDITY 43% CLOUD COVER Clear

BACKGROUND NOISE birds / bugs

MAJOR SOURCES Traffic

UNUSUAL EVENTS

OTHER NOTES

FS-5

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	3:07	60.3		loud vehicle
2	3:08	59.1		
3	3:09	60.2		
4	3:10	60.0		
5	3:11	61.2		
6	3:12	63.6		
7	3:13	62.5		
8	3:14	61.4		bird call
9	3:15	62.7		
10	3:16	61.1		
11	3:17	59.9		
12	3:18	60.9		
13	3:19	61.0		
14	3:20	61.5		
15	3:21	60.3		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)		
AUTOS		
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		
SPEED		

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mostrus

SITE: FS-6 DATE: 11/2/2022 TIME: 2:32 pm

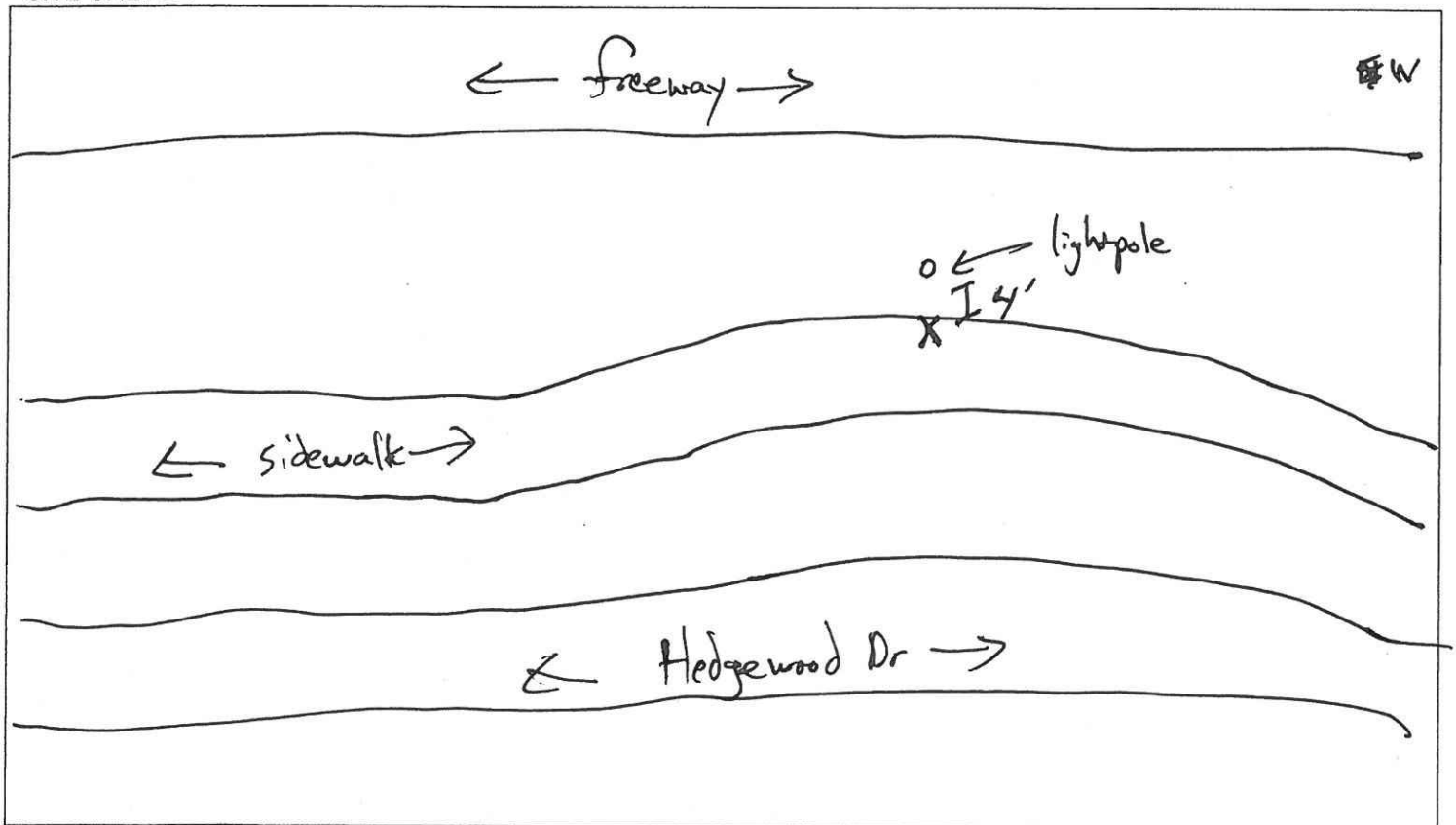
CALIBRATION: 114.0 at 1k Hz dB. Offset: -0.06 File: .025

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	NB I-75	SB I-75
ROAD (Name/Dir)	NB Hedgewood	SB Hedgewood	
AUTOS	11 (2)	823 11 (2)	601
MED TRKS		20	28
HVY TRKS		50	44
BUS		2	0
MOTORCYCLE		1	0
SPEED	25	70 25	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 65.4	

WEATHER DATA WIND SPEED (MPH) ≈6 DIR. S TEMP. 66 HUMIDITY 44% CLOUD COVER clear

BACKGROUND NOISE

MAJOR SOURCES traffic on I-75

UNUSUAL EVENTS

OTHER NOTES

FS-6

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	2:33	63.8		some beeping from vehicle backing up
2	2:34	66.4		
3	2:35	66.1		
4	2:36	64.8		
5	2:37	66.6		postal truck passby
6	2:38	65.2		
7	2:39	66.5		
8	2:40	65.1		
9	2:41	65.1		
10	2:42	65.6		
11	2:43	65.6		
12	2:44	65.4		
13	2:45	65.7		
14	2:46	65.3		
15	2:47	64.2		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	NB HEDGEWOOD	SB HEDGEWOOD
AUTOS	11 (2)	11 (2)
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		
SPEED	25	25

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Moskus

SITE: FS-7 DATE: 11/2/2022 TIME: 9:08 am

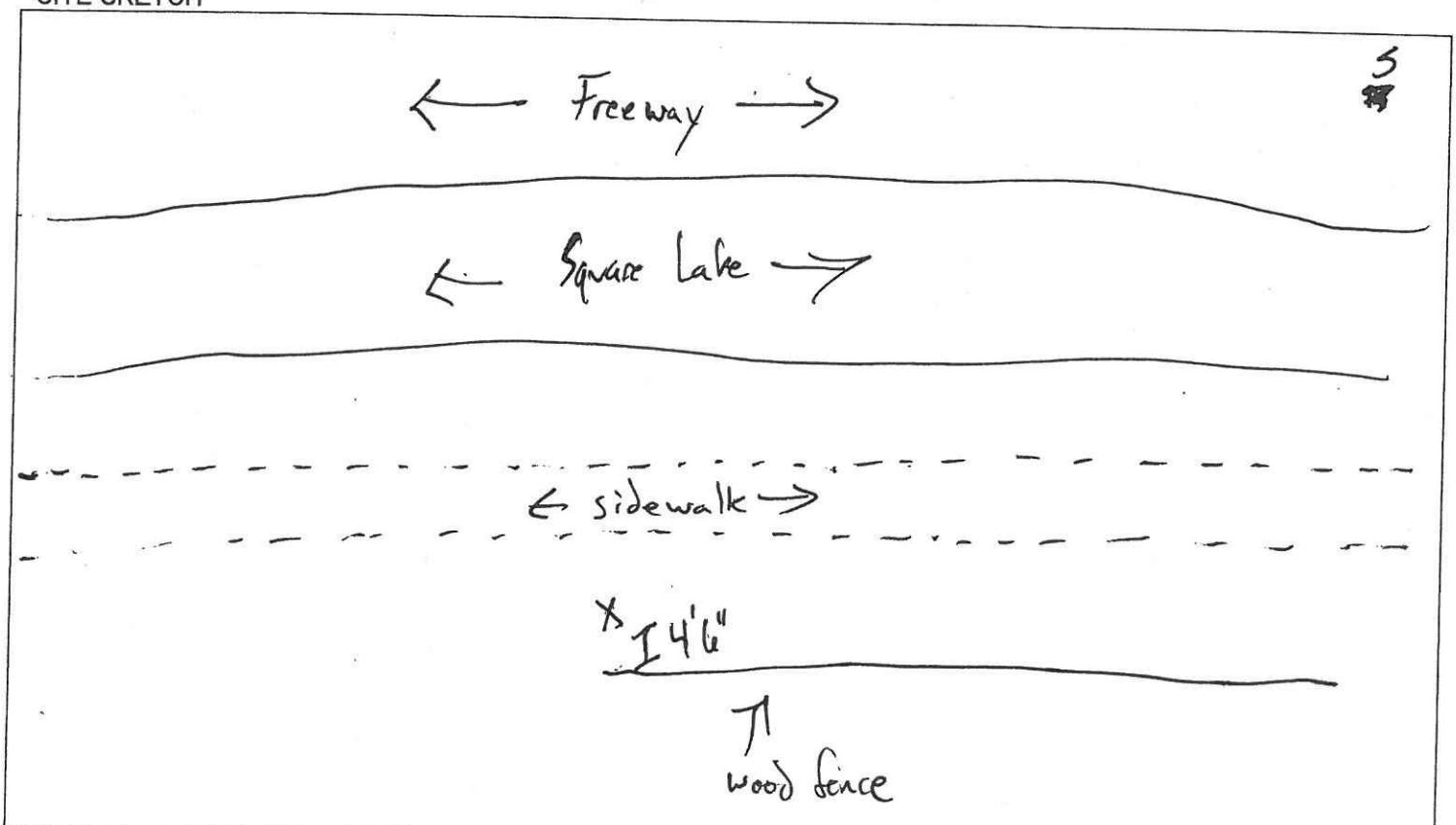
CALIBRATION: 114.0 at 1k Hz dB. Offset: -0.03 File: .019

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	482	638
MED TRKS	22	26
HVY TRKS	46	40
BUS	0	2
MOTORCYCLE	0	0
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 73.2	

WEATHER DATA WIND SPEED (MPH) 20 DIR. SW TEMP. ~~48~~ 63 HUMIDITY 91 CLOUD COVER clear

BACKGROUND NOISE

MAJOR SOURCES Traffic from I-75 / Square Lake Rd

UNUSUAL EVENTS

OTHER NOTES

FS-7

DRAFT

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1				
2	9:09	73.4		
3	9:10	73.0		
4	9:11	73.4		
5	9:12	73.5		loud car on I-75
6	9:13	73.2		
7	9:14	73.2		
8	9:15	72.6		
9	9:16	72.1		
10	9:17	73.4		loud truck on I-75
11	9:18	73.7		
12	9:19	73.3		
13	9:20	73.3		
14	9:21	72.8		
15	9:22	73.7		
16	9:23	73.0		
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	WB SQUARE LAKE	EB SQUARE LAKE
AUTOS	𝍸 𝍸 IIII 14	𝍸 𝍸 𝍸 15
~~MED TRKS~~ AUTO	𝍸 𝍸 II 12	𝍸 𝍸 𝍸 𝍸 20
~~HVY TRKS~~ AUTO	𝍸 𝍸 𝍸 II 17	𝍸 𝍸 𝍸 𝍸 20
~~BUS~~ AUTO		𝍸 𝍸 𝍸 𝍸 20
MOTORCYCLE		
SPEED	1 1	

	WB	EB
AUTO =	43	75
MT =	0	0
HT =	0	0
BUS =	1	0
~~BUS~~ MOTO =	0	0

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mostrus

SITE: FS-7a DATE: 11/3/2022 TIME: 11:06 am

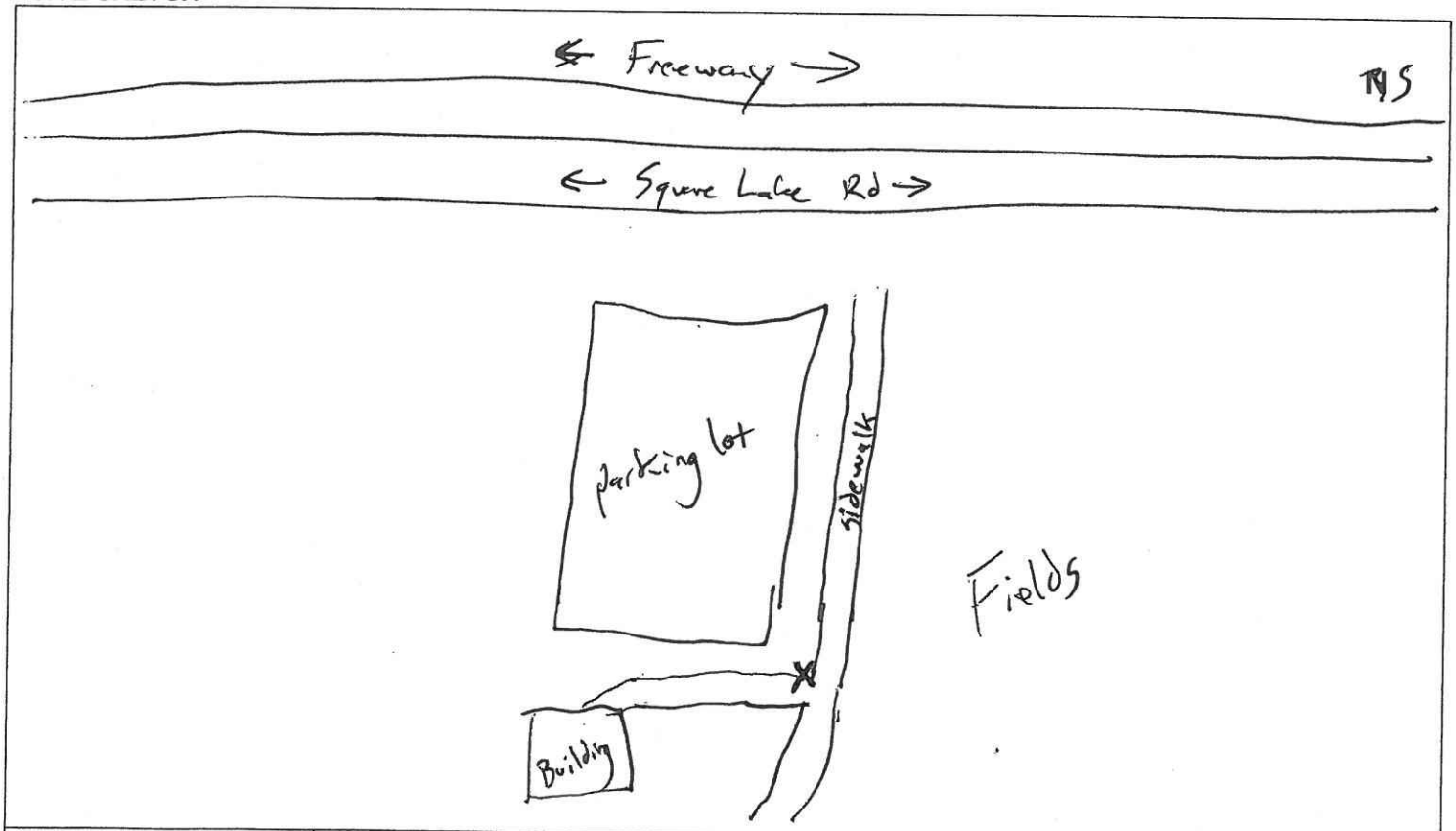
CALIBRATION: 114.0 at 1k Hz dB. Offset: +0.02 File: .029

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	409	434
MED TRKS	16	15
HVY TRKS	43	48
BUS	0	0
MOTORCYCLE	1	0
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 64.4	

WEATHER DATA WIND SPEED (MPH) 5 DIR. SSW TEMP. 50 HUMIDITY 94% CLOUD COVER light fog

BACKGROUND NOISE

MAJOR SOURCES Traffic on I-75

UNUSUAL EVENTS

OTHER NOTES

FS-7A

DRAFT

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	11:07	63.0		
2	11:08	62.6		
3	11:09	62.3		
4	11:10	62.3		
5	11:11	63.9		
6	11:12	65.0		
7	11:13	63.8		
8	11:14	63.8		
9	11:15	65.7		
10	11:16	64.2		
11	11:17	64.0		
12	11:18	65.7		
13	11:19	64.9		
14	11:20	66.8		
15	11:21	65.0		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	SQUARE LAKE EB	SQUARE LAKE WB
AUTOS	36	37
MED TRKS	~~0~~	~~0~~
HVY TRKS	~~0~~	~~0~~
BUS	~~0~~	~~0~~
MOTORCYCLE	~~0~~	~~0~~
SPEED	45	45

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mostrus

SITE: FS-7b DATE: 11/3/2022 TIME: 11:35 am

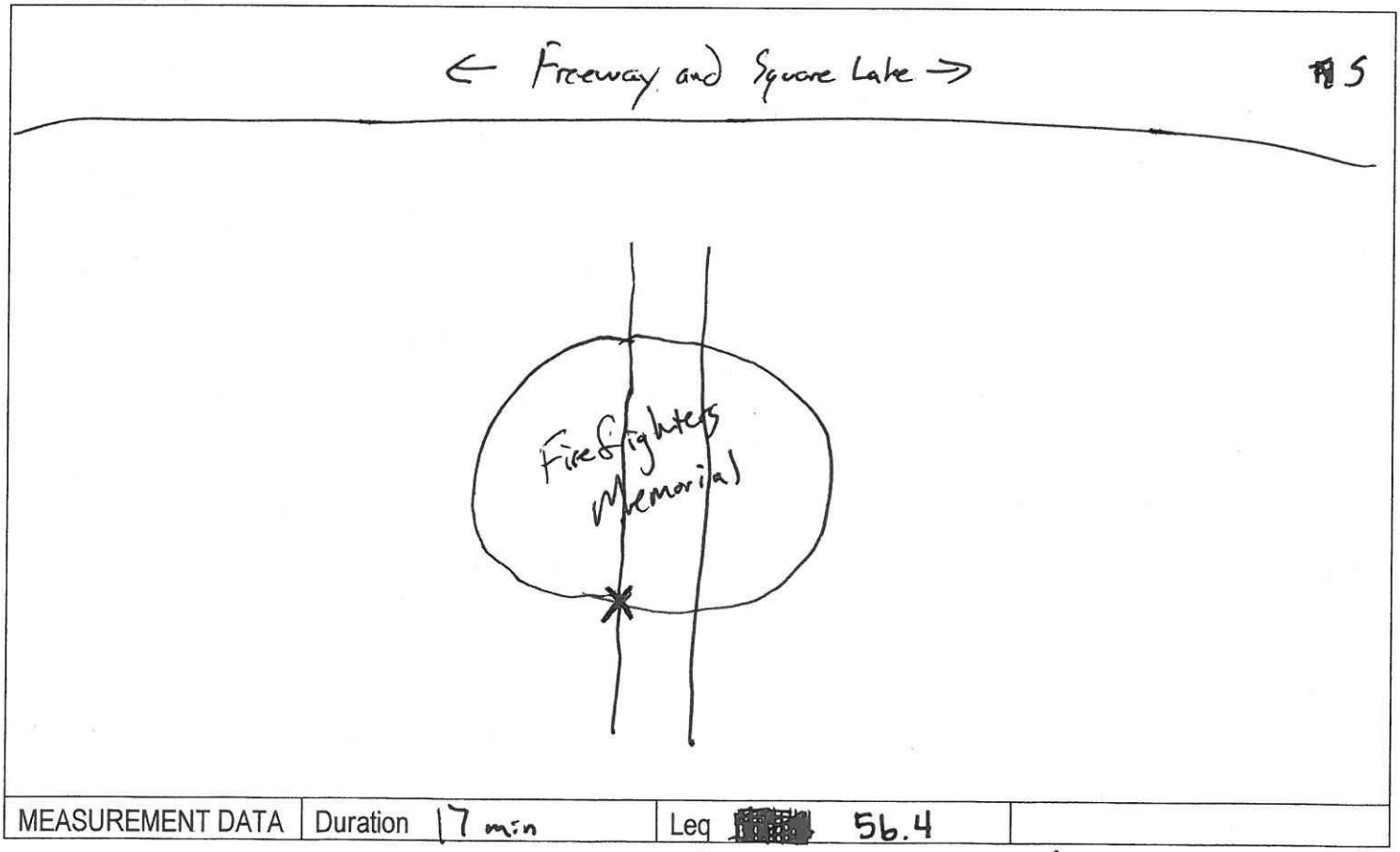
CALIBRATION: 114.0 at 1k Hz dB. Offset: -0.06 File: .030

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT TRAFFIC DATA		
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	452	462
MED TRKS	23	19
HVY TRKS	40	46
BUS	0	0
MOTORCYCLE	0	0
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 17 min	Leq [redacted] 56.4	

WEATHER DATA WIND SPEED (MPH) 6 DIR. SSW TEMP. 51 HUMIDITY 92% CLOUD COVER light fog partly cloudy

BACKGROUND NOISE birds, bugs, leaves rustling

MAJOR SOURCES Traffic on I-75

UNUSUAL EVENTS

OTHER NOTES

FS-7B

DRAFT

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	11:36	55.3		
2	11:37	55.5		
3	11:38	67.3	X	woman kept talking to me
4	11:39	61.9	X	woman still talking to me
5	11:40	56.3		
6	11:41	55.2		
7	11:42	57.2		
8	11:43	56.0		
9	11:44	56.7		
10	11:45	58.3		
11	11:46	56.3		
12	11:47	56.2		
13	11:48	55.7		
14	11:49	55.9		
15	11:50	55.8		
16	11:51	56.4		
17	11:52	57.8		
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)	10 MIN	
ROAD (Name/Dir)	SQUARE LAKE EB	SQUARE LAKE WB
AUTOS	33	31
MED TRKS	0	0
HVY TRKS	0	0
BUS	0	0
MOTORCYCLE	0	0
SPEED	45	45

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mosteus

SITE: FS-8 DATE: 11/2/2022 TIME: 12:23 pm

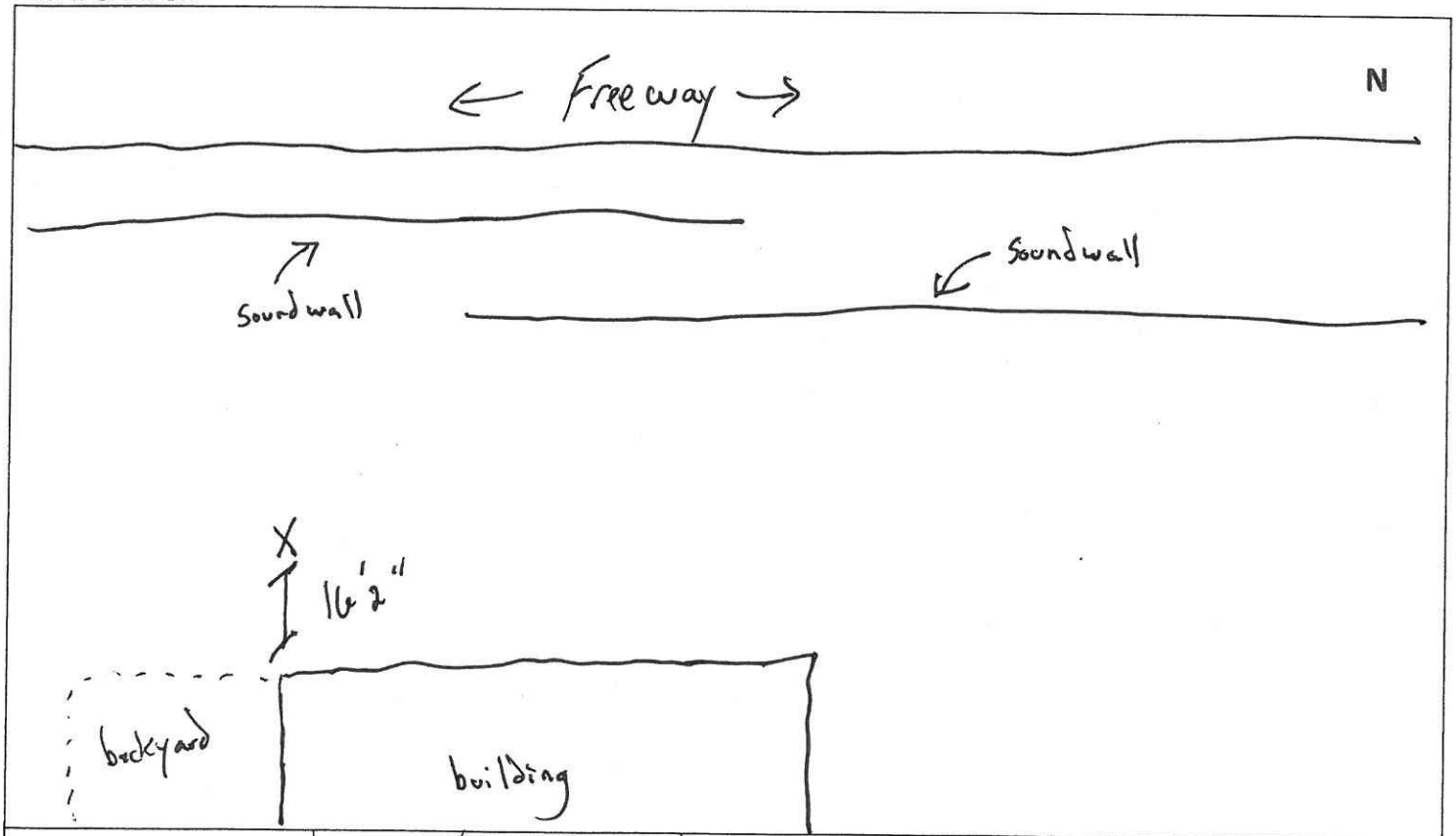
CALIBRATION: 114.0 at 1k Hz dB. Offset: -0.10 File: .024

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT TRAFFIC DATA		
ROAD (Name/Dir)	175 NB	175 SB
AUTOS	458	487
MED TRKS	22	23
HVY TRKS	38	60
BUS	0	0
MOTORCYCLE	0	1
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 62.5	

WEATHER DATA WIND SPEED (MPH) 4 DIR. SE TEMP 60 HUMIDITY 57% CLOUD COVER clear

BACKGROUND NOISE birds ; stream/running water (barely audible)

MAJOR SOURCES Traffic

UNUSUAL EVENTS

OTHER NOTES

FS-8

DRAFT

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	12:24	62.4		
2	12:25	63.7		
3	12:26	62.5		
4	12:27	61.6		
5	12:28	62.8		
6	12:29	62.3		
7	12:30	62.2		
8	12:31	59.5		
9	12:32	61.3		
10	12:33	63.5		
11	12:34	64.0		
12	12:35	61.4		
13	12:36	62.0		
14	12:37	63.1		
15	12:38	62.9		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)		
AUTOS		
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		
SPEED		

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mostus

SITE: FS-9 DATE: 11/2/2022 TIME: 9:54 am

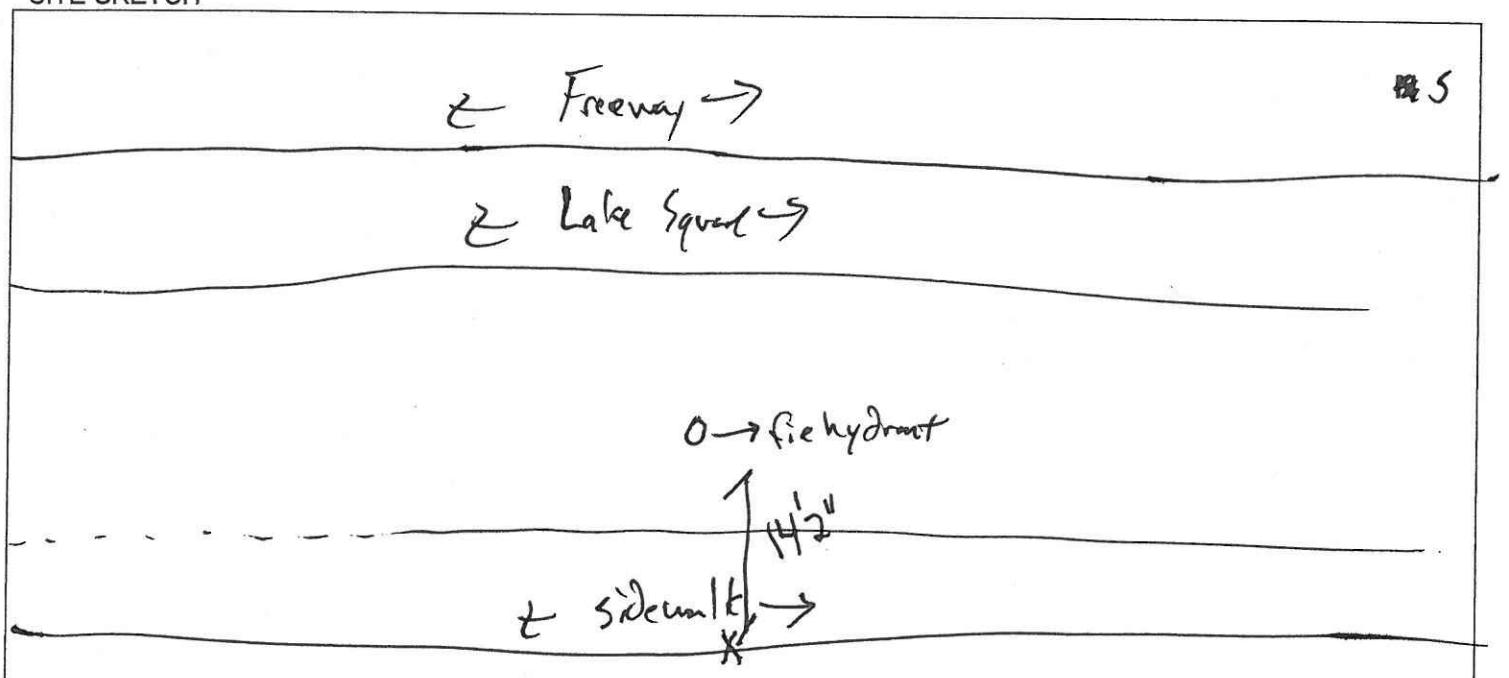
CALIBRATION: 114.0 at 1k Hz dB. Offset: 0.00 File: .020

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	175 NB	175 SB
AUTOS	371	445
MED TRKS	21	18
HVY TRKS	47	39
BUS	0	0
MOTORCYCLE	0	0
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 71.1	

WEATHER DATA WIND SPEED (MPH) 20 DIR. WNW TEMP. 70 HUMIDITY 87 CLOUD COVER clear

BACKGROUND NOISE birds

MAJOR SOURCES Traffic on I-75 / Square Lake

UNUSUAL EVENTS

OTHER NOTES

FS-9

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	9:55	72.5		
2	9:56	70.4		
3	9:57	70.8		
4	9:58	70.9		
5	9:59	70.9		
6	10:00	71.7		
7	10:01	70.5		
8	10:02	73.2		loud truck on I-75
9	10:03	71.8		
10	10:04	70.9		
11	10:05	68.0		
12	10:06	67.4		
13	10:07	67.8		
14	10:08	71.9		
15	10:09	73.4		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	SQUARE LAKE EB	SQUARE LAKE WB
AUTOS	34	34
MED TRKS	0	0
HVY TRKS	0	0
BUS	0	0
MOTORCYCLE	0	0
SPEED	45	45

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mostrus

SITE: FS-10 DATE: 11/2/2022 TIME: 11:23 am

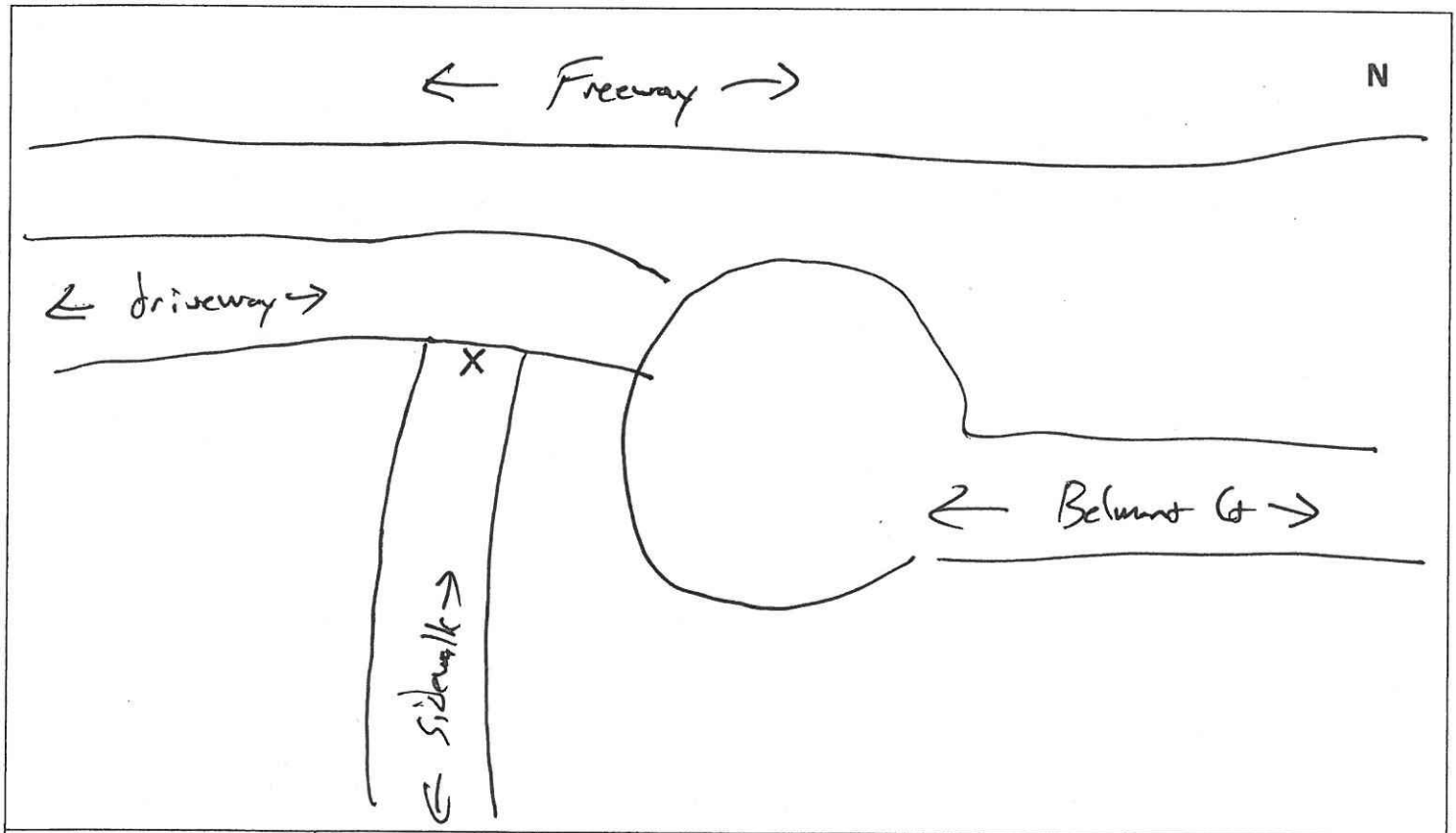
CALIBRATION: 114.0 at 1k Hz dB. Offset: + ~~.04~~ .01 File: .022

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT TRAFFIC DATA		
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	409	462
MED TRKS	11	19
HVY TRKS	45	40
BUS	1	1
MOTORCYCLE	0	0
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 61.5	

WEATHER DATA WIND SPEED (MPH) 2\ DIR. NNE TEMP. 80 HUMIDITY 69% CLOUD COVER clear

BACKGROUND NOISE birds

MAJOR SOURCES Traffic on I-75

UNUSUAL EVENTS

OTHER NOTES

FS-10

DRAFT

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	11:24	60.6		
2	11:25	60.9		
3	11:26	62.4		
4	11:27	61.4		
5	11:28	59.7		
6	11:29	63.5		loud vehicle on freeway
7	11:30	59.6		
8	11:31	60.7		
9	11:32	62.6		
10	11:33	62.2		
11	11:34	59.8		
12	11:35	60.7		
13	11:36	61.9		
14	11:37	62.8		
15	11:38	61.6		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)		
AUTOS		
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		
SPEED		

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Mastrus

SITE: FS-11 DATE: 11/2/2022 TIME: 11:51

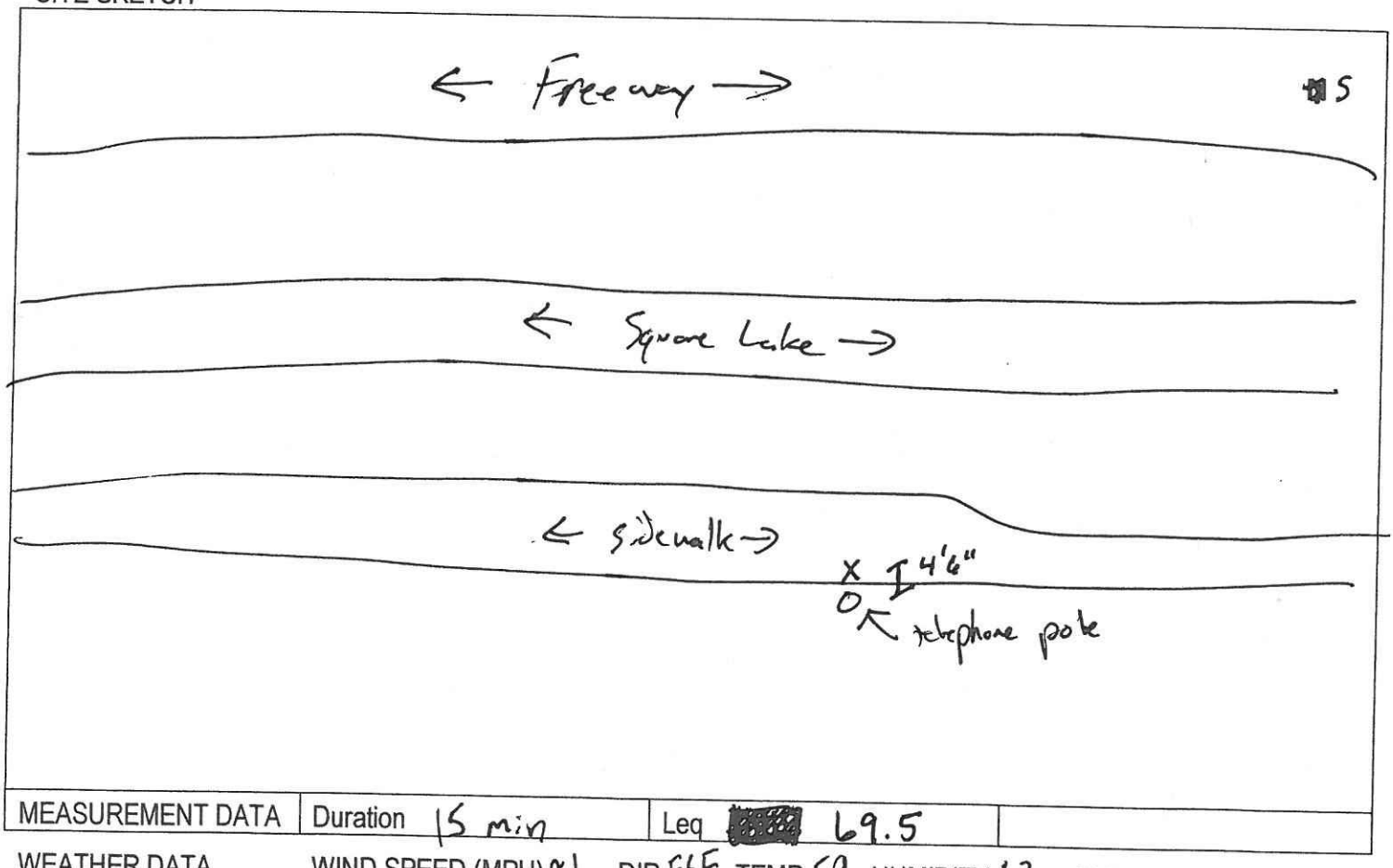
CALIBRATION: 114.0 at 1k Hz dB. Offset: 0.00 File: ,023

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I-75 NB	I75 SB
AUTOS	409	477
MED TRKS	18	20
HVY TRKS	50	60
BUS	~~0~~	1
MOTORCYCLE	~~0~~	~~0~~
SPEED	~~70~~	~~70~~

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq [redacted] 69.5	

WEATHER DATA WIND SPEED (MPH) ≈1 DIR. ESE TEMP. 59 HUMIDITY 63 CLOUD COVER Clear

BACKGROUND NOISE

MAJOR SOURCES Traffic from I-75/ Square Lake

UNUSUAL EVENTS

OTHER NOTES

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	11:52	70.7		
2	11:53	69.8		
3	11:54	69.0		
4	11:55	70.5		
5	11:56	70.0		
6	11:57	69.3		
7	11:58	71.1		
8	11:59	69.2		
9	12:00	70.6		
10	12:01	66.9		
11	12:02	68.2		
12	12:03	67.5		
13	12:04	69.1		
14	12:05	69.4		
15	12:06	69.5		heavy truck passby on Square Lake
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	EB SQUARE LAKE	WB SQUARE LAKE
AUTOS	41	49
MED TRKS	3	1
HVY TRKS	1	
BUS		
MOTORCYCLE		
SPEED		

DRAFT

HNTB

NOISE MEASUREMENT DATA SHEET

PROJECT: I-75 Oakland JOB #: 83608 BY: Eric Moskus

SITE: FS-12 DATE: 11/2/2022 TIME: ~~10:55~~ 10:47

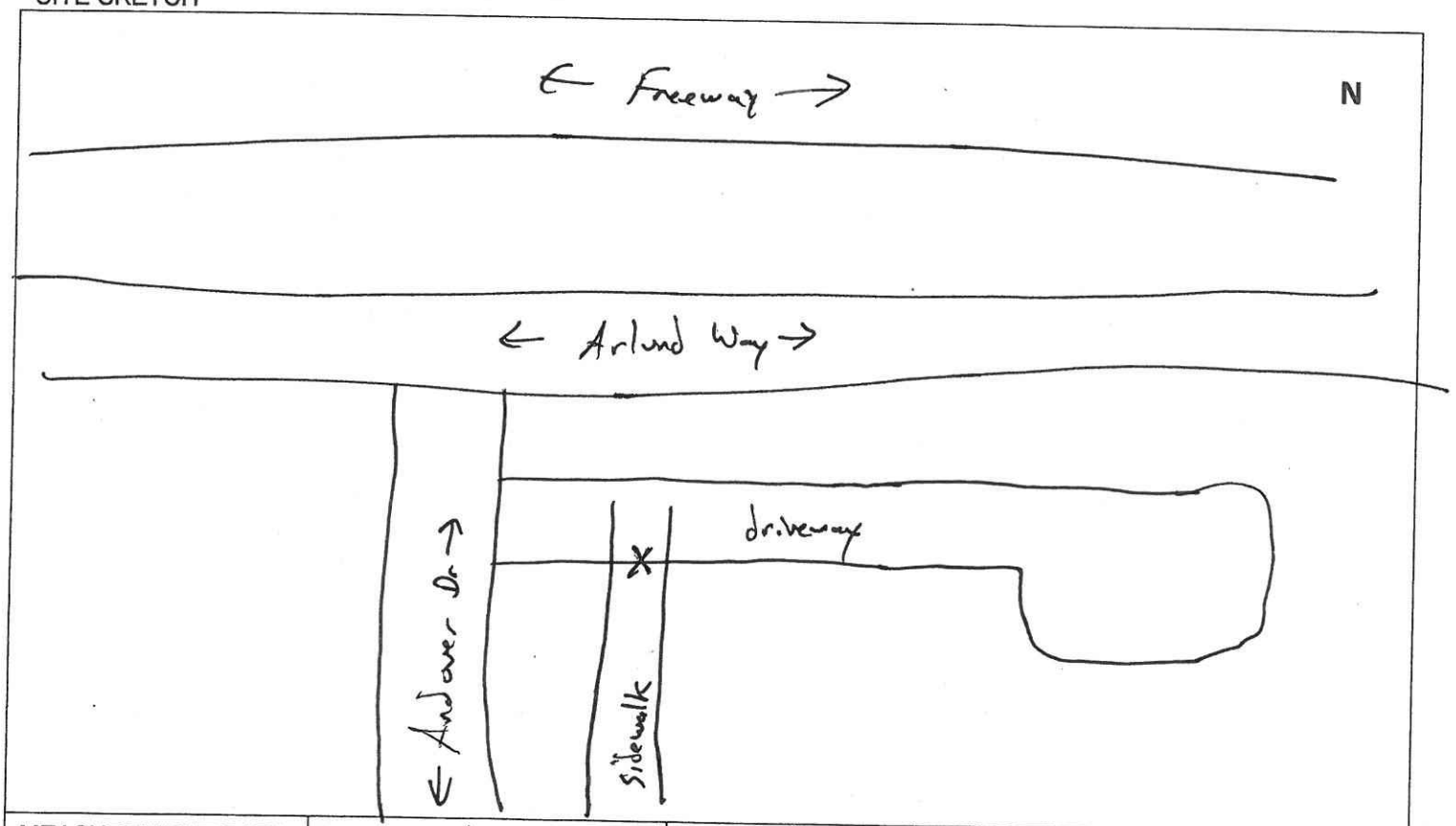
CALIBRATION: 114.0 at 1k Hz dB. Offset: File: .021

RESPONSE: FAST / SLOW WEIGHTING: A / C / LIN.

RAW COUNT	TRAFFIC DATA	
ROAD (Name/Dir)	I-75 NB	I-75 SB
AUTOS	384	507
MED TRKS	17	16
HVY TRKS	52	50
BUS	2	0
MOTORCYCLE	0	1
SPEED	70	70

EQUIPMENT	
INSTRUMENT	
SLM MANUFACTURER	Larson Davis
SLM MODEL	LxT SE
SLM	S / N 0006277
PREAMPLIFIER – PRMLxT1L	S / N 069992
MICROPHONE – PCB 377B02	S / N 325784
CALIBRATOR – CAL200	S / N 17856

SITE SKETCH



MEASUREMENT DATA	Duration 15 min	Leq 64.8	

WEATHER DATA WIND SPEED (MPH) ≈0 DIR. W TEMP. 65 HUMIDITY 78 CLOUD COVER clear

BACKGROUND NOISE

MAJOR SOURCES Traffic on I-75

UNUSUAL EVENTS

OTHER NOTES

FS-12

#	1 Minute Period Starting	Meas'd Leq (dBA)	√ or X	Comments
1	10:48	65.6		
2	10:49	~~64~~ 64.8		
3	10:50	66.6		
4	10:51	65.8		
5	10:52	64.5		
6	10:53	64.8		
7	10:54	63.3		
8	10:55	63.5		
9	10:56	65.6		
10	10:57	64.6		
11	10:58	64.2		
12	10:59	64.3		
13	~~11~~ 11:00	64.5		
14	11:01	64.3		
15	11:02	63.9		
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				
27				
28				
29				
30				

TOTAL Leq =

√ = Other sources contributed to Leq X = Exclude period - contaminated by non-characteristic sources

TRAFFIC DATA (Local Roads)		
ROAD (Name/Dir)	EB ARUNDWAY	WB ARUNDWAY
AUTOS	6	11
MED TRKS		
HVY TRKS		
BUS		
MOTORCYCLE		
SPEED		

APPENDIX C: Impact Analysis Results, dB(A) $L_{eq(1h)}$

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
CNE 7								
R-7-1	Residential	B	66	4	64	64	0	N
R-7-2	Residential	B	66	4	64	65	0	N
R-7-3	Residential	B	66	4	59	60	0	N
R-7-4	Residential	B	66	4	58	58	0	N
R-7-5	Residential	B	66	4	57	57	0	N
R-7-6	Residential	B	66	4	62	62	0	N
R-7-7	Residential	B	66	4	56	56	0	N
R-7-8	Residential	B	66	4	60	61	0	N
R-7-9	Residential	B	66	4	62	62	0	N
R-7-10	Residential	B	66	4	54	54	0	N
R-7-11	Residential	B	66	4	61	61	0	N
R-7-12	Residential	B	66	4	56	56	0	N
R-7-13	Residential	B	66	4	61	61	0	N
R-7-14	Residential	B	66	4	62	63	0	N
R-7-15	Residential	B	66	4	54	55	0	N
R-7-16	Residential	B	66	4	63	63	0	N
R-7-17	Residential	B	66	6	56	56	0	N
R-7-18	Residential	B	66	6	56	56	0	N
R-7-19	Residential	B	66	4	64	64	0	N
R-7-20	Residential	B	66	4	62	62	0	N
R-7-21	Residential	B	66	4	64	64	0	N
R-7-22	Residential	B	66	4	56	56	0	N
R-7-23	Residential	B	66	4	57	57	0	N
R-7-24	Residential	B	66	4	55	56	0	N
R-7-25	Residential	B	66	4	64	64	0	N
R-7-26	Lamphere High School Tennis Courts	C	66	1	54	55	0	N
R-7-27	Residential	B	66	6	57	58	0	N
R-7-28	Residential	B	66	4	64	64	0	N
R-7-29	Residential	B	66	4	56	56	0	N
R-7-30	Residential	B	66	4	58	58	0	N

Boldface indicates noise levels that approach, equal, or exceed the NAC and create an impact with the future year.

^ For receivers behind existing barriers, the future year noise level (NL) is the future **with barrier** noise level.

* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-7-31	Residential	B	66	4	63	64	0	N
R-7-32	Lamphere High School Baseball Field	C	66	1	55	55	0	N
R-7-33	Residential	B	66	4	65	65	0	N
R-7-34	Residential	B	66	4	56	56	0	N
R-7-35	Residential	B	66	4	57	57	0	N
R-7-36	Residential	B	66	4	55	56	0	N
R-7-37	Residential	B	66	4	65	65	0	N
R-7-38	Residential	B	66	4	57	57	0	N
R-7-39	Residential	B	66	4	58	58	0	N
R-7-40	Residential	B	66	4	64	64	0	N
R-7-41	Residential	B	66	4	64	65	0	N
R-7-42	Residential	B	66	4	56	56	0	N
R-7-43	Lamphere High School Track	C	66	1	54	55	0	N
R-7-44	Residential	B	66	4	58	58	0	N
R-7-45	Residential	B	66	4	56	57	0	N
R-7-46	Residential	B	66	4	56	56	0	N
R-7-47	Residential	B	66	4	59	59	0	N
R-7-48	Residential	B	66	4	64	64	0	N
R-7-49	Lamphere High School Baseball Field	C	66	1	55	55	0	N
R-7-50	Residential	B	66	4	64	64	0	N
R-7-51	Residential	B	66	4	56	56	0	N
R-7-52	Residential	B	66	4	56	56	0	N
R-7-53	Residential	B	66	4	56	56	0	N
R-7-54	Residential	B	66	4	64	65	0	N
R-7-55	Residential	B	66	4	63	63	0	N
R-7-56	Residential	B	66	4	62	62	0	N
R-7-57	Residential	B	66	4	57	57	0	N
R-7-58	Residential	B	66	4	65	65	0	N
R-7-59	Residential	B	66	4	55	55	0	N
R-7-60	Residential	B	66	4	65	65	0	N

Boldface indicates noise levels that approach, equal, or exceed the NAC and create an impact with the future year.

^ For receivers behind existing barriers, the future year noise level (NL) is the future **with barrier** noise level.

* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-7-61	Residential	B	66	4	53	53	0	N
R-7-62	Residential	B	66	4	54	54	0	N
R-7-63	Residential	B	66	4	57	57	0	N
R-7-64	Residential	B	66	4	62	62	0	N
R-7-65	Residential	B	66	4	58	58	0	N
R-7-66	Residential	B	66	4	62	62	0	N
R-7-67	Residential	B	66	12	54	54	0	N
R-7-68	Residential	B	66	4	53	53	0	N
R-7-69	Residential	B	66	4	55	55	0	N
R-7-70	Residential	B	66	4	54	54	0	N
R-7-71	Residential	B	66	4	65	65	0	N
R-7-72	Residential	B	66	4	54	54	0	N
R-7-73	Residential	B	66	4	55	55	0	N
R-7-74	Residential	B	66	4	65	65	0	N
R-7-75	Residential	B	66	4	58	58	0	N
R-7-76	Residential	B	66	8	54	54	0	N
R-7-77	Residential	B	66	4	62	62	0	N
R-7-78	Residential	B	66	8	55	54	0	N
R-7-79	Residential	B	66	4	62	62	0	N
R-7-80	Residential	B	66	4	59	58	0	N
R-7-81	Residential	B	66	8	55	55	0	N
R-7-82	Residential	B	66	4	64	65	0	N
R-7-83	Residential	B	66	4	57	57	0	N
R-7-84	Residential	B	66	4	54	54	0	N
R-7-85	Residential	B	66	4	56	56	0	N
R-7-86	**Residential**	**B**	**66**	**4**	**66**	**66**	**0**	**Y**
R-7-87	Residential	B	66	4	57	57	0	N
R-7-88	Residential	B	66	4	59	59	0	N
R-7-89	Residential	B	66	4	62	62	0	N
R-7-90	Residential	B	66	4	64	64	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-7-91	Hampton Inn Pool	E	71	1	49	49	0	N
R-7-92	Hampton Inn Picnic Table	E	71	1	64	64	0	N
R-7-93	Residence Inn by Marriott Pool	E	71	1	55	55	0	N
R-7-94	Residence Inn by Marriott Tennis Court	E	71	1	57	57	0	N
R-7-95	Baymont by Wyndahm Pool	E	71	1	60	61	0	N
CNE 8								
R-8-1	Office	E	71	1	63	63	0	N
R-8-2	Office	E	71	1	69	69	0	N
R-8-3	Office	E	71	1	67	67	0	N
R-8-4	Holiday Inn Express & Suites Patio	E	71	1	66	66	0	N
R-8-5	**Office**	**E**	**71**	**1**	**76**	**77**	**0**	**Y**
R-8-6	**Office**	**E**	**71**	**1**	**70**	**71**	**0**	**Y**
R-8-7	Office	E	71	1	68	68	0	N
R-8-8	Patio	E	71	1	61	61	0	N
R-8-9	**Office**	**E**	**71**	**1**	**74**	**74**	**0**	**Y**
R-8-10	Tru By Hilton Courtyard	E	71	1	52	53	1	N
R-8-11	Courtyard by Marriott Courtyard	E	71	1	54	54	0	N
R-8-12	Residential	B	66	1	62	62	0	N
R-8-13	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-14	Residential	B	66	1	62	62	0	N
R-8-15	Residential	B	66	1	62	62	0	N
R-8-16	Residential	B	66	1	63	64	0	N
R-8-17	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-8-18	Residential	B	66	3	57	57	0	N
R-8-19	Residential	B	66	4	58	58	0	N
R-8-20	Residential	B	66	3	59	60	0	N
R-8-21	Residential	B	66	1	61	62	0	N
R-8-22	Residential	B	66	1	64	64	0	N
R-8-23	Residential	B	66	1	62	63	0	N
R-8-24	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**

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* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-8-25	Residential	B	66	1	61	61	0	N
R-8-26	Residential	B	66	1	64	64	0	N
R-8-27	Residential	B	66	14	58	59	0	N
R-8-28	Residential	B	66	1	60	61	0	N
R-8-29	Residential	B	66	1	65	65	0	N
R-8-30	Residential	B	66	1	63	63	0	N
R-8-31	**Troy Villa Outdoor Use**	**C**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-32	Residential	B	66	1	59	59	0	N
R-8-33	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-34	Residential	B	66	1	64	64	0	N
R-8-35	Residential	B	66	5	57	57	0	N
R-8-36	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-8-37	Residential	B	66	1	58	58	0	N
R-8-38	Residential	B	66	1	63	64	0	N
R-8-39	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-8-40	Residential	B	66	1	62	62	0	N
R-8-41	Residential	B	66	1	58	59	0	N
R-8-42	Residential	B	66	3	58	58	0	N
R-8-43	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-8-44	**Troy Villa Basketball Court**	**C**	**66**	**1**	**67**	**67**	**0**	**Y**
R-8-45	Residential	B	66	1	63	63	0	N
R-8-46	Residential	B	66	6	58	58	0	N
R-8-47	Residential	B	66	9	58	58	0	N
R-8-48	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-8-49	Residential	B	66	1	59	59	0	N
R-8-50	Residential	B	66	1	62	62	0	N
R-8-51	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-52	Residential	B	66	1	60	61	0	N
R-8-53	Residential	B	66	6	59	59	0	N
R-8-54	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-8-55	**Troy Villa Patio**	**C**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-56	Residential	B	66	1	65	65	0	N
R-8-57	Residential	B	66	1	60	60	0	N
R-8-58	Residential	B	66	1	56	56	0	N
R-8-59	Residential	B	66	1	61	62	0	N
R-8-60	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-61	Residential	B	66	6	61	61	0	N
R-8-62	Residential	B	66	6	60	60	0	N
R-8-63	Residential	B	66	6	60	60	0	N
R-8-64	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-65	Residential	B	66	1	59	59	0	N
R-8-66	**Troy Villa Picnic Table**	**C**	**66**	**1**	**67**	**67**	**0**	**Y**
R-8-67	Residential	B	66	1	62	62	0	N
R-8-68	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-69	Residential	B	66	1	62	62	0	N
R-8-70	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-71	Residential	B	66	6	59	59	0	N
R-8-72	**Troy Villa Outdoor Use**	**C**	**66**	**1**	**66**	**66**	**0**	**Y**
R-8-73	Residential	B	66	3	61	62	0	N
R-8-74	Residential	B	66	4	60	60	0	N
R-8-75	Residential	B	66	3	61	61	0	N
R-8-76	Residential	B	66	1	64	64	0	N
R-8-77	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-8-78	Residential	B	66	1	65	65	0	N
R-8-79	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-8-80	Residential	B	66	5	56	57	1	N
R-8-81	Permitted SpringHill Suites	E	71	1	64	64	1	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
CNE 9								
R-9-1	**Residential**	**B**	**66**	**3**	**67**	**67**	**0**	**Y**
R-9-2	Residential	B	66	2	65	65	0	N
R-9-3	Residential	B	66	3	57	57	0	N
R-9-4	Residential	B	66	1	59	59	0	N
R-9-5	Residential	B	66	2	62	62	0	N
R-9-6	Residential	B	66	1	61	61	0	N
R-9-7	Residential	B	66	1	60	60	0	N
R-9-8	Residential	B	66	1	61	62	0	N
R-9-9	Residential	B	66	1	61	61	0	N
R-9-10	Residential	B	66	5	59	60	0	N
R-9-11	Residential	B	66	1	61	61	0	N
R-9-12	Residential	B	66	1	62	62	0	N
R-9-13	Residential	B	66	1	61	62	0	N
R-9-14	Residential	B	66	1	62	62	0	N
R-9-15	Residential	B	66	5	60	60	0	N
R-9-16	Residential	B	66	1	63	63	0	N
R-9-17	Residential	B	66	1	64	64	0	N
R-9-18	Residential	B	66	1	65	65	0	N
R-9-19	Residential	B	66	1	64	64	0	N
R-9-20	Residential	B	66	5	61	62	0	N
R-9-21	Residential	B	66	1	64	65	0	N
R-9-22	Residential	B	66	1	65	65	0	N
R-9-23	Residential	B	66	3	62	63	0	N
R-9-24	Residential	B	66	1	58	59	0	N
R-9-25	Residential	B	66	6	56	56	0	N
R-9-26	**Residential**	**B**	**66**	**6**	**66**	**66**	**0**	**Y**
R-9-27	Residential	B	66	6	57	57	0	N
R-9-28	Residential	B	66	20	53	53	0	N
R-9-29	Residential	B	66	18	55	55	0	N
R-9-30	Residential	B	66	6	58	59	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-9-31	**Residential**	**B**	**66**	**6**	**66**	**66**	**0**	**Y**
R-9-32	Residential	B	66	6	59	59	0	N
R-9-33	Residential	B	66	3	54	54	0	N
R-9-34	Residential	B	66	3	60	61	0	N
R-9-35	Charter Square Apartments Pool	C	66	1	54	54	0	N
R-9-36	Residential	B	66	3	57	57	0	N
R-9-37	Residential	B	66	4	62	62	0	N
R-9-38	Residential	B	66	6	57	57	0	N
R-9-39	**Residential**	**B**	**66**	**6**	**66**	**67**	**0**	**Y**
R-9-40	Residential	B	66	18	55	56	0	N
R-9-41	Residential	B	66	6	59	59	0	N
R-9-42	Residential	B	66	20	52	52	0	N
R-9-43	**Residential**	**B**	**66**	**6**	**67**	**67**	**0**	**Y**
R-9-44	Residential	B	66	6	59	59	0	N
R-9-45	Residential	B	66	6	58	59	0	N
R-9-46	Residential	B	66	12	55	55	0	N
R-9-47	**Residential**	**B**	**66**	**6**	**68**	**68**	**0**	**Y**
R-9-48	Residential	B	66	6	64	65	0	N
R-9-49	**Residential**	**B**	**66**	**4**	**67**	**67**	**0**	**Y**
R-9-50	**Residential**	**B**	**66**	**3**	**66**	**67**	**0**	**Y**
R-9-51	Quality Inn Pool	E	71	1	47	47	0	N
R-9-52	Residential	B	66	3	58	58	0	N
R-9-53	Residential	B	66	2	62	62	0	N
R-9-54	Residential	B	66	6	65	65	0	N
R-9-55	Residential	B	66	2	59	60	0	N
R-9-56	Residential	B	66	2	64	65	0	N
R-9-57	Residential	B	66	2	64	64	0	N
R-9-58	Residential	B	66	6	62	62	0	N
R-9-59	**Residential**	**B**	**66**	**2**	**67**	**67**	**0**	**Y**
R-9-60	Residential	B	66	2	56	56	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-9-61	Residential	B	66	1	59	59	0	N
R-9-62	Residential	B	66	2	58	58	0	N
R-9-63	Residential	B	66	2	58	58	0	N
R-9-64	Residential	B	66	2	57	57	0	N
R-9-65	Residential	B	66	1	60	60	0	N
R-9-66	**Residential**	**B**	**66**	**2**	**66**	**66**	**0**	**Y**
R-9-67	Residential	B	66	2	60	61	0	N
R-9-68	Residential	B	66	6	54	54	0	N
R-9-69	Residential	B	66	2	57	57	0	N
R-9-70	Residential	B	66	2	64	64	0	N
R-9-71	**Residential**	**B**	**66**	**3**	**69**	**69**	**0**	**Y**
R-9-72	Residential	B	66	2	53	53	0	N
R-9-73	Residential	B	66	3	56	56	0	N
R-9-74	Residential	B	66	2	54	54	0	N
R-9-75	Residential	B	66	1	56	57	0	N
R-9-76	Residential	B	66	2	55	55	0	N
R-9-77	Residential	B	66	2	53	52	0	N
R-9-78	Residential	B	66	3	64	64	0	N
R-9-79	Residential	B	66	3	55	55	0	N
R-9-80	**Residential**	**B**	**66**	**2**	**69**	**69**	**0**	**Y**
R-9-81	Residential	B	66	2	57	58	0	N
R-9-82	Residential	B	66	2	53	53	0	N
R-9-83	Residential	B	66	3	56	56	0	N
R-9-84	Residential	B	66	2	64	64	0	N
R-9-85	**Residential**	**B**	**66**	**2**	**68**	**68**	**0**	**Y**
R-9-86	Residential	B	66	2	53	53	0	N
R-9-87	Residential	B	66	2	55	55	0	N
R-9-88	Residential	B	66	6	56	56	0	N
R-9-89	Residential	B	66	2	58	58	0	N
R-9-90	Residential	B	66	2	61	61	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-9-91	Residential	B	66	2	64	64	0	N
R-9-92	Residential	B	66	2	54	54	0	N
R-9-93	Residential	B	66	1	56	56	0	N
R-9-94	The Gables of Troy Playground	C	66	4	64	64	0	N
R-9-95	Residential	B	66	2	53	52	0	N
R-9-96	Residential	B	66	1	55	55	0	N
R-9-97	The Gables of Troy Tennis Court	C	66	2	64	65	0	N
R-9-98	The Gables of Troy Pool	C	66	6	53	53	0	N
R-9-99	Residential	B	66	3	54	55	0	N
R-9-100	**Residential**	**B**	**66**	**2**	**66**	**66**	**0**	**Y**
R-9-101	Residential	B	66	2	63	64	0	N
R-9-102	Residential	B	66	6	51	51	0	N
R-9-103	Residential	B	66	3	54	54	0	N
R-9-104	Residential	B	66	2	49	49	0	N
R-9-105	**Residential**	**B**	**66**	**2**	**67**	**67**	**0**	**Y**
R-9-106	Residential	B	66	2	47	47	0	N
R-9-107	Residential	B	66	2	64	64	0	N
R-9-108	Residential	B	66	1	57	57	0	N
R-9-109	Residential	B	66	1	55	56	0	N
R-9-110	Residential	B	66	1	62	62	0	N
R-9-111	Residential	B	66	1	60	60	0	N
R-9-112	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-9-113	Residential	B	66	1	64	64	0	N
R-9-114	Residential	B	66	1	60	61	0	N
R-9-115	Residential	B	66	1	58	58	0	N
R-9-116	Residential	B	66	1	63	64	0	N
R-9-117	Residential	B	66	1	61	61	0	N
R-9-118	Residential	B	66	3	53	53	0	N
R-9-119	Residential	B	66	2	50	50	0	N
R-9-120	Residential	B	66	2	47	47	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-9-121	Residential	B	66	2	61	61	0	N
R-9-122	Residential	B	66	2	59	59	0	N
R-9-123	Residential	B	66	3	53	53	0	N
R-9-124	Residential	B	66	9	53	53	0	N
R-9-125	Residential	B	66	1	58	58	0	N
R-9-126	Residential	B	66	1	60	60	0	N
R-9-127	Residential	B	66	1	60	61	0	N
R-9-128	Residential	B	66	1	63	63	0	N
R-9-129	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-9-130	Residential	B	66	1	64	64	0	N
R-9-131	Residential	B	66	1	55	55	0	N
R-9-132	Residential	B	66	1	56	57	0	N
R-9-133	Residential	B	66	1	59	59	0	N
R-9-134	Residential	B	66	1	61	61	0	N
R-9-135	Residential	B	66	3	54	53	0	N
R-9-136	Residential	B	66	2	51	51	0	N
R-9-137	Residential	B	66	2	47	47	0	N
R-9-138	**Residential**	**B**	**66**	**2**	**66**	**66**	**0**	**Y**
R-9-139	Residential	B	66	2	63	63	0	N
R-9-140	Residential	B	66	2	55	55	0	N
R-9-141	Residential	B	66	1	53	53	0	N
R-9-142	Residential	B	66	2	58	58	0	N
R-9-143	Residential	B	66	1	56	57	0	N
R-9-144	Residential	B	66	3	54	54	0	N
R-9-145	Residential	B	66	1	63	63	0	N
R-9-146	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-9-147	Residential	B	66	2	60	60	0	N
R-9-148	Residential	B	66	1	57	57	0	N
R-9-149	Residential	B	66	2	62	62	0	N
R-9-150	Residential	B	66	1	60	60	0	N

Boldface indicates noise levels that approach, equal, or exceed the NAC and create an impact with the future year.

^ For receivers behind existing barriers, the future year noise level (NL) is the future **with barrier** noise level.

* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-9-151	Residential	B	66	3	55	55	0	N
R-9-152	Residential	B	66	6	53	54	0	N
R-9-153	Residential	B	66	1	57	58	0	N
R-9-154	Residential	B	66	1	60	60	0	N
R-9-155	Residential	B	66	1	60	61	0	N
R-9-156	Residential	B	66	1	62	63	0	N
R-9-157	Residential	B	66	1	65	65	0	N
R-9-158	Residential	B	66	1	63	63	0	N
R-9-159	Residential	B	66	1	57	57	0	N
R-9-160	Residential	B	66	1	59	59	0	N
R-9-161	Residential	B	66	1	59	60	0	N
R-9-162	Residential	B	66	1	61	62	0	N
R-9-163	Residential	B	66	3	52	52	0	N
R-9-164	Residential	B	66	2	49	49	0	N
R-9-165	Residential	B	66	2	45	45	0	N
R-9-166	Residential	B	66	2	60	60	0	N
R-9-167	Residential	B	66	2	58	58	0	N
R-9-168	Residential	B	66	5	54	54	0	N
R-9-169	Residential	B	66	1	57	57	0	N
R-9-170	Residential	B	66	1	58	58	0	N
R-9-171	Residential	B	66	3	53	54	0	N
R-9-172	Residential	B	66	1	59	59	0	N
R-9-173	Residential	B	66	1	61	61	0	N
R-9-174	Residential	B	66	1	64	64	0	N
R-9-175	Residential	B	66	1	61	62	0	N
R-9-176	Residential	B	66	1	57	57	0	N
R-9-177	Residential	B	66	1	58	58	0	N
R-9-178	Residential	B	66	1	54	54	0	N
R-9-179	Residential	B	66	1	57	57	0	N
R-9-180	Residential	B	66	4	56	56	0	N

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* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-9-181	Residential	B	66	4	55	55	0	N
R-9-182	Residential	B	66	2	63	63	0	N
R-9-183	Residential	B	66	2	54	54	0	N
R-9-184	Residential	B	66	4	65	65	0	N
R-9-185	Residential	B	66	4	58	59	0	N
R-9-186	Residential	B	66	4	55	55	0	N
R-9-187	Residential	B	66	4	55	55	0	N
R-9-188	Residential	B	66	3	55	55	0	N
R-9-189	Residential	B	66	4	56	56	0	N
R-9-190	Residential	B	66	4	56	56	0	N
R-9-191	Residential	B	66	4	51	51	0	N
R-9-192	Residential	B	66	4	63	63	0	N
R-9-193	Residential	B	66	4	55	56	0	N
R-9-194	Residential	B	66	4	65	65	0	N
R-9-195	Residential	B	66	5	54	54	0	N
R-9-196	Residential	B	66	8	50	50	0	N
R-9-197	Residential	B	66	8	50	50	0	N
R-9-198	Residential	B	66	8	50	50	0	N
R-9-199	Residential	B	66	8	50	50	0	N
R-9-200	Residential	B	66	2	55	56	0	N
R-9-201	Residential	B	66	4	50	50	0	N
R-9-202	Residential	B	66	4	63	64	0	N
R-9-203	Residential	B	66	4	55	55	0	N
R-9-204	Residential	B	66	4	65	65	0	N
R-9-205	Residential	B	66	4	54	55	0	N
R-9-206	Residential	B	66	4	56	56	0	N
R-9-207	The Alcove Troy Tennis Court	C	66	2	54	54	0	N
R-9-208	Residential	B	66	4	50	51	0	N
R-9-209	Residential	B	66	4	64	65	0	N
R-9-210	Residential	B	66	4	55	55	0	N

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* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-9-211	**Residential**	**B**	**66**	**4**	**66**	**66**	**0**	**Y**
R-9-212	Residential	B	66	2	58	58	0	N
R-9-213	Residential	B	66	1	57	57	0	N
R-9-214	The Alcove Troy Pool	C	66	5	57	57	0	N
R-9-215	Residential	B	66	4	57	57	0	N
R-9-216	Residential	B	66	4	54	55	0	N
R-9-217	Residential	B	66	3	59	59	0	N
R-9-218	Residential	B	66	4	58	59	0	N
R-9-219	Residential	B	66	2	64	64	0	N
R-9-220	**Residential**	**B**	**66**	**4**	**69**	**69**	**0**	**Y**
R-9-221	**Residential**	**B**	**66**	**4**	**66**	**67**	**0**	**Y**
R-9-222	**Residential**	**B**	**66**	**4**	**70**	**70**	**0**	**Y**
R-9-223	**Residential**	**B**	**66**	**4**	**68**	**68**	**0**	**Y**
CNE 10								
R-10-1	CJ Mahoney's Sports Grille	E	71	1	63	64	0	N
R-10-2	Office	E	71	1	64	64	0	N
R-10-3	**Residential**	**B**	**66**	**1**	**68**	**68**	**0**	**Y**
R-10-4	**Residential**	**B**	**66**	**1**	**68**	**68**	**0**	**Y**
R-10-5	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-10-6	Residential	B	66	1	61	62	0	N
R-10-7	Office	E	71	1	59	59	0	N
R-10-8	Drury Inn & Suites Patio	E	71	1	69	69	0	N
R-10-9	Granite City Food 7 Brewery	E	71	1	62	62	0	N
R-10-10	Carrabba's Italian Grill	E	71	1	61	61	0	N
R-10-11	Hampton Inn & Suites Patio	E	71	1	58	58	0	N
R-10-12	Hilton Garden Inn Patio	E	71	1	57	58	0	N
R-10-13	Hilton Garden Inn Patio	E	71	1	62	62	0	N
R-10-14	Office	E	71	1	59	59	0	N
R-10-15	Oakland County District Court	C	66	1	56	57	1	N
R-10-16	Troy Aquatic Center	C	66	1	57	57	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-10-17	Phillip J Huber Park	C	66	1	65	65	0	N
R-10-18	Residential	B	66	1	59	59	0	N
R-10-19	Residential	B	66	1	61	62	0	N
R-10-20	Residential	B	66	1	57	58	0	N
R-10-21	Residential	B	66	1	56	56	0	N
R-10-22	Residential	B	66	1	55	55	0	N
R-10-23	Residential	B	66	1	59	59	0	N
R-10-24	Residential	B	66	1	62	62	0	N
R-10-25	Residential	B	66	1	55	55	0	N
R-10-26	Residential	B	66	1	56	56	0	N
R-10-27	Residential	B	66	1	57	57	0	N
R-10-28	Residential	B	66	1	63	63	0	N
R-10-29	Residential	B	66	1	58	58	0	N
R-10-30	Residential	B	66	1	56	56	0	N
R-10-31	Residential	B	66	1	55	56	0	N
R-10-32	Residential	B	66	1	55	55	0	N
R-10-33	Residential	B	66	1	64	64	0	N
R-10-34	Residential	B	66	1	64	64	0	N
R-10-35	Residential	B	66	1	58	58	0	N
R-10-36	Residential	B	66	2	53	53	0	N
R-10-37	Residential	B	66	2	54	55	0	N
R-10-38	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-10-39	Residential	B	66	2	56	57	0	N
R-10-40	Residential	B	66	1	58	58	0	N
R-10-41	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-10-42	Residential	B	66	1	54	54	0	N
R-10-43	Residential	B	66	1	58	58	0	N
R-10-44	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-10-45	Residential	B	66	1	55	55	0	N
R-10-46	Residential	B	66	1	58	58	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-10-47	**Residential**	**B**	**66**	**1**	**68**	**68**	**0**	**Y**
R-10-48	Residential	B	66	1	59	59	0	N
R-10-49	Residential	B	66	1	56	56	0	N
R-10-50	Residential	B	66	1	54	54	0	N
R-10-51	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-10-52	Residential	B	66	1	58	59	0	N
R-10-53	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-10-54	Residential	B	66	1	58	58	0	N
R-10-55	Residential	B	66	1	54	54	0	N
R-10-56	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-10-57	Residential	B	66	1	58	59	0	N
R-10-58	Residential	B	66	1	56	56	0	N
R-10-59	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-10-60	Residential	B	66	1	59	59	0	N
R-10-61	Residential	B	66	1	55	55	0	N
R-10-62	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-10-63	Residential	B	66	1	59	60	0	N
R-10-64	**Residential**	**B**	**66**	**1**	**68**	**69**	**0**	**Y**
R-10-65	Residential	B	66	1	55	55	0	N
R-10-66	Residential	B	66	1	54	54	0	N
R-10-67	Residential	B	66	1	59	59	0	N
R-10-68	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-10-69	Residential	B	66	1	53	53	0	N
R-10-70	Residential	B	66	1	53	53	0	N
R-10-71	Residential	B	66	1	58	59	0	N
R-10-72	Residential	B	66	1	65	65	0	N
R-10-73	Residential	B	66	1	65	65	0	N
R-10-74	Residential	B	66	1	61	61	0	N
R-10-75	Residential	B	66	1	61	61	0	N
R-10-76	Residential	B	66	1	61	61	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-10-77	Residential	B	66	1	61	61	0	N
R-10-78	Residential	B	66	1	62	62	0	N
R-10-79	Residential	B	66	8	56	57	0	N
R-10-80	Residential	B	66	5	64	65	0	N
R-10-81	Residential	B	66	2	65	65	0	N
R-10-82	Residential	B	66	4	61	61	0	N
R-10-83	**Residential**	**B**	**66**	**2**	**66**	**66**	**0**	**Y**
R-10-84	Residential	B	66	4	57	57	0	N
R-10-85	Residential	B	66	4	54	54	0	N
R-10-86	**Residential**	**B**	**66**	**5**	**66**	**66**	**0**	**Y**
R-10-87	Residential	B	66	2	56	56	0	N
R-10-88	Residential	B	66	2	51	51	0	N
R-10-89	Residential	B	66	2	50	50	0	N
R-10-90	Residential	B	66	4	64	64	0	N
R-10-91	Residential	B	66	2	54	54	0	N
R-10-92	Residential	B	66	3	62	62	0	N
R-10-93	Residential	B	66	5	53	53	0	N
R-10-94	Residential	B	66	2	64	64	0	N
R-10-95	Residential	B	66	3	53	53	0	N
R-10-96	Residential	B	66	3	57	57	0	N
R-10-97	**Residential**	**B**	**66**	**3**	**66**	**66**	**0**	**Y**
R-10-98	Residential	B	66	2	53	53	0	N
R-10-99	Residential	B	66	3	50	50	0	N
R-10-100	Residential	B	66	2	59	59	0	N
R-10-101	Residential	B	66	2	65	65	0	N
R-10-102	Residential	B	66	2	54	54	0	N
R-10-103	Residential	B	66	2	59	60	0	N
R-10-104	Residential	B	66	3	64	64	0	N
R-10-105	Residential	B	66	2	56	56	0	N
R-10-106	Residential	B	66	4	52	52	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-10-107	Residential	B	66	2	60	60	0	N
R-10-108	Residential	B	66	4	61	61	0	N
R-10-109	Residential	B	66	2	53	53	0	N
R-10-110	Residential	B	66	2	53	53	0	N
R-10-111	Residential	B	66	2	63	63	0	N
R-10-112	Residential	B	66	3	55	55	0	N
R-10-113	Residential	B	66	4	64	64	0	N
R-10-114	**Residential**	**B**	**66**	**2**	**66**	**66**	**0**	**Y**
R-10-115	Residential	B	66	2	64	64	0	N
R-10-116	Residential	B	66	4	60	60	0	N
R-10-117	Residential	B	66	1	53	53	0	N
R-10-118	Residential	B	66	4	57	58	0	N
R-10-119	Residential	B	66	1	55	55	0	N
R-10-120	Residential	B	66	1	56	57	0	N
R-10-121	Residential	B	66	1	53	53	0	N
R-10-122	Residential	B	66	1	55	55	0	N
R-10-123	Wattles Creek Condominiums Pool	C	66	5	54	54	0	N
R-10-124	Residential	B	66	1	56	56	0	N
R-10-125	Residential	B	66	2	62	62	0	N
R-10-126	Residential	B	66	2	64	64	0	N
R-10-127	Residential	B	66	2	58	59	0	N
R-10-128	Residential	B	66	1	51	51	0	N
R-10-129	Residential	B	66	1	53	53	0	N
R-10-130	Residential	B	66	4	57	57	0	N
R-10-131	Residential	B	66	2	63	64	0	N
R-10-132	Residential	B	66	3	56	56	0	N
R-10-133	Residential	B	66	2	62	62	0	N
R-10-134	Residential	B	66	3	60	61	0	N
R-10-135	Residential	B	66	4	63	64	0	N
R-10-136	Residential	B	66	3	57	57	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-10-137	Residential	B	66	2	65	65	0	N
R-10-138	Residential	B	66	3	59	59	0	N
R-10-139	Residential	B	66	3	53	53	0	N
R-10-140	Residential	B	66	6	57	57	0	N
R-10-141	Residential	B	66	7	64	64	0	N
R-10-142	Residential	B	66	3	51	51	0	N
R-10-143	Residential	B	66	3	54	54	0	N
R-10-144	Residential	B	66	4	55	55	0	N
R-10-145	Residential	B	66	4	63	63	0	N
R-10-146	Residential	B	66	2	54	54	0	N
R-10-147	Residential	B	66	2	56	56	0	N
R-10-148	Residential	B	66	2	51	51	0	N
R-10-149	Residential	B	66	2	54	54	0	N
R-10-150	Residential	B	66	4	64	65	0	N
R-10-151	Residential	B	66	5	58	58	0	N
R-10-152	Residential	B	66	3	51	51	0	N
R-10-153	Residential	B	66	3	55	55	0	N
R-10-154	Residential	B	66	4	55	55	0	N
R-10-155	Residential	B	66	5	65	65	0	N
R-10-156	Residential	B	66	1	63	63	0	N
R-10-157	Residential	B	66	2	59	60	0	N
R-10-158	Residential	B	66	1	62	62	0	N
R-10-159	Residential	B	66	2	62	62	0	N
R-10-160	**Wattles Creek Condominiums Tennis Court**	**C**	**66**	**2**	**67**	**67**	**0**	**Y**
R-10-161	Residential	B	66	3	64	64	0	N
CNE 11a								
R-11a-1	Residential	B	66	4	61	61	0	N
R-11a-2	Residential	B	66	4	61	61	0	N
R-11a-3	Residential	B	66	2	64	64	0	N
R-11a-4	Residential	B	66	2	60	60	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-5	Residential	B	66	2	61	61	0	N
R-11a-6	Residential	B	66	2	58	58	0	N
R-11a-7	Residential	B	66	2	59	59	0	N
R-11a-8	Residential	B	66	2	62	62	0	N
R-11a-9	Residential	B	66	2	53	53	0	N
R-11a-10	Residential	B	66	2	62	62	0	N
R-11a-11	Residential	B	66	2	49	50	0	N
R-11a-12	Residential	B	66	2	59	59	0	N
R-11a-13	Residential	B	66	2	59	60	0	N
R-11a-14	Residential	B	66	2	64	64	0	N
R-11a-15	Residential	B	66	2	51	51	0	N
R-11a-16	Residential	B	66	2	58	58	0	N
R-11a-17	Residential	B	66	2	62	63	0	N
R-11a-18	Residential	B	66	2	49	49	0	N
R-11a-19	Residential	B	66	4	56	56	0	N
R-11a-20	Residential	B	66	2	56	57	0	N
R-11a-21	Residential	B	66	2	57	57	0	N
R-11a-22	Residential	B	66	2	55	55	0	N
R-11a-23	Residential	B	66	2	53	53	0	N
R-11a-24	Residential	B	66	4	52	53	1	N
R-11a-25	Residential	B	66	4	46	45	0	N
R-11a-26	Residential	B	66	2	55	56	0	N
R-11a-27	Residential	B	66	2	64	64	0	N
R-11a-28	Residential	B	66	2	51	51	0	N
R-11a-29	Residential	B	66	2	61	61	0	N
R-11a-30	Residential	B	66	4	51	51	0	N
R-11a-31	Residential	B	66	2	57	57	0	N
R-11a-32	Residential	B	66	2	64	64	0	N
R-11a-33	Residential	B	66	2	54	55	0	N
R-11a-34	Residential	B	66	2	61	61	0	N

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* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-35	Residential	B	66	2	51	52	0	N
R-11a-36	Residential	B	66	4	47	48	0	N
R-11a-37	Residential	B	66	2	54	54	0	N
R-11a-38	Residential	B	66	2	51	52	0	N
R-11a-39	Residential	B	66	2	55	55	0	N
R-11a-40	Residential	B	66	4	50	50	0	N
R-11a-41	Residential	B	66	4	53	53	0	N
R-11a-42	Residential	B	66	2	55	55	0	N
R-11a-43	Residential	B	66	2	58	58	0	N
R-11a-44	Residential	B	66	2	56	56	0	N
R-11a-45	Residential	B	66	2	60	60	0	N
R-11a-46	Residential	B	66	4	54	54	0	N
R-11a-47	Three Oaks Apartments Pool	C	66	5	57	57	0	N
R-11a-48	Three Oaks Apartments Tennis Court	C	66	4	58	59	0	N
R-11a-49	Residential	B	66	4	48	48	0	N
R-11a-50	Residential	B	66	2	57	58	0	N
R-11a-51	Residential	B	66	2	56	56	0	N
R-11a-52	Residential	B	66	4	52	52	0	N
R-11a-53	Residential	B	66	2	59	59	0	N
R-11a-54	Residential	B	66	4	52	52	0	N
R-11a-55	Residential	B	66	2	51	51	0	N
R-11a-56	Residential	B	66	2	58	58	0	N
R-11a-57	Residential	B	66	2	47	47	0	N
R-11a-58	Residential	B	66	4	55	55	0	N
R-11a-59	Three Oaks Apartments Playground	C	66	6	59	60	0	N
R-11a-60	Residential	B	66	2	50	50	0	N
R-11a-61	Residential	B	66	2	47	47	0	N
R-11a-62	Residential	B	66	4	56	56	0	N
R-11a-63	Residential	B	66	2	54	54	0	N
R-11a-64	Residential	B	66	2	50	50	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-65	Residential	B	66	4	53	53	0	N
R-11a-66	Residential	B	66	2	62	62	0	N
R-11a-67	Residential	B	66	2	53	53	0	N
R-11a-68	Residential	B	66	2	58	59	0	N
R-11a-69	Residential	B	66	4	55	56	0	N
R-11a-70	Residential	B	66	2	53	53	0	N
R-11a-71	Residential	B	66	2	61	62	0	N
R-11a-72	Residential	B	66	4	52	52	0	N
R-11a-73	Residential	B	66	2	57	58	0	N
R-11a-74	Kingdom Hall of Jehovah's Witnesses	C / D	66 / 51	3	60 / 40	60 / 40	0	N
R-11a-75	Residential	B	66	1	58	58	0	N
R-11a-76	Residential	B	66	1	57	57	0	N
R-11a-77	Residential	B	66	1	57	57	0	N
R-11a-78	Residential	B	66	1	59	59	0	N
R-11a-79	Residential	B	66	1	60	60	0	N
R-11a-80	Residential	B	66	1	56	56	0	N
R-11a-81	Residential	B	66	1	55	55	0	N
R-11a-82	Residential	B	66	1	57	57	0	N
R-11a-83	Residential	B	66	1	55	55	0	N
R-11a-84	Residential	B	66	1	53	54	0	N
R-11a-85	Residential	B	66	1	53	54	0	N
R-11a-86	Residential	B	66	1	55	55	0	N
R-11a-87	Residential	B	66	1	54	55	0	N
R-11a-88	Residential	B	66	1	56	56	0	N
R-11a-89	Residential	B	66	1	53	54	0	N
R-11a-90	Residential	B	66	1	54	54	0	N
R-11a-91	Residential	B	66	1	53	53	0	N
R-11a-92	Residential	B	66	1	53	53	0	N
R-11a-93	Residential	B	66	1	53	53	0	N
R-11a-94	Residential	B	66	1	54	54	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-95	Residential	B	66	1	54	54	0	N
R-11a-96	Residential	B	66	1	55	56	0	N
R-11a-97	Residential	B	66	1	58	58	0	N
R-11a-98	Residential	B	66	1	54	54	0	N
R-11a-99	Residential	B	66	1	53	53	0	N
R-11a-100	Residential	B	66	2	52	52	0	N
R-11a-101	Residential	B	66	1	54	54	0	N
R-11a-102	Residential	B	66	1	53	54	0	N
R-11a-103	Residential	B	66	1	53	53	0	N
R-11a-104	Residential	B	66	1	58	58	0	N
R-11a-105	Residential	B	66	1	55	55	0	N
R-11a-106	Residential	B	66	1	53	53	0	N
R-11a-107	Residential	B	66	1	60	60	0	N
R-11a-108	Residential	B	66	1	55	55	0	N
R-11a-109	Residential	B	66	1	53	53	0	N
R-11a-110	Residential	B	66	4	54	54	0	N
R-11a-111	Residential	B	66	2	53	53	0	N
R-11a-112	Residential	B	66	2	52	52	0	N
R-11a-113	Residential	B	66	2	52	52	0	N
R-11a-114	Residential	B	66	1	57	57	0	N
R-11a-115	Residential	B	66	1	55	55	0	N
R-11a-116	Residential	B	66	1	61	61	0	N
R-11a-117	Residential	B	66	1	61	61	0	N
R-11a-118	Residential	B	66	1	61	61	0	N
R-11a-119	Residential	B	66	1	62	62	0	N
R-11a-120	Residential	B	66	1	62	63	0	N
R-11a-121	Residential	B	66	1	63	63	0	N
R-11a-122	Residential	B	66	1	64	64	0	N
R-11a-123	Residential	B	66	1	65	65	0	N
R-11a-124	Residential	B	66	1	65	65	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-125	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-126	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-127	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-11a-128	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-129	Residential	B	66	1	64	65	0	N
R-11a-130	Residential	B	66	1	61	61	0	N
R-11a-131	**Residential**	**B**	**66**	**1**	**69**	**69**	**0**	**Y**
R-11a-132	Residential	B	66	3	58	59	0	N
R-11a-133	Residential	B	66	2	57	57	0	N
R-11a-134	Residential	B	66	2	55	56	0	N
R-11a-135	Residential	B	66	2	54	54	0	N
R-11a-136	Residential	B	66	2	53	53	0	N
R-11a-137	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-138	Residential	B	66	1	64	65	0	N
R-11a-139	Residential	B	66	1	56	56	0	N
R-11a-140	Residential	B	66	1	54	55	0	N
R-11a-141	Residential	B	66	2	52	52	0	N
R-11a-142	Residential	B	66	1	65	65	0	N
R-11a-143	Residential	B	66	2	52	52	0	N
R-11a-144	Residential	B	66	1	65	65	0	N
R-11a-145	Residential	B	66	1	65	65	0	N
R-11a-146	Residential	B	66	1	56	56	0	N
R-11a-147	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-148	Residential	B	66	1	52	52	0	N
R-11a-149	Residential	B	66	1	57	57	0	N
R-11a-150	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-151	Residential	B	66	1	57	57	0	N
R-11a-152	Residential	B	66	1	52	52	0	N
R-11a-153	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-154	Residential	B	66	1	60	60	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-155	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-156	Residential	B	66	1	59	59	0	N
R-11a-157	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11a-158	Residential	B	66	1	54	54	0	N
R-11a-159	Residential	B	66	1	52	53	0	N
R-11a-160	Residential	B	66	1	57	58	0	N
R-11a-161	**Residential**	**B**	**66**	**1**	**65**	**66**	**0**	**Y**
R-11a-162	Residential	B	66	1	64	65	0	N
R-11a-163	Residential	B	66	1	63	63	0	N
R-11a-164	Residential	B	66	1	55	55	0	N
R-11a-165	Residential	B	66	1	60	60	0	N
R-11a-166	Residential	B	66	1	56	56	0	N
R-11a-167	Residential	B	66	1	58	58	0	N
R-11a-168	Residential	B	66	1	57	57	0	N
R-11a-169	Residential	B	66	1	59	59	0	N
R-11a-170	Residential	B	66	1	60	61	0	N
R-11a-171	Residential	B	66	1	62	62	0	N
R-11a-172	Residential	B	66	1	61	61	0	N
R-11a-173	Residential	B	66	1	60	60	0	N
R-11a-174	Residential	B	66	1	55	55	0	N
R-11a-175	Residential	B	66	1	56	56	0	N
R-11a-176	Residential	B	66	1	57	57	0	N
R-11a-177	Residential	B	66	1	59	59	0	N
R-11a-178	Residential	B	66	1	55	55	0	N
R-11a-179	Residential	B	66	1	55	56	0	N
R-11a-180	Residential	B	66	1	55	56	0	N
R-11a-181	Residential	B	66	1	58	58	0	N
R-11a-182	Residential	B	66	1	57	58	0	N
R-11a-183	Residential	B	66	1	57	57	0	N
R-11a-184	Residential	B	66	1	57	57	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-185	Residential	B	66	1	54	54	0	N
R-11a-186	Residential	B	66	1	56	56	0	N
R-11a-187	Residential	B	66	1	55	55	0	N
R-11a-188	Residential	B	66	1	56	56	0	N
R-11a-189	Residential	B	66	1	57	57	0	N
R-11a-190	Residential	B	66	1	57	57	0	N
R-11a-191	Residential	B	66	1	61	61	0	N
R-11a-192	Residential	B	66	1	61	61	0	N
R-11a-193	Residential	B	66	1	59	60	0	N
R-11a-194	Residential	B	66	1	59	59	0	N
R-11a-195	Residential	B	66	1	57	57	0	N
R-11a-196	Residential	B	66	1	59	59	0	N
R-11a-197	Residential	B	66	1	57	57	0	N
R-11a-198	Residential	B	66	1	59	59	0	N
R-11a-199	Residential	B	66	1	60	60	0	N
R-11a-200	Residential	B	66	1	56	56	0	N
R-11a-201	Residential	B	66	1	61	61	0	N
R-11a-202	Residential	B	66	1	60	60	0	N
R-11a-203	Residential	B	66	1	61	61	0	N
R-11a-204	Residential	B	66	1	61	61	0	N
R-11a-205	Residential	B	66	1	60	61	0	N
R-11a-206	Residential	B	66	1	60	61	0	N
R-11a-207	Residential	B	66	1	63	63	0	N
R-11a-208	Residential	B	66	1	62	62	0	N
R-11a-209	Residential	B	66	1	60	60	0	N
R-11a-210	Office	E	71	1	67	67	0	N
R-11a-211	Office	E	71	1	64	64	0	N
R-11a-212	Embassy Suites Patio	E	71	1	68	68	0	N
R-11a-213	Loccino Italian Grill & Bar	E	71	1	54	55	0	N
R-11a-214	Office	E	71	1	50	51	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11a-215	Office	E	71	1	66	67	0	N
R-11a-216	Office	E	71	1	61	61	0	N
R-11a-217	Office	E	71	1	60	60	0	N
R-11a-218	Residential	B	66	2	64	64	0	N
R-11a-219	Residential	B	66	2	62	63	0	N
R-11a-220	Residential	B	66	2	62	63	0	N
R-11a-221	Residential	B	66	2	64	65	0	N
CNE 11								
R-11-1	Residential	B	66	1	62	62	0	N
R-11-2	Residential	B	66	1	60	61	0	N
R-11-3	Residential	B	66	1	60	61	0	N
R-11-4	Residential	B	66	1	54	54	0	N
R-11-5	Residential	B	66	1	61	61	0	N
R-11-6	Residential	B	66	1	62	62	0	N
R-11-7	Residential	B	66	2	55	55	0	N
R-11-8	Residential	B	66	1	62	62	0	N
R-11-9	Residential	B	66	1	63	63	0	N
R-11-10	Residential	B	66	2	56	57	0	N
R-11-11	Residential	B	66	2	52	52	0	N
R-11-12	Residential	B	66	1	64	64	0	N
R-11-13	Residential	B	66	1	63	63	0	N
R-11-14	Residential	B	66	2	57	57	0	N
R-11-15	Residential	B	66	2	52	52	0	N
R-11-16	Residential	B	66	1	63	63	0	N
R-11-17	Residential	B	66	2	57	57	0	N
R-11-18	Residential	B	66	1	63	63	0	N
R-11-19	Residential	B	66	2	52	52	0	N
R-11-20	Residential	B	66	1	63	63	0	N
R-11-21	Residential	B	66	1	63	63	0	N
R-11-22	Residential	B	66	2	57	57	0	N

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	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11-23	Residential	B	66	2	52	52	0	N
R-11-24	Residential	B	66	2	57	57	0	N
R-11-25	Residential	B	66	1	62	63	0	N
R-11-26	Residential	B	66	2	52	52	0	N
R-11-27	Residential	B	66	1	63	63	0	N
R-11-28	Residential	B	66	1	54	54	0	N
R-11-29	Residential	B	66	1	57	57	0	N
R-11-30	Residential	B	66	1	63	63	0	N
R-11-31	Residential	B	66	1	63	63	0	N
R-11-32	Residential	B	66	1	59	59	0	N
R-11-33	Residential	B	66	1	54	54	0	N
R-11-34	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11-35	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11-36	Residential	B	66	1	54	54	0	N
R-11-37	Residential	B	66	1	60	60	0	N
R-11-38	Residential	B	66	1	57	57	0	N
R-11-39	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-11-40	Residential	B	66	1	61	61	0	N
R-11-41	Residential	B	66	1	54	54	0	N
R-11-42	**Residential**	**B**	**66**	**1**	**69**	**69**	**0**	**Y**
R-11-43	Residential	B	66	1	55	55	0	N
R-11-44	**Residential**	**B**	**66**	**1**	**68**	**68**	**0**	**Y**
R-11-45	Residential	B	66	1	65	65	0	N
R-11-46	Residential	B	66	1	63	64	0	N
R-11-47	**Firefighters Park**	**C**	**66**	**44**	**73**	**73**	**0**	**Y**
R-11-48	Residential	B	66	5	55	55	0	N
R-11-49	Residential	B	66	1	61	61	0	N
R-11-50	Residential	B	66	1	62	63	0	N
R-11-51	Residential	B	66	1	65	65	0	N
R-11-52	Residential	B	66	1	58	58	0	N

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	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11-53	**Residential**	**B**	**66**	**1**	**68**	**68**	**0**	**Y**
R-11-54	**Residential**	**B**	**66**	**1**	**72**	**72**	**0**	**Y**
R-11-55	Residential	B	66	1	58	58	0	N
R-11-56	**Residential**	**B**	**66**	**1**	**71**	**72**	**0**	**Y**
R-11-57	Residential	B	66	1	56	56	0	N
R-11-58	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11-59	Residential	B	66	2	60	60	0	N
R-11-60	Residential	B	66	2	62	63	0	N
R-11-61	Residential	B	66	1	56	57	0	N
R-11-62	**Residential**	**B**	**66**	**1**	**69**	**69**	**0**	**Y**
R-11-63	**Residential**	**B**	**66**	**1**	**70**	**71**	**0**	**Y**
R-11-64	**Residential**	**B**	**66**	**1**	**69**	**69**	**0**	**Y**
R-11-65	**Residential**	**B**	**66**	**1**	**67**	**68**	**0**	**Y**
R-11-66	Residential	B	66	1	64	64	0	N
R-11-67	Residential	B	66	1	64	64	0	N
R-11-68	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11-69	Residential	B	66	2	64	64	0	N
R-11-70	Residential	B	66	2	58	58	0	N
R-11-71	**Residential**	**B**	**66**	**2**	**66**	**66**	**0**	**Y**
R-11-72	Residential	B	66	2	50	51	0	N
R-11-73	Residential	B	66	2	51	52	0	N
R-11-74	Residential	B	66	2	54	54	0	N
R-11-75	Residential	B	66	4	50	50	0	N
R-11-76	Residential	B	66	2	64	64	0	N
R-11-77	Residential	B	66	2	62	63	0	N
R-11-78	Residential	B	66	4	50	50	0	N
R-11-79	Residential	B	66	2	50	51	0	N
R-11-80	Residential	B	66	4	51	51	0	N
R-11-81	Residential	B	66	2	59	60	0	N
R-11-82	Residential	B	66	2	51	51	0	N

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* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11-83	Residential	B	66	1	50	50	0	N
R-11-84	Residential	B	66	2	60	60	0	N
R-11-85	Residential	B	66	4	50	50	0	N
R-11-86	Residential	B	66	2	56	56	0	N
R-11-87	Residential	B	66	2	50	50	0	N
R-11-88	Residential	B	66	1	54	55	0	N
R-11-89	Residential	B	66	2	62	63	0	N
R-11-90	Residential	B	66	1	48	48	0	N
R-11-91	Residential	B	66	1	51	51	0	N
R-11-92	Residential	B	66	1	54	54	0	N
R-11-93	Residential	B	66	1	53	53	0	N
R-11-94	Residential	B	66	2	51	51	0	N
R-11-95	Residential	B	66	1	62	62	0	N
R-11-96	Residential	B	66	4	51	51	0	N
R-11-97	Residential	B	66	1	61	61	0	N
R-11-98	Residential	B	66	2	49	49	0	N
R-11-99	Residential	B	66	1	51	51	0	N
R-11-100	Residential	B	66	1	59	59	0	N
R-11-101	Residential	B	66	2	58	59	0	N
R-11-102	Residential	B	66	1	52	52	0	N
R-11-103	Residential	B	66	4	51	51	0	N
R-11-104	Residential	B	66	1	50	50	0	N
R-11-105	Residential	B	66	2	58	58	0	N
R-11-106	Residential	B	66	2	53	54	0	N
R-11-107	Residential	B	66	1	50	50	0	N
R-11-108	Residential	B	66	2	51	51	0	N
R-11-109	Residential	B	66	2	61	61	0	N
R-11-110	Residential	B	66	2	55	55	0	N
R-11-111	Residential	B	66	2	52	52	0	N
R-11-112	Residential	B	66	2	53	53	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11-113	Residential	B	66	2	53	53	0	N
R-11-114	Residential	B	66	2	52	52	0	N
R-11-115	Residential	B	66	2	62	62	0	N
R-11-116	Residential	B	66	1	52	52	0	N
R-11-117	Residential	B	66	2	60	60	0	N
R-11-118	Residential	B	66	2	53	53	0	N
R-11-119	Residential	B	66	2	56	56	0	N
R-11-120	Residential	B	66	2	56	56	0	N
R-11-121	Residential	B	66	3	59	59	0	N
R-11-122	Residential	B	66	3	53	53	0	N
R-11-123	Residential	B	66	2	62	62	0	N
R-11-124	Residential	B	66	3	53	53	0	N
R-11-125	Residential	B	66	2	62	62	0	N
R-11-126	Residential	B	66	2	56	57	0	N
R-11-127	Residential	B	66	4	54	54	0	N
R-11-128	Residential	B	66	2	61	62	0	N
R-11-129	Residential	B	66	2	55	56	0	N
R-11-130	Residential	B	66	3	53	53	0	N
R-11-131	Residential	B	66	3	53	53	0	N
R-11-132	Residential	B	66	2	61	61	0	N
R-11-133	Residential	B	66	4	53	53	0	N
R-11-134	Residential	B	66	4	53	53	0	N
R-11-135	Residential	B	66	2	55	55	0	N
R-11-136	Residential	B	66	4	56	56	0	N
R-11-137	Residential	B	66	2	62	62	0	N
R-11-138	Residential	B	66	3	60	61	0	N
R-11-139	Residential	B	66	3	58	58	0	N
R-11-140	Residential	B	66	2	58	58	0	N
R-11-141	Residential	B	66	2	55	55	0	N
R-11-142	Residential	B	66	4	54	54	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11-143	Residential	B	66	2	57	57	0	N
R-11-144	Residential	B	66	1	53	53	0	N
R-11-145	Residential	B	66	1	62	63	0	N
R-11-146	Residential	B	66	1	54	54	0	N
R-11-147	Residential	B	66	1	59	59	0	N
R-11-148	Residential	B	66	1	56	56	0	N
R-11-149	Residential	B	66	1	57	57	0	N
R-11-150	Residential	B	66	1	64	65	0	N
R-11-151	Residential	B	66	1	64	64	0	N
R-11-152	Residential	B	66	1	54	54	0	N
R-11-153	Residential	B	66	2	52	52	0	N
R-11-154	Residential	B	66	1	55	56	0	N
R-11-155	Residential	B	66	1	64	64	0	N
R-11-156	Residential	B	66	1	57	57	0	N
R-11-157	Residential	B	66	1	64	64	0	N
R-11-158	Residential	B	66	2	52	52	0	N
R-11-159	Residential	B	66	1	58	58	0	N
R-11-160	Residential	B	66	1	64	65	0	N
R-11-161	Residential	B	66	1	55	55	0	N
R-11-162	Residential	B	66	1	54	54	0	N
R-11-163	Residential	B	66	1	64	64	0	N
R-11-164	Residential	B	66	2	51	51	0	N
R-11-165	Residential	B	66	1	53	53	0	N
R-11-166	Residential	B	66	1	64	64	0	N
R-11-167	Residential	B	66	1	54	54	0	N
R-11-168	Residential	B	66	1	64	64	0	N
R-11-169	Residential	B	66	1	55	56	0	N
R-11-170	Residential	B	66	2	53	53	0	N
R-11-171	Residential	B	66	1	56	57	0	N
R-11-172	Residential	B	66	1	54	54	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11-173	Residential	B	66	1	64	64	0	N
R-11-174	Residential	B	66	1	56	57	0	N
R-11-175	Residential	B	66	1	63	64	0	N
R-11-176	Residential	B	66	1	54	54	0	N
R-11-177	Residential	B	66	2	53	53	0	N
R-11-178	Residential	B	66	1	51	50	0	N
R-11-179	Residential	B	66	1	56	57	0	N
R-11-180	Residential	B	66	1	63	64	0	N
R-11-181	Residential	B	66	1	51	51	0	N
R-11-182	Residential	B	66	2	54	54	0	N
R-11-183	Residential	B	66	1	56	57	0	N
R-11-184	Residential	B	66	1	52	52	0	N
R-11-185	Residential	B	66	1	63	64	0	N
R-11-186	Residential	B	66	1	56	57	0	N
R-11-187	Residential	B	66	1	63	63	0	N
R-11-188	Residential	B	66	1	53	53	0	N
R-11-189	Residential	B	66	2	54	54	0	N
R-11-190	Residential	B	66	1	52	52	0	N
R-11-191	Residential	B	66	1	63	63	0	N
R-11-192	Residential	B	66	1	56	56	0	N
R-11-193	Residential	B	66	1	52	52	0	N
R-11-194	Residential	B	66	1	53	53	0	N
R-11-195	Residential	B	66	1	63	63	0	N
R-11-196	Residential	B	66	1	56	57	0	N
R-11-197	Residential	B	66	2	53	54	0	N
R-11-198	Residential	B	66	1	63	63	0	N
R-11-199	Residential	B	66	1	56	57	0	N
R-11-200	Residential	B	66	1	54	54	0	N
R-11-201	Residential	B	66	1	63	63	0	N
R-11-202	Residential	B	66	1	58	58	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-11-203	Residential	B	66	1	53	53	0	N
R-11-204	Residential	B	66	1	55	55	0	N
R-11-205	Residential	B	66	1	57	58	0	N
R-11-206	Residential	B	66	1	63	63	0	N
R-11-207	Residential	B	66	1	57	57	0	N
R-11-208	Residential	B	66	1	58	59	0	N
R-11-209	Residential	B	66	1	63	64	0	N
R-11-210	Residential	B	66	2	54	54	0	N
R-11-211	Residential	B	66	2	55	55	0	N
R-11-212	Residential	B	66	2	56	56	0	N
R-11-213	Residential	B	66	2	54	54	0	N
R-11-214	Residential	B	66	1	64	64	0	N
R-11-215	Residential	B	66	1	60	60	0	N
R-11-216	Residential	B	66	1	59	59	0	N
R-11-217	Residential	B	66	1	65	65	0	N
R-11-218	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-11-219	Residential	B	66	1	62	62	0	N
R-11-220	Residential	B	66	1	64	64	0	N
R-11-221	Residential	B	66	1	63	63	0	N
R-11-222	**Residential**	**B**	**66**	**1**	**66**	**67**	**0**	**Y**
R-11-223	Residential	B	66	1	63	63	0	N
R-11-224	Residential	B	66	1	64	64	0	N
R-11-225	Residential	B	66	1	64	65	0	N
R-11-226	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
CNE 12								
R-12-1	Residential	B	66	1	62	62	0	N
R-12-2	**Residential**	**B**	**66**	**1**	**65**	**66**	**0**	**Y**
R-12-3	**Residential**	**B**	**66**	**1**	**68**	**68**	**0**	**Y**
R-12-4	Residential	B	66	1	64	64	0	N
R-12-5	**Residential**	**B**	**66**	**1**	**68**	**69**	**0**	**Y**

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-12-6	Residential	B	66	2	61	61	0	N
R-12-7	**Residential**	**B**	**66**	**1**	**68**	**69**	**0**	**Y**
R-12-8	Residential	B	66	2	64	64	0	N
R-12-9	Residential	B	66	2	60	60	0	N
R-12-10	**Residential**	**B**	**66**	**1**	**69**	**69**	**0**	**Y**
R-12-11	Residential	B	66	2	62	62	0	N
R-12-12	**Residential**	**B**	**66**	**1**	**70**	**70**	**0**	**Y**
R-12-13	Residential	B	66	2	65	65	0	N
R-12-14	**Residential**	**B**	**66**	**1**	**71**	**72**	**0**	**Y**
R-12-15	Residential	B	66	1	63	63	0	N
R-12-16	Residential	B	66	1	64	65	0	N
R-12-17	**Residential**	**B**	**66**	**1**	**70**	**70**	**0**	**Y**
R-12-18	Residential	B	66	1	60	61	0	N
R-12-19	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-12-20	Residential	B	66	1	62	62	0	N
R-12-21	Residential	B	66	1	61	61	0	N
R-12-22	Residential	B	66	1	63	64	0	N
R-12-23	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-12-24	**Residential**	**B**	**66**	**1**	**70**	**71**	**0**	**Y**
R-12-25	Residential	B	66	2	63	63	0	N
R-12-26	Residential	B	66	2	59	59	0	N
R-12-27	**Residential**	**B**	**66**	**1**	**71**	**72**	**0**	**Y**
R-12-28	Residential	B	66	1	56	56	0	N
R-12-29	Residential	B	66	1	54	54	0	N
R-12-30	Residential	B	66	1	60	60	0	N
R-12-31	**Residential**	**B**	**66**	**1**	**69**	**69**	**0**	**Y**
R-12-32	Residential	B	66	1	63	63	0	N
R-12-33	Residential	B	66	1	56	56	0	N
R-12-34	Residential	B	66	1	63	63	0	N
R-12-35	Residential	B	66	2	55	55	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-12-36	Residential	B	66	1	63	63	0	N
R-12-37	Residential	B	66	1	64	64	0	N
R-12-38	Residential	B	66	1	58	58	0	N
R-12-39	Residential	B	66	1	62	63	0	N
R-12-40	Residential	B	66	1	61	61	0	N
R-12-41	Residential	B	66	1	60	61	0	N
R-12-42	Residential	B	66	1	64	64	0	N
R-12-43	Residential	B	66	1	62	62	1	N
R-12-44	Residential	B	66	1	63	64	0	N
R-12-45	**Residential**	**B**	**66**	**1**	**65**	**66**	**1**	**Y**
R-12-46	Residential	B	66	1	60	61	0	N
R-12-47	**Residential**	**B**	**66**	**1**	**66**	**67**	**1**	**Y**
R-12-48	Residential	B	66	2	62	62	1	N
R-12-49	**Residential**	**B**	**66**	**1**	**66**	**67**	**1**	**Y**
R-12-50	**Residential**	**B**	**66**	**1**	**67**	**67**	**1**	**Y**
R-12-51	Residential	B	66	2	63	63	0	N
R-12-52	Residential	B	66	2	61	61	0	N
R-12-53	**Residential**	**B**	**66**	**1**	**68**	**68**	**1**	**Y**
R-12-54	Residential	B	66	1	60	60	0	N
R-12-55	Residential	B	66	1	60	60	0	N
R-12-56	Residential	B	66	1	55	55	0	N
R-12-57	Residential	B	66	1	56	56	0	N
R-12-58	Residential	B	66	2	55	55	0	N
R-12-59	Residential	B	66	1	64	64	0	N
R-12-60	**Residential**	**B**	**66**	**1**	**66**	**66**	**0**	**Y**
R-12-61	Residential	B	66	1	59	59	0	N
R-12-62	Residential	B	66	1	62	62	0	N
R-12-63	Residential	B	66	1	54	54	0	N
R-12-64	Residential	B	66	1	59	59	0	N
R-12-65	Residential	B	66	1	62	62	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-12-66	Residential	B	66	2	53	54	0	N
R-12-67	Residential	B	66	1	59	59	0	N
R-12-68	Residential	B	66	1	62	62	0	N
R-12-69	Residential	B	66	2	53	53	0	N
R-12-70	Residential	B	66	2	57	58	0	N
R-12-71	Residential	B	66	2	51	52	0	N
R-12-72	Residential	B	66	1	61	61	0	N
R-12-73	Residential	B	66	1	59	60	0	N
R-12-74	Residential	B	66	1	59	59	0	N
R-12-75	Residential	B	66	1	60	60	0	N
R-12-76	Residential	B	66	2	53	54	0	N
R-12-77	Residential	B	66	1	60	61	0	N
R-12-78	Residential	B	66	2	57	57	0	N
R-12-79	Residential	B	66	2	53	53	0	N
R-12-80	Residential	B	66	1	62	62	0	N
R-12-81	Residential	B	66	1	63	63	0	N
R-12-82	Residential	B	66	2	54	54	0	N
R-12-83	Residential	B	66	1	62	63	0	N
R-12-84	Residential	B	66	1	56	56	0	N
R-12-85	Residential	B	66	1	62	62	0	N
R-12-86	Residential	B	66	2	52	52	0	N
R-12-87	Residential	B	66	1	64	64	0	N
R-12-88	Residential	B	66	2	56	57	0	N
R-12-89	Residential	B	66	1	62	63	0	N
R-12-90	Residential	B	66	1	60	60	0	N
R-12-91	Residential	B	66	2	56	57	0	N
R-12-92	Residential	B	66	1	62	62	0	N
R-12-93	Residential	B	66	1	52	53	0	N
R-12-94	Residential	B	66	1	52	53	0	N
R-12-95	Residential	B	66	1	55	55	0	N

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Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-12-96	Residential	B	66	1	59	59	0	N
R-12-97	Residential	B	66	1	63	63	0	N
R-12-98	Residential	B	66	1	63	64	0	N
R-12-99	Residential	B	66	2	51	51	0	N
R-12-100	Residential	B	66	2	57	57	0	N
R-12-101	Residential	B	66	1	63	63	0	N
R-12-102	Residential	B	66	1	62	63	0	N
R-12-103	Residential	B	66	1	55	55	0	N
R-12-104	Residential	B	66	2	50	51	0	N
R-12-105	Residential	B	66	1	54	54	0	N
R-12-106	Residential	B	66	1	64	64	0	N
R-12-107	Residential	B	66	1	57	57	0	N
R-12-108	Residential	B	66	2	51	51	0	N
R-12-109	**Residential**	**B**	**66**	**1**	**69**	**69**	**0**	**Y**
R-12-110	Residential	B	66	1	55	55	0	N
R-12-111	Residential	B	66	1	53	53	0	N
R-12-112	Residential	B	66	1	57	57	0	N
R-12-113	Residential	B	66	1	54	54	0	N
R-12-114	Residential	B	66	1	51	51	0	N
R-12-115	**Residential**	**B**	**66**	**1**	**71**	**71**	**0**	**Y**
R-12-116	**Residential**	**B**	**66**	**1**	**70**	**70**	**0**	**Y**
R-12-117	Residential	B	66	1	60	61	0	N
R-12-118	**Residential**	**B**	**66**	**1**	**69**	**70**	**0**	**Y**
R-12-119	Residential	B	66	1	59	59	0	N
R-12-120	Residential	B	66	1	61	61	0	N
R-12-121	Residential	B	66	1	58	58	0	N
R-12-122	Residential	B	66	1	56	56	0	N
R-12-123	**Residential**	**B**	**66**	**1**	**67**	**67**	**0**	**Y**
R-12-124	Residential	B	66	1	57	57	0	N
R-12-125	**Residential**	**B**	**66**	**1**	**68**	**68**	**0**	**Y**

Boldface indicates noise levels that approach, equal, or exceed the NAC and create an impact with the future year.

^ For receivers behind existing barriers, the future year noise level (NL) is the future **with barrier** noise level.

* Change in noise level may appear incorrect due to rounding.

Receiver ID	Noise Abatement Criteria			Receptors	Noise Level dB(A) $L_{eq(1h)}$			
	Description	Category	Criteria $L_{eq(1h)}$		Existing	Future Year		
						NL^	Change from Existing*	Impact (Y/N)
R-12-126	Residential	B	66	1	60	60	0	N
R-12-127	Residential	B	66	1	65	65	0	N
R-12-128	**Residential**	**B**	**66**	**1**	**75**	**76**	**0**	**Y**
R-12-129	Residential	B	66	1	65	65	0	N
R-12-130	Residential	B	66	1	60	60	0	N
R-12-131	Residential	B	66	1	64	65	1	N
R-12-132	**Residential**	**B**	**66**	**1**	**71**	**71**	**0**	**Y**
R-12-133	Residential	B	66	1	60	60	0	N
R-12-134	Residential - Belmar Oakland	B	66	13	51	51	0	N
R-12-135	Residential - Belmar Oakland	B	66	13	64	64	0	N
R-12-136	Residential	B	66	1	52	52	0	N
R-12-137	Residential - Belmar Oakland	B	66	13	50	50	0	N
R-12-138	Residential - Belmar Oakland	B	66	13	65	65	0	N
R-12-139	Residential	B	66	1	63	63	0	N
R-12-140	Office	E	71	1	65	65	0	N

Boldface indicates noise levels that approach, equal, or exceed the NAC and create an impact with the future year.

^ For receivers behind existing barriers, the future year noise level (NL) is the future **with barrier** noise level.

* Change in noise level may appear incorrect due to rounding.

APPENDIX D: Abatement Analysis Results per Receiver, dB(A) $L_{eq(1h)}$

Table D-1. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB1											
R-7-1	Residential	B	66	4	64	66	Yes	2	64	2	No
R-7-2	Residential	B	66	4	64	68	Yes	3	65	3	No
R-7-3	Residential	B	66	4	59	61	No	1	58	4	No
R-7-4	Residential	B	66	4	58	63	No	5	60	4	No
R-7-5	Residential	B	66	4	57	61	No	5	57	4	No
R-7-6	Residential	B	66	4	62	67	Yes	5	62	4	No
R-7-7	**Residential**	**B**	**66**	**4**	**56**	**62**	**No**	**6**	**56**	**5**	**Yes**
R-7-8	**Residential**	**B**	**66**	**4**	**60**	**66**	**Yes**	**6**	**61**	**5**	**Yes**
R-7-9	**Residential**	**B**	**66**	**4**	**62**	**68**	**Yes**	**6**	**62**	**6**	**Yes**
R-7-10	**Residential**	**B**	**66**	**4**	**54**	**61**	**No**	**7**	**54**	**7**	**Yes**
R-7-11	**Residential**	**B**	**66**	**4**	**61**	**68**	**Yes**	**7**	**61**	**7**	**Yes**
R-7-12	**Residential**	**B**	**66**	**4**	**56**	**62**	**No**	**6**	**56**	**6**	**Yes**
R-7-13	**Residential**	**B**	**66**	**4**	**61**	**67**	**Yes**	**7**	**61**	**7**	**Yes**
R-7-14	**Residential**	**B**	**66**	**4**	**62**	**70**	**Yes**	**8**	**63**	**8**	**Yes**
R-7-15	**Residential**	**B**	**66**	**4**	**54**	**62**	**No**	**7**	**55**	**7**	**Yes**
R-7-16	**Residential**	**B**	**66**	**4**	**63**	**73**	**Yes**	**10**	**63**	**10**	**Yes**
R-7-17	**Residential**	**B**	**66**	**6**	**56**	**64**	**No**	**8**	**56**	**8**	**Yes**
R-7-18	**Residential**	**B**	**66**	**6**	**56**	**65**	**No**	**9**	**56**	**8**	**Yes**
R-7-19	**Residential**	**B**	**66**	**4**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**
R-7-20	**Residential**	**B**	**66**	**4**	**62**	**72**	**Yes**	**10**	**62**	**10**	**Yes**
R-7-21	**Residential**	**B**	**66**	**4**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**
R-7-22	**Residential**	**B**	**66**	**4**	**56**	**62**	**No**	**6**	**56**	**6**	**Yes**
R-7-23	**Residential**	**B**	**66**	**4**	**57**	**64**	**No**	**7**	**57**	**7**	**Yes**
R-7-24	**Residential**	**B**	**66**	**4**	**55**	**62**	**No**	**6**	**56**	**6**	**Yes**
R-7-25	**Residential**	**B**	**66**	**4**	**64**	**75**	**Yes**	**10**	**64**	**10**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-1 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB1											
R-7-26	Lamphere High School Tennis Courts	C	66	1	54	58	No	4	55	3	No
R-7-27	**Residential**	**B**	**66**	**6**	**57**	**64**	**No**	**7**	**58**	**7**	**Yes**
R-7-28	**Residential**	**B**	**66**	**4**	**64**	**75**	**Yes**	**10**	**64**	**10**	**Yes**
R-7-29	**Residential**	**B**	**66**	**4**	**56**	**62**	**No**	**6**	**56**	**6**	**Yes**
R-7-30	**Residential**	**B**	**66**	**4**	**58**	**66**	**Yes**	**8**	**58**	**7**	**Yes**
R-7-31	**Residential**	**B**	**66**	**4**	**63**	**74**	**Yes**	**10**	**64**	**10**	**Yes**
R-7-32	Lamphere High School Baseball Field	C	66	1	55	58	No	4	55	3	No
R-7-33	**Residential**	**B**	**66**	**4**	**65**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-7-34	**Residential**	**B**	**66**	**4**	**56**	**61**	**No**	**5**	**56**	**5**	**Yes**
R-7-35	**Residential**	**B**	**66**	**4**	**57**	**64**	**No**	**7**	**57**	**7**	**Yes**
R-7-36	**Residential**	**B**	**66**	**4**	**55**	**61**	**No**	**6**	**56**	**5**	**Yes**
R-7-37	**Residential**	**B**	**66**	**4**	**65**	**76**	**Yes**	**11**	**65**	**11**	**Yes**
R-7-38	**Residential**	**B**	**66**	**4**	**57**	**62**	**No**	**6**	**57**	**5**	**Yes**
R-7-39	**Residential**	**B**	**66**	**4**	**58**	**65**	**No**	**7**	**58**	**7**	**Yes**
R-7-40	**Residential**	**B**	**66**	**4**	**64**	**74**	**Yes**	**10**	**64**	**10**	**Yes**
R-7-41	**Residential**	**B**	**66**	**4**	**64**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-7-42	**Residential**	**B**	**66**	**4**	**56**	**61**	**No**	**6**	**56**	**5**	**Yes**
R-7-43	Lamphere High School Track	C	66	1	54	57	No	3	55	3	No
R-7-44	**Residential**	**B**	**66**	**4**	**58**	**66**	**Yes**	**8**	**58**	**8**	**Yes**
R-7-45	**Residential**	**B**	**66**	**4**	**56**	**63**	**No**	**6**	**57**	**6**	**Yes**
R-7-46	**Residential**	**B**	**66**	**4**	**56**	**62**	**No**	**6**	**56**	**6**	**Yes**
R-7-47	**Residential**	**B**	**66**	**4**	**59**	**67**	**Yes**	**8**	**59**	**8**	**Yes**
R-7-48	**Residential**	**B**	**66**	**4**	**64**	**74**	**Yes**	**10**	**64**	**10**	**Yes**
R-7-49	Lamphere High School Baseball Field	C	66	1	55	58	No	4	55	3	No
R-7-50	**Residential**	**B**	**66**	**4**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-1 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB1											
R-7-51	**Residential**	**B**	**66**	**4**	**56**	**62**	**No**	**6**	**56**	**6**	**Yes**
R-7-52	**Residential**	**B**	**66**	**4**	**56**	**61**	**No**	**5**	**56**	**5**	**Yes**
R-7-53	Residential	B	66	4	56	61	No	5	56	4	No
R-7-54	**Residential**	**B**	**66**	**4**	**64**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-7-55	**Residential**	**B**	**66**	**4**	**63**	**73**	**Yes**	**10**	**63**	**10**	**Yes**
R-7-56	**Residential**	**B**	**66**	**4**	**62**	**71**	**Yes**	**9**	**62**	**9**	**Yes**
R-7-57	**Residential**	**B**	**66**	**4**	**57**	**62**	**No**	**5**	**57**	**5**	**Yes**
R-7-58	**Residential**	**B**	**66**	**4**	**65**	**75**	**Yes**	**10**	**65**	**10**	**Yes**
R-7-59	Residential	B	66	4	55	60	No	5	55	4	No
R-7-60	**Residential**	**B**	**66**	**4**	**65**	**77**	**Yes**	**12**	**65**	**12**	**Yes**
R-7-61	Residential	B	66	4	53	57	No	4	53	4	No
R-7-62	Residential	B	66	4	54	59	No	5	54	4	No
R-7-63	Residential	B	66	4	57	61	No	4	57	4	No
R-7-64	**Residential**	**B**	**66**	**4**	**62**	**71**	**Yes**	**9**	**62**	**9**	**Yes**
R-7-65	Residential	B	66	4	58	62	No	4	58	4	No
R-7-66	**Residential**	**B**	**66**	**4**	**62**	**71**	**Yes**	**9**	**62**	**9**	**Yes**
R-7-67	Residential	B	66	12	54	56	No	2	54	2	No
R-7-68	Residential	B	66	4	53	56	No	3	53	3	No
R-7-69	Residential	B	66	4	55	58	No	4	55	4	No
R-7-70	Residential	B	66	4	54	57	No	3	54	3	No
R-7-71	**Residential**	**B**	**66**	**4**	**65**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-7-72	Residential	B	66	4	54	58	No	4	54	4	No
R-7-73	Residential	B	66	4	55	59	No	4	55	4	No
R-7-74	**Residential**	**B**	**66**	**4**	**65**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-7-75	Residential	B	66	4	58	61	No	3	58	3	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-1 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB1											
R-7-76	Residential	B	66	8	54	56	No	2	54	2	No
R-7-77	**Residential**	**B**	**66**	**4**	**62**	**71**	**Yes**	**9**	**62**	**9**	**Yes**
R-7-78	Residential	B	66	8	55	58	No	3	54	3	No
R-7-79	**Residential**	**B**	**66**	**4**	**62**	**71**	**Yes**	**9**	**62**	**9**	**Yes**
R-7-80	Residential	B	66	4	59	62	No	3	58	4	No
R-7-81	Residential	B	66	8	55	56	No	1	55	1	No
R-7-82	**Residential**	**B**	**66**	**4**	**64**	**74**	**Yes**	**10**	**65**	**10**	**Yes**
R-7-83	Residential	B	66	4	57	61	No	4	57	3	No
R-7-84	Residential	B	66	4	54	57	No	3	54	3	No
R-7-85	**Residential**	**B**	**66**	**4**	**56**	**60**	**No**	**5**	**56**	**5**	**Yes**
R-7-86	**Residential**	**B**	**66**	**4**	**66**	**75**	**Yes**	**10**	**66**	**10**	**Yes**
R-7-87	Residential	B	66	4	57	58	No	1	57	1	No
R-7-88	Residential	B	66	4	59	60	No	1	59	1	No
R-7-89	Residential	B	66	4	62	64	No	2	62	2	No
R-7-90	**Residential**	**B**	**66**	**4**	**64**	**71**	**Yes**	**7**	**64**	**7**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-2. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB2											
R-8-12	Residential	B	66	1	62	63	No	1	62	1	No
R-8-13	**Residential**	**B**	**66**	**1**	**66**	**71**	**Yes**	**5**	**66**	**5**	**Yes**
R-8-14	Residential	B	66	1	62	62	No	0	62	0	No
R-8-15	Residential	B	66	1	62	64	No	2	62	2	No
R-8-16	Residential	B	66	1	63	65	No	1	64	1	No
R-8-17	**Residential**	**B**	**66**	**1**	**66**	**75**	**Yes**	**8**	**67**	**8**	**Yes**
R-8-18	Residential	B	66	3	57	58	No	1	57	1	No
R-8-19	Residential	B	66	4	58	60	No	2	58	2	No
R-8-20	Residential	B	66	3	59	60	No	1	60	1	No
R-8-21	Residential	B	66	1	61	65	No	4	62	3	No
R-8-22	**Residential**	**B**	**66**	**1**	**64**	**73**	**Yes**	**9**	**64**	**9**	**Yes**
R-8-23	Residential	B	66	1	62	66	Yes	4	63	4	No
R-8-24	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**10**	**66**	**10**	**Yes**
R-8-25	Residential	B	66	1	61	64	No	3	61	3	No
R-8-26	Residential	B	66	1	64	68	Yes	4	64	4	No
R-8-27	Residential	B	66	14	58	59	No	1	59	1	No
R-8-28	Residential	B	66	1	60	63	No	3	61	3	No
R-8-29	**Residential**	**B**	**66**	**1**	**65**	**74**	**Yes**	**9**	**65**	**9**	**Yes**
R-8-30	Residential	B	66	1	63	68	Yes	5	63	4	No
R-8-31	**Troy Villa Outdoor Use**	**C**	**66**	**1**	**66**	**78**	**Yes**	**11**	**66**	**11**	**Yes**
R-8-32	Residential	B	66	1	59	61	No	3	59	2	No
R-8-33	**Residential**	**B**	**66**	**1**	**66**	**75**	**Yes**	**9**	**66**	**9**	**Yes**
R-8-34	Residential	B	66	1	64	68	Yes	5	64	4	No
R-8-35	Residential	B	66	5	57	58	No	1	57	1	No
R-8-36	**Residential**	**B**	**66**	**1**	**66**	**75**	**Yes**	**9**	**67**	**9**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-2 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB2											
R-8-37	Residential	B	66	1	58	60	No	2	58	2	No
R-8-38	Residential	B	66	1	63	67	Yes	4	64	4	No
R-8-39	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**9**	**67**	**9**	**Yes**
R-8-40	Residential	B	66	1	62	67	Yes	4	62	4	No
R-8-41	Residential	B	66	1	58	61	No	2	59	2	No
R-8-42	Residential	B	66	3	58	58	No	0	58	0	No
R-8-43	**Residential**	**B**	**66**	**1**	**67**	**76**	**Yes**	**9**	**67**	**9**	**Yes**
R-8-44	**Troy Villa Basketball Court**	**C**	**66**	**1**	**67**	**78**	**Yes**	**11**	**67**	**11**	**Yes**
R-8-45	Residential	B	66	1	63	67	Yes	4	63	4	No
R-8-46	Residential	B	66	6	58	59	No	1	58	1	No
R-8-47	Residential	B	66	9	58	58	No	0	58	0	No
R-8-48	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**10**	**67**	**9**	**Yes**
R-8-49	Residential	B	66	1	59	60	No	2	59	1	No
R-8-50	**Residential**	**B**	**66**	**1**	**62**	**67**	**Yes**	**5**	**62**	**5**	**Yes**
R-8-51	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**10**	**66**	**9**	**Yes**
R-8-52	Residential	B	66	1	60	64	No	4	61	3	No
R-8-53	Residential	B	66	6	59	59	No	0	59	0	No
R-8-54	**Residential**	**B**	**66**	**1**	**66**	**75**	**Yes**	**10**	**66**	**9**	**Yes**
R-8-55	**Troy Villa Patio**	**C**	**66**	**1**	**66**	**78**	**Yes**	**12**	**66**	**11**	**Yes**
R-8-56	**Residential**	**B**	**66**	**1**	**65**	**75**	**Yes**	**10**	**65**	**10**	**Yes**
R-8-57	Residential	B	66	1	60	61	No	1	60	1	No
R-8-58	Residential	B	66	1	56	56	No	1	56	1	No
R-8-59	**Residential**	**B**	**66**	**1**	**61**	**66**	**Yes**	**5**	**62**	**5**	**Yes**
R-8-60	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**10**	**66**	**10**	**Yes**
R-8-61	Residential	B	66	6	61	61	No	0	61	0	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-2 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB2											
R-8-62	Residential	B	66	6	60	61	No	1	60	1	No
R-8-63	Residential	B	66	6	60	62	No	2	60	2	No
R-8-64	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**10**	**66**	**10**	**Yes**
R-8-65	Residential	B	66	1	59	60	No	1	59	1	No
R-8-66	**Troy Villa Picnic Table**	**C**	**66**	**1**	**67**	**78**	**Yes**	**11**	**67**	**11**	**Yes**
R-8-67	Residential	B	66	1	62	66	Yes	4	62	3	No
R-8-68	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**10**	**66**	**10**	**Yes**
R-8-69	Residential	B	66	1	62	65	No	4	62	4	No
R-8-70	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**11**	**66**	**10**	**Yes**
R-8-71	Residential	B	66	6	59	60	No	1	59	1	No
R-8-72	**Troy Villa Outdoor Use**	**C**	**66**	**1**	**66**	**78**	**Yes**	**13**	**66**	**12**	**Yes**
R-8-73	Residential	B	66	3	61	63	No	2	62	2	No
R-8-74	Residential	B	66	4	60	62	No	1	60	1	No
R-8-75	Residential	B	66	3	61	63	No	2	61	2	No
R-8-76	Residential	B	66	1	64	68	Yes	4	64	4	No
R-8-77	**Residential**	**B**	**66**	**1**	**66**	**77**	**Yes**	**11**	**67**	**11**	**Yes**
R-8-78	**Residential**	**B**	**66**	**1**	**65**	**70**	**Yes**	**5**	**65**	**5**	**Yes**
R-8-79	**Residential**	**B**	**66**	**1**	**66**	**74**	**Yes**	**8**	**67**	**8**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-3. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB3											
R-9-3	Residential	B	66	3	57	71	Yes	14	67	4	No
R-9-4	Residential	B	66	1	59	66	Yes	8	65	2	No
R-9-5	**Residential**	**B**	**66**	**2**	**62**	**63**	**No**	**1**	**57**	**6**	**Yes**
R-9-6	**Residential**	**B**	**66**	**1**	**61**	**64**	**No**	**3**	**59**	**5**	**Yes**
R-9-7	Residential	B	66	1	60	66	Yes	5	62	3	No
R-9-8	**Residential**	**B**	**66**	**1**	**61**	**66**	**Yes**	**5**	**61**	**5**	**Yes**
R-9-9	**Residential**	**B**	**66**	**1**	**61**	**65**	**No**	**4**	**60**	**5**	**Yes**
R-9-10	**Residential**	**B**	**66**	**5**	**59**	**67**	**Yes**	**8**	**62**	**6**	**Yes**
R-9-11	**Residential**	**B**	**66**	**1**	**61**	**67**	**Yes**	**6**	**61**	**6**	**Yes**
R-9-12	**Residential**	**B**	**66**	**1**	**62**	**67**	**Yes**	**5**	**60**	**7**	**Yes**
R-9-13	**Residential**	**B**	**66**	**1**	**61**	**70**	**Yes**	**8**	**61**	**8**	**Yes**
R-9-14	**Residential**	**B**	**66**	**1**	**62**	**70**	**Yes**	**8**	**62**	**8**	**Yes**
R-9-15	**Residential**	**B**	**66**	**5**	**60**	**69**	**Yes**	**9**	**62**	**8**	**Yes**
R-9-16	**Residential**	**B**	**66**	**1**	**63**	**70**	**Yes**	**7**	**62**	**8**	**Yes**
R-9-17	**Residential**	**B**	**66**	**1**	**64**	**68**	**Yes**	**5**	**60**	**8**	**Yes**
R-9-18	**Residential**	**B**	**66**	**1**	**65**	**71**	**Yes**	**7**	**63**	**8**	**Yes**
R-9-19	**Residential**	**B**	**66**	**1**	**64**	**72**	**Yes**	**8**	**64**	**8**	**Yes**
R-9-20	**Residential**	**B**	**66**	**5**	**61**	**73**	**Yes**	**11**	**65**	**8**	**Yes**
R-9-21	**Residential**	**B**	**66**	**1**	**64**	**72**	**Yes**	**7**	**64**	**8**	**Yes**
R-9-22	**Residential**	**B**	**66**	**1**	**65**	**68**	**Yes**	**3**	**62**	**6**	**Yes**
R-9-23	**Residential**	**B**	**66**	**3**	**62**	**71**	**Yes**	**9**	**65**	**7**	**Yes**
R-9-24	**Residential**	**B**	**66**	**1**	**58**	**72**	**Yes**	**14**	**65**	**7**	**Yes**
R-9-25	**Residential**	**B**	**66**	**6**	**56**	**69**	**Yes**	**13**	**63**	**6**	**Yes**
R-9-26	**Residential**	**B**	**66**	**6**	**66**	**73**	**Yes**	**7**	**66**	**7**	**Yes**
R-9-27	Residential	B	66	6	57	58	No	1	57	1	No

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-3 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB3											
R-9-28	Residential	B	66	20	53	53	No	1	53	0	No
R-9-29	Residential	B	66	18	55	55	No	0	55	0	No
R-9-30	Residential	B	66	6	58	61	No	3	59	3	No
R-9-31	**Residential**	**B**	**66**	**6**	**66**	**73**	**Yes**	**7**	**66**	**7**	**Yes**
R-9-32	Residential	B	66	6	59	62	No	3	59	3	No
R-9-33	Residential	B	66	3	54	54	No	0	54	0	No
R-9-34	Residential	B	66	3	60	64	No	4	61	4	No
R-9-35	Charter Square Apartments Pool	C	66	1	54	56	No	2	54	1	No
R-9-36	Residential	B	66	3	57	60	No	2	57	2	No
R-9-37	**Residential**	**B**	**66**	**4**	**62**	**67**	**Yes**	**5**	**62**	**5**	**Yes**
R-9-38	Residential	B	66	6	57	60	No	3	57	3	No
R-9-39	**Residential**	**B**	**66**	**6**	**66**	**73**	**Yes**	**7**	**67**	**6**	**Yes**
R-9-40	Residential	B	66	18	55	56	No	0	56	0	No
R-9-41	Residential	B	66	6	59	61	No	2	59	2	No
R-9-42	Residential	B	66	20	52	52	No	0	52	0	No
R-9-43	**Residential**	**B**	**66**	**6**	**67**	**73**	**Yes**	**7**	**67**	**6**	**Yes**
R-9-44	Residential	B	66	6	59	60	No	1	59	1	No
R-9-45	Residential	B	66	6	58	60	No	2	59	2	No
R-9-46	Residential	B	66	12	55	55	No	0	55	0	No
R-9-47	**Residential**	**B**	**66**	**6**	**68**	**73**	**Yes**	**6**	**68**	**5**	**Yes**
R-9-48	Residential	B	66	6	64	66	Yes	1	65	1	No
R-9-49	Residential	B	66	4	67	69	Yes	2	67	2	No
R-9-50	Residential	B	66	3	66	68	Yes	2	67	1	No

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Table D-4. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB4											
R-9-51	Quality Inn Pool	E	71	1	47	47	No	0	47	0	No
R-9-52	Residential	B	66	3	58	59	No	1	58	1	No
R-9-53	Residential	B	66	2	62	62	No	0	62	0	No
R-9-54	Residential	B	66	6	65	67	Yes	2	65	2	No
R-9-55	Residential	B	66	2	59	63	No	3	60	3	No
R-9-56	Residential	B	66	2	64	65	No	1	65	1	No
R-9-57	Residential	B	66	2	64	65	No	1	64	1	No
R-9-58	Residential	B	66	6	62	66	Yes	4	62	4	No
R-9-59	Residential	B	66	2	67	70	Yes	3	67	3	No
R-9-60	Residential	B	66	2	56	57	No	1	56	1	No
R-9-61	Residential	B	66	1	59	59	No	0	59	0	No
R-9-62	Residential	B	66	2	58	58	No	0	58	0	No
R-9-63	Residential	B	66	2	58	58	No	0	58	0	No
R-9-64	Residential	B	66	2	57	60	No	4	57	3	No
R-9-65	Residential	B	66	1	60	65	No	4	60	4	No
R-9-66	Residential	B	66	2	66	68	Yes	2	66	2	No
R-9-67	Residential	B	66	2	60	64	No	4	61	3	No
R-9-68	Residential	B	66	6	54	54	No	1	54	1	No
R-9-69	Residential	B	66	2	57	59	No	2	57	2	No
R-9-70	**Residential**	**B**	**66**	**2**	**64**	**70**	**Yes**	**7**	**64**	**6**	**Yes**
R-9-71	**Residential**	**B**	**66**	**3**	**69**	**74**	**Yes**	**5**	**69**	**5**	**Yes**
R-9-72	Residential	B	66	2	53	55	No	2	53	2	No
R-9-73	Residential	B	66	3	56	58	No	3	56	2	No
R-9-74	Residential	B	66	2	54	54	No	1	54	1	No
R-9-75	Residential	B	66	1	56	58	No	2	57	2	No

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Table D-4 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB4											
R-9-76	Residential	B	66	2	55	57	No	2	55	2	No
R-9-77	Residential	B	66	2	53	53	No	1	52	1	No
R-9-78	**Residential**	**B**	**66**	**3**	**64**	**72**	**Yes**	**8**	**64**	**8**	**Yes**
R-9-79	Residential	B	66	3	55	57	No	2	55	2	No
R-9-80	**Residential**	**B**	**66**	**2**	**69**	**75**	**Yes**	**6**	**69**	**6**	**Yes**
R-9-81	Residential	B	66	2	57	61	No	4	58	4	No
R-9-82	Residential	B	66	2	53	54	No	1	53	1	No
R-9-83	Residential	B	66	3	56	59	No	3	56	3	No
R-9-84	**Residential**	**B**	**66**	**2**	**64**	**74**	**Yes**	**10**	**64**	**9**	**Yes**
R-9-85	**Residential**	**B**	**66**	**2**	**68**	**76**	**Yes**	**8**	**68**	**8**	**Yes**
R-9-86	Residential	B	66	2	53	53	No	0	53	0	No
R-9-87	Residential	B	66	2	55	55	No	0	55	0	No
R-9-88	Residential	B	66	6	56	59	No	3	56	3	No
R-9-89	**Residential**	**B**	**66**	**2**	**58**	**64**	**No**	**6**	**58**	**6**	**Yes**
R-9-90	**Residential**	**B**	**66**	**2**	**61**	**70**	**Yes**	**9**	**61**	**9**	**Yes**
R-9-91	**Residential**	**B**	**66**	**2**	**64**	**73**	**Yes**	**8**	**64**	**8**	**Yes**
R-9-92	Residential	B	66	2	54	56	No	3	54	3	No
R-9-93	Residential	B	66	1	56	60	No	4	56	4	No
R-9-94	**The Gables of Troy Playground**	**C**	**66**	**4**	**64**	**74**	**Yes**	**10**	**64**	**10**	**Yes**
R-9-95	Residential	B	66	2	53	54	No	2	52	2	No
R-9-96	Residential	B	66	1	55	59	No	4	55	3	No
R-9-97	**The Gables of Troy Tennis Court**	**C**	**66**	**2**	**64**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-9-98	The Gables of Troy Pool	C	66	6	53	57	No	4	53	4	No
R-9-99	Residential	B	66	3	54	59	No	4	55	4	No
R-9-100	**Residential**	**B**	**66**	**2**	**66**	**76**	**Yes**	**10**	**66**	**9**	**Yes**

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Table D-4 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

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Barrier NB4											
R-9-101	**Residential**	**B**	**66**	**2**	**63**	**73**	**Yes**	**9**	**64**	**9**	**Yes**
R-9-102	Residential	B	66	6	51	53	No	2	51	2	No
R-9-103	Residential	B	66	3	54	58	No	4	54	4	No
R-9-104	Residential	B	66	2	49	49	No	0	49	0	No
R-9-105	**Residential**	**B**	**66**	**2**	**67**	**76**	**Yes**	**10**	**67**	**10**	**Yes**
R-9-106	Residential	B	66	2	47	47	No	0	47	0	No
R-9-107	**Residential**	**B**	**66**	**2**	**64**	**73**	**Yes**	**10**	**64**	**9**	**Yes**
R-9-108	**Residential**	**B**	**66**	**1**	**57**	**67**	**Yes**	**10**	**57**	**10**	**Yes**
R-9-109	**Residential**	**B**	**66**	**1**	**55**	**62**	**No**	**7**	**56**	**6**	**Yes**
R-9-110	**Residential**	**B**	**66**	**1**	**62**	**72**	**Yes**	**11**	**62**	**10**	**Yes**
R-9-111	**Residential**	**B**	**66**	**1**	**60**	**69**	**Yes**	**9**	**60**	**9**	**Yes**
R-9-112	**Residential**	**B**	**66**	**1**	**67**	**76**	**Yes**	**9**	**67**	**9**	**Yes**
R-9-113	**Residential**	**B**	**66**	**1**	**64**	**73**	**Yes**	**9**	**64**	**9**	**Yes**
R-9-114	**Residential**	**B**	**66**	**1**	**60**	**70**	**Yes**	**9**	**61**	**9**	**Yes**
R-9-115	**Residential**	**B**	**66**	**1**	**58**	**64**	**No**	**6**	**58**	**6**	**Yes**
R-9-116	**Residential**	**B**	**66**	**1**	**63**	**73**	**Yes**	**9**	**64**	**9**	**Yes**
R-9-117	**Residential**	**B**	**66**	**1**	**61**	**69**	**Yes**	**8**	**61**	**8**	**Yes**
R-9-118	Residential	B	66	3	53	55	No	2	53	2	No
R-9-119	Residential	B	66	2	50	50	No	0	50	0	No
R-9-120	Residential	B	66	2	47	47	No	0	47	0	No
R-9-121	**Residential**	**B**	**66**	**2**	**61**	**71**	**Yes**	**10**	**61**	**9**	**Yes**
R-9-122	**Residential**	**B**	**66**	**2**	**59**	**65**	**No**	**6**	**59**	**6**	**Yes**
R-9-123	Residential	B	66	3	53	56	No	3	53	3	No
R-9-124	Residential	B	66	9	53	54	No	1	53	1	No
R-9-125	**Residential**	**B**	**66**	**1**	**58**	**64**	**No**	**7**	**58**	**6**	**Yes**

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Table D-4 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

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Barrier NB4											
R-9-126	**Residential**	**B**	**66**	**1**	**60**	**70**	**Yes**	**10**	**60**	**10**	**Yes**
R-9-127	**Residential**	**B**	**66**	**1**	**60**	**69**	**Yes**	**9**	**61**	**8**	**Yes**
R-9-128	**Residential**	**B**	**66**	**1**	**63**	**73**	**Yes**	**10**	**63**	**10**	**Yes**
R-9-129	**Residential**	**B**	**66**	**1**	**67**	**76**	**Yes**	**10**	**67**	**9**	**Yes**
R-9-130	**Residential**	**B**	**66**	**1**	**64**	**73**	**Yes**	**9**	**64**	**9**	**Yes**
R-9-131	**Residential**	**B**	**66**	**1**	**55**	**60**	**No**	**6**	**55**	**6**	**Yes**
R-9-132	**Residential**	**B**	**66**	**1**	**56**	**65**	**No**	**9**	**57**	**9**	**Yes**
R-9-133	**Residential**	**B**	**66**	**1**	**59**	**68**	**Yes**	**9**	**59**	**8**	**Yes**
R-9-134	**Residential**	**B**	**66**	**1**	**61**	**71**	**Yes**	**10**	**61**	**10**	**Yes**
R-9-135	Residential	B	66	3	54	56	No	3	53	3	No
R-9-136	Residential	B	66	2	51	51	No	0	51	0	No
R-9-137	Residential	B	66	2	47	47	No	0	47	0	No
R-9-138	**Residential**	**B**	**66**	**2**	**66**	**76**	**Yes**	**10**	**66**	**10**	**Yes**
R-9-139	**Residential**	**B**	**66**	**2**	**63**	**73**	**Yes**	**9**	**63**	**9**	**Yes**
R-9-140	**Residential**	**B**	**66**	**2**	**55**	**63**	**No**	**9**	**55**	**9**	**Yes**
R-9-141	**Residential**	**B**	**66**	**1**	**53**	**58**	**No**	**5**	**53**	**5**	**Yes**
R-9-142	**Residential**	**B**	**66**	**2**	**58**	**69**	**Yes**	**11**	**58**	**10**	**Yes**
R-9-143	**Residential**	**B**	**66**	**1**	**56**	**64**	**No**	**8**	**57**	**8**	**Yes**
R-9-144	Residential	B	66	3	54	57	No	3	54	3	No
R-9-145	**Residential**	**B**	**66**	**1**	**63**	**72**	**Yes**	**9**	**63**	**8**	**Yes**
R-9-146	**Residential**	**B**	**66**	**1**	**66**	**76**	**Yes**	**10**	**66**	**10**	**Yes**
R-9-147	**Residential**	**B**	**66**	**2**	**60**	**68**	**Yes**	**9**	**60**	**9**	**Yes**
R-9-148	**Residential**	**B**	**66**	**1**	**57**	**63**	**No**	**6**	**57**	**6**	**Yes**
R-9-149	**Residential**	**B**	**66**	**2**	**62**	**72**	**Yes**	**10**	**62**	**9**	**Yes**
R-9-150	**Residential**	**B**	**66**	**1**	**60**	**67**	**Yes**	**8**	**60**	**7**	**Yes**

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Table D-4 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

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Barrier NB4											
R-9-151	Residential	B	66	3	55	59	No	4	55	4	No
R-9-152	Residential	B	66	6	53	56	No	3	54	3	No
R-9-153	**Residential**	**B**	**66**	**1**	**57**	**64**	**No**	**7**	**58**	**6**	**Yes**
R-9-154	**Residential**	**B**	**66**	**1**	**60**	**70**	**Yes**	**10**	**60**	**10**	**Yes**
R-9-155	**Residential**	**B**	**66**	**1**	**60**	**69**	**Yes**	**8**	**61**	**8**	**Yes**
R-9-156	**Residential**	**B**	**66**	**1**	**62**	**73**	**Yes**	**11**	**63**	**11**	**Yes**
R-9-157	**Residential**	**B**	**66**	**1**	**65**	**76**	**Yes**	**11**	**65**	**11**	**Yes**
R-9-158	**Residential**	**B**	**66**	**1**	**63**	**71**	**Yes**	**9**	**63**	**9**	**Yes**
R-9-159	**Residential**	**B**	**66**	**1**	**57**	**64**	**No**	**7**	**57**	**7**	**Yes**
R-9-160	**Residential**	**B**	**66**	**1**	**59**	**69**	**Yes**	**10**	**59**	**10**	**Yes**
R-9-161	**Residential**	**B**	**66**	**1**	**59**	**68**	**Yes**	**8**	**60**	**8**	**Yes**
R-9-162	**Residential**	**B**	**66**	**1**	**61**	**72**	**Yes**	**11**	**62**	**11**	**Yes**
R-9-163	Residential	B	66	3	52	54	No	2	52	2	No
R-9-164	Residential	B	66	2	49	50	No	1	49	1	No
R-9-165	Residential	B	66	2	45	45	No	0	45	1	No
R-9-166	**Residential**	**B**	**66**	**2**	**60**	**70**	**Yes**	**11**	**60**	**10**	**Yes**
R-9-167	**Residential**	**B**	**66**	**2**	**58**	**65**	**No**	**7**	**58**	**7**	**Yes**
R-9-168	Residential	B	66	5	54	56	No	2	54	2	No
R-9-169	**Residential**	**B**	**66**	**1**	**57**	**63**	**No**	**6**	**57**	**6**	**Yes**
R-9-170	**Residential**	**B**	**66**	**1**	**58**	**68**	**Yes**	**10**	**58**	**10**	**Yes**
R-9-171	Residential	B	66	3	53	57	No	3	54	3	No
R-9-172	**Residential**	**B**	**66**	**1**	**59**	**67**	**Yes**	**8**	**59**	**8**	**Yes**
R-9-173	**Residential**	**B**	**66**	**1**	**61**	**72**	**Yes**	**11**	**61**	**11**	**Yes**
R-9-174	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**12**	**64**	**11**	**Yes**
R-9-175	**Residential**	**B**	**66**	**1**	**61**	**70**	**Yes**	**8**	**62**	**8**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-4 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB4											
R-9-176	**Residential**	**B**	**66**	**1**	**57**	**64**	**No**	**8**	**57**	**8**	**Yes**
R-9-177	**Residential**	**B**	**66**	**1**	**58**	**69**	**Yes**	**11**	**58**	**11**	**Yes**
R-9-178	**Residential**	**B**	**66**	**1**	**54**	**62**	**No**	**7**	**54**	**7**	**Yes**
R-9-179	**Residential**	**B**	**66**	**1**	**57**	**66**	**Yes**	**9**	**57**	**9**	**Yes**
R-9-180	**Residential**	**B**	**66**	**4**	**56**	**63**	**No**	**7**	**56**	**7**	**Yes**
R-9-181	**Residential**	**B**	**66**	**4**	**55**	**62**	**No**	**7**	**55**	**7**	**Yes**
R-9-182	**Residential**	**B**	**66**	**2**	**63**	**71**	**Yes**	**8**	**63**	**7**	**Yes**
R-9-183	**Residential**	**B**	**66**	**2**	**54**	**60**	**No**	**6**	**54**	**5**	**Yes**
R-9-184	**Residential**	**B**	**66**	**4**	**65**	**77**	**Yes**	**12**	**65**	**12**	**Yes**
R-9-185	**Residential**	**B**	**66**	**4**	**58**	**64**	**No**	**6**	**59**	**6**	**Yes**
R-9-186	**Residential**	**B**	**66**	**4**	**55**	**62**	**No**	**8**	**55**	**7**	**Yes**
R-9-187	**Residential**	**B**	**66**	**4**	**55**	**63**	**No**	**8**	**55**	**7**	**Yes**
R-9-188	Residential	B	66	3	55	58	No	3	55	3	No
R-9-189	**Residential**	**B**	**66**	**4**	**56**	**64**	**No**	**8**	**56**	**7**	**Yes**
R-9-190	**Residential**	**B**	**66**	**4**	**56**	**63**	**No**	**7**	**56**	**7**	**Yes**
R-9-191	Residential	B	66	4	51	55	No	4	51	4	No
R-9-192	**Residential**	**B**	**66**	**4**	**63**	**69**	**Yes**	**7**	**63**	**6**	**Yes**
R-9-193	Residential	B	66	4	55	59	No	4	56	3	No
R-9-194	**Residential**	**B**	**66**	**4**	**65**	**76**	**Yes**	**12**	**65**	**11**	**Yes**
R-9-195	Residential	B	66	5	54	56	No	2	54	2	No
R-9-196	**Residential**	**B**	**66**	**8**	**50**	**56**	**No**	**6**	**50**	**6**	**Yes**
R-9-197	**Residential**	**B**	**66**	**8**	**50**	**56**	**No**	**6**	**50**	**6**	**Yes**
R-9-198	Residential	B	66	8	50	54	No	5	50	4	No
R-9-199	Residential	B	66	8	50	54	No	4	50	4	No
R-9-200	Residential	B	66	2	55	58	No	2	56	2	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-4 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB4											
R-9-201	Residential	B	66	4	50	53	No	3	50	3	No
R-9-202	**Residential**	**B**	**66**	**4**	**63**	**69**	**Yes**	**6**	**64**	**6**	**Yes**
R-9-203	Residential	B	66	4	55	58	No	3	55	3	No
R-9-204	**Residential**	**B**	**66**	**4**	**65**	**75**	**Yes**	**10**	**65**	**10**	**Yes**
R-9-205	Residential	B	66	4	54	58	No	4	55	4	No
R-9-206	Residential	B	66	4	56	59	No	4	56	4	No
R-9-207	The Alcove Troy Tennis Court	C	66	2	54	58	No	4	54	4	No
R-9-208	Residential	B	66	4	50	53	No	3	51	3	No
R-9-209	Residential	B	66	4	64	69	Yes	4	65	4	No
R-9-210	Residential	B	66	4	55	58	No	3	55	3	No
R-9-211	**Residential**	**B**	**66**	**4**	**66**	**74**	**Yes**	**8**	**66**	**8**	**Yes**
R-9-212	Residential	B	66	2	58	59	No	1	58	1	No
R-9-213	Residential	B	66	1	57	59	No	2	57	2	No
R-9-214	The Alcove Troy Pool	C	66	5	57	59	No	3	57	2	No
R-9-215	**Residential**	**B**	**66**	**4**	**57**	**66**	**Yes**	**9**	**57**	**9**	**Yes**
R-9-216	**Residential**	**B**	**66**	**4**	**54**	**60**	**No**	**6**	**55**	**6**	**Yes**
R-9-217	**Residential**	**B**	**66**	**3**	**59**	**65**	**No**	**6**	**59**	**6**	**Yes**
R-9-218	**Residential**	**B**	**66**	**4**	**58**	**64**	**No**	**6**	**59**	**6**	**Yes**
R-9-219	Residential	B	66	2	64	64	No	1	64	0	No
R-9-220	Residential	B	66	4	69	70	Yes	1	69	1	No
R-9-221	Residential	B	66	4	66	67	Yes	0	67	0	No
R-9-222	Residential	B	66	4	70	71	Yes	1	70	1	No
R-9-223	Residential	B	66	4	68	68	Yes	1	68	0	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-5. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB5											
R-10-1	CJ Mahoney's Sports Grille	E	71	1	63	64	No	0	64	0	No
R-10-2	**Office**	**E**	**71**	**1**	**64**	**64**	**No**	**0**	**57**	**7**	**Yes**
R-10-3	**Residential**	**B**	**66**	**1**	**68**	**68**	**Yes**	**0**	**59**	**10**	**Yes**
R-10-4	**Residential**	**B**	**66**	**1**	**68**	**68**	**Yes**	**0**	**59**	**9**	**Yes**
R-10-5	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**0**	**58**	**9**	**Yes**
R-10-6	**Residential**	**B**	**66**	**1**	**61**	**62**	**No**	**0**	**57**	**5**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-6. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB6											
R-10-18	Residential	B	66	1	59	59	No	0	59	1	No
R-10-19	Residential	B	66	1	61	62	No	0	60	1	No
R-10-20	Residential	B	66	1	57	58	No	0	57	1	No
R-10-21	Residential	B	66	1	56	56	No	0	57	1	No
R-10-22	Residential	B	66	1	55	56	No	2	54	1	No
R-10-23	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**55**	**5**	**Yes**
R-10-24	**Residential**	**B**	**66**	**1**	**62**	**62**	**No**	**0**	**58**	**5**	**Yes**
R-10-25	Residential	B	66	1	55	56	No	1	53	3	No
R-10-26	Residential	B	66	1	56	56	No	1	53	3	No
R-10-27	Residential	B	66	1	57	57	No	0	54	4	No
R-10-28	**Residential**	**B**	**66**	**1**	**63**	**63**	**No**	**0**	**58**	**5**	**Yes**
R-10-29	Residential	B	66	1	58	58	No	0	54	4	No
R-10-30	Residential	B	66	1	56	56	No	0	54	3	No
R-10-31	Residential	B	66	1	55	56	No	1	53	3	No
R-10-32	Residential	B	66	1	55	56	No	1	53	2	No
R-10-33	**Residential**	**B**	**66**	**1**	**64**	**64**	**No**	**0**	**59**	**6**	**Yes**
R-10-34	**Residential**	**B**	**66**	**1**	**64**	**64**	**No**	**0**	**58**	**6**	**Yes**
R-10-35	Residential	B	66	1	58	58	No	0	54	4	No
R-10-37	Residential	B	66	2	54	56	No	2	51	3	No
R-10-38	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**59**	**8**	**Yes**
R-10-39	Residential	B	66	2	56	57	No	0	52	4	No
R-10-40	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**54**	**5**	**Yes**
R-10-41	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**0**	**59**	**9**	**Yes**
R-10-42	Residential	B	66	1	54	56	No	2	51	3	No
R-10-43	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**53**	**5**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-6 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB6											
R-10-44	**Residential**	**B**	**66**	**1**	**66**	**67**	**Yes**	**0**	**59**	**8**	**Yes**
R-10-45	Residential	B	66	1	55	56	No	2	51	4	No
R-10-46	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**53**	**5**	**Yes**
R-10-47	**Residential**	**B**	**66**	**1**	**68**	**68**	**Yes**	**0**	**59**	**10**	**Yes**
R-10-48	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**54**	**6**	**Yes**
R-10-49	Residential	B	66	1	56	56	No	1	52	4	No
R-10-50	Residential	B	66	1	54	56	No	2	51	4	No
R-10-51	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**0**	**58**	**9**	**Yes**
R-10-52	**Residential**	**B**	**66**	**1**	**58**	**59**	**No**	**0**	**53**	**5**	**Yes**
R-10-53	**Residential**	**B**	**66**	**1**	**66**	**67**	**Yes**	**0**	**58**	**8**	**Yes**
R-10-54	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**53**	**5**	**Yes**
R-10-55	Residential	B	66	1	54	56	No	3	51	3	No
R-10-56	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**8**	**Yes**
R-10-57	**Residential**	**B**	**66**	**1**	**58**	**59**	**No**	**0**	**54**	**5**	**Yes**
R-10-58	Residential	B	66	1	56	56	No	1	52	4	No
R-10-59	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**8**	**Yes**
R-10-60	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**54**	**5**	**Yes**
R-10-61	Residential	B	66	1	55	56	No	1	52	3	No
R-10-62	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**7**	**Yes**
R-10-63	**Residential**	**B**	**66**	**1**	**59**	**60**	**No**	**0**	**54**	**5**	**Yes**
R-10-64	**Residential**	**B**	**66**	**1**	**68**	**69**	**Yes**	**0**	**60**	**8**	**Yes**
R-10-65	Residential	B	66	1	55	56	No	1	52	3	No
R-10-66	Residential	B	66	1	54	56	No	3	51	3	No
R-10-67	Residential	B	66	1	59	59	No	0	55	4	No
R-10-68	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**59**	**7**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-6 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB6											
R-10-69	Residential	B	66	1	53	56	No	4	50	3	No
R-10-70	Residential	B	66	1	53	56	No	3	52	2	No
R-10-71	Residential	B	66	1	58	59	No	0	55	4	No
R-10-72	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**61**	**5**	**Yes**
R-10-73	Residential	B	66	1	65	65	No	0	61	4	No
R-10-74	Residential	B	66	1	61	61	No	0	60	1	No
R-10-75	Residential	B	66	1	61	61	No	0	61	1	No
R-10-76	Residential	B	66	1	61	61	No	0	61	0	No
R-10-77	Residential	B	66	1	61	61	No	0	61	0	No
R-10-78	Residential	B	66	1	62	62	No	0	62	0	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-7. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB7											
R-10-80	Residential	B	66	5	64	69	Yes	4	65	4	No
R-10-81	**Residential**	**B**	**66**	**2**	**65**	**72**	**Yes**	**7**	**65**	**7**	**Yes**
R-10-82	Residential	B	66	4	61	63	No	2	61	2	No
R-10-83	**Residential**	**B**	**66**	**2**	**66**	**76**	**Yes**	**10**	**66**	**10**	**Yes**
R-10-84	Residential	B	66	4	57	61	No	5	57	4	No
R-10-85	Residential	B	66	4	54	55	No	1	54	1	No
R-10-86	**Residential**	**B**	**66**	**5**	**66**	**76**	**Yes**	**11**	**66**	**10**	**Yes**
R-10-87	Residential	B	66	2	56	56	No	0	56	0	No
R-10-88	Residential	B	66	2	51	51	No	0	51	0	No
R-10-89	Residential	B	66	2	50	50	No	0	50	0	No
R-10-90	**Residential**	**B**	**66**	**4**	**64**	**74**	**Yes**	**10**	**64**	**10**	**Yes**
R-10-91	Residential	B	66	2	54	54	No	0	54	0	No
R-10-92	**Residential**	**B**	**66**	**3**	**62**	**70**	**Yes**	**8**	**62**	**8**	**Yes**
R-10-93	Residential	B	66	5	53	53	No	0	53	0	No
R-10-94	**Residential**	**B**	**66**	**2**	**64**	**73**	**Yes**	**9**	**64**	**9**	**Yes**
R-10-95	Residential	B	66	3	53	55	No	2	53	2	No
R-10-96	Residential	B	66	3	57	61	No	5	57	4	No
R-10-97	**Residential**	**B**	**66**	**3**	**66**	**77**	**Yes**	**11**	**66**	**10**	**Yes**
R-10-98	Residential	B	66	2	53	53	No	0	53	0	No
R-10-99	Residential	B	66	3	50	50	No	0	50	0	No
R-10-100	**Residential**	**B**	**66**	**2**	**59**	**64**	**No**	**5**	**59**	**5**	**Yes**
R-10-101	**Residential**	**B**	**66**	**2**	**65**	**77**	**Yes**	**11**	**65**	**11**	**Yes**
R-10-102	Residential	B	66	2	54	54	No	0	54	0	No
R-10-103	Residential	B	66	2	59	62	No	3	60	3	No
R-10-104	**Residential**	**B**	**66**	**3**	**64**	**72**	**Yes**	**9**	**64**	**8**	**Yes**

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* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-7 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB7											
R-10-105	Residential	B	66	2	56	59	No	3	56	3	No
R-10-106	Residential	B	66	4	52	52	No	0	52	0	No
R-10-107	Residential	B	66	2	60	63	No	4	60	3	No
R-10-108	Residential	B	66	4	61	65	No	4	61	4	No
R-10-109	Residential	B	66	2	53	53	No	0	53	0	No
R-10-110	Residential	B	66	2	53	54	No	1	53	1	No
R-10-111	**Residential**	**B**	**66**	**2**	**63**	**68**	**Yes**	**6**	**63**	**6**	**Yes**
R-10-112	Residential	B	66	3	55	57	No	2	55	2	No
R-10-113	**Residential**	**B**	**66**	**4**	**64**	**70**	**Yes**	**7**	**64**	**7**	**Yes**
R-10-114	**Residential**	**B**	**66**	**2**	**66**	**76**	**Yes**	**10**	**66**	**9**	**Yes**
R-10-115	**Residential**	**B**	**66**	**2**	**64**	**70**	**Yes**	**6**	**64**	**6**	**Yes**
R-10-116	Residential	B	66	4	60	63	No	3	60	3	No
R-10-117	Residential	B	66	1	53	54	No	1	53	1	No
R-10-118	Residential	B	66	4	57	59	No	2	58	2	No
R-10-119	Residential	B	66	1	55	56	No	1	55	1	No
R-10-120	Residential	B	66	1	56	57	No	1	57	1	No
R-10-121	Residential	B	66	1	53	53	No	1	53	0	No
R-10-122	Residential	B	66	1	55	56	No	1	55	1	No
R-10-123	Wattles Creek Condominiums Pool	C	66	5	54	54	No	0	54	0	No
R-10-124	Residential	B	66	1	56	57	No	1	56	1	No
R-10-125	**Residential**	**B**	**66**	**2**	**62**	**68**	**Yes**	**6**	**62**	**6**	**Yes**
R-10-126	**Residential**	**B**	**66**	**2**	**64**	**72**	**Yes**	**8**	**64**	**8**	**Yes**
R-10-127	Residential	B	66	2	58	61	No	3	59	3	No
R-10-128	Residential	B	66	1	51	52	No	0	51	0	No
R-10-129	Residential	B	66	1	53	54	No	1	53	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-7 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB7											
R-10-130	Residential	B	66	4	57	60	No	3	57	3	No
R-10-131	**Residential**	**B**	**66**	**2**	**63**	**70**	**Yes**	**7**	**64**	**7**	**Yes**
R-10-132	Residential	B	66	3	56	57	No	2	56	1	No
R-10-133	**Residential**	**B**	**66**	**2**	**62**	**69**	**Yes**	**6**	**62**	**6**	**Yes**
R-10-134	Residential	B	66	3	60	65	No	5	61	4	No
R-10-135	**Residential**	**B**	**66**	**4**	**63**	**71**	**Yes**	**8**	**64**	**8**	**Yes**
R-10-136	Residential	B	66	3	57	60	No	3	57	3	No
R-10-137	**Residential**	**B**	**66**	**2**	**65**	**76**	**Yes**	**11**	**65**	**11**	**Yes**
R-10-138	Residential	B	66	3	59	62	No	3	59	3	No
R-10-139	Residential	B	66	3	53	54	No	1	53	0	No
R-10-140	Residential	B	66	6	57	61	No	4	57	4	No
R-10-141	**Residential**	**B**	**66**	**7**	**64**	**76**	**Yes**	**11**	**64**	**11**	**Yes**
R-10-142	Residential	B	66	3	51	51	No	0	51	0	No
R-10-143	Residential	B	66	3	54	54	No	0	54	0	No
R-10-144	Residential	B	66	4	55	57	No	3	55	2	No
R-10-145	**Residential**	**B**	**66**	**4**	**63**	**71**	**Yes**	**8**	**63**	**8**	**Yes**
R-10-146	Residential	B	66	2	54	55	No	1	54	1	No
R-10-147	Residential	B	66	2	56	57	No	2	56	1	No
R-10-148	Residential	B	66	2	51	51	No	0	51	0	No
R-10-149	Residential	B	66	2	54	54	No	0	54	0	No
R-10-150	**Residential**	**B**	**66**	**4**	**64**	**74**	**Yes**	**10**	**65**	**10**	**Yes**
R-10-151	**Residential**	**B**	**66**	**5**	**58**	**63**	**No**	**5**	**58**	**5**	**Yes**
R-10-152	Residential	B	66	3	51	51	No	0	51	0	No
R-10-153	Residential	B	66	3	55	56	No	1	55	0	No
R-10-154	Residential	B	66	4	55	56	No	1	55	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-7 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB7											
R-10-155	**Residential**	**B**	**66**	**5**	**65**	**74**	**Yes**	**9**	**65**	**9**	**Yes**
R-10-156	Residential	B	66	1	63	68	Yes	5	63	4	No
R-10-157	Residential	B	66	2	59	60	No	1	60	1	No
R-10-158	Residential	B	66	1	62	63	No	2	62	2	No
R-10-159	Residential	B	66	2	62	63	No	1	62	1	No
R-10-160	**Wattles Creek Condominiums Tennis Court**	**C**	**66**	**2**	**67**	**73**	**Yes**	**6**	**67**	**6**	**Yes**
R-10-161	Residential	B	66	3	64	64	No	0	64	0	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-8. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB10											
R-11a-123	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**58**	**7**	**Yes**
R-11a-124	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**58**	**8**	**Yes**
R-11a-125	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**8**	**Yes**
R-11a-126	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**8**	**Yes**
R-11a-127	**Residential**	**B**	**66**	**1**	**66**	**67**	**Yes**	**0**	**58**	**9**	**Yes**
R-11a-128	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**9**	**Yes**
R-11a-129	**Residential**	**B**	**66**	**1**	**64**	**65**	**No**	**0**	**56**	**8**	**Yes**
R-11a-130	**Residential**	**B**	**66**	**1**	**61**	**61**	**No**	**0**	**54**	**7**	**Yes**
R-11a-131	**Residential**	**B**	**66**	**1**	**69**	**69**	**Yes**	**0**	**60**	**10**	**Yes**
R-11a-132	**Residential**	**B**	**66**	**3**	**58**	**59**	**No**	**0**	**52**	**7**	**Yes**
R-11a-133	**Residential**	**B**	**66**	**2**	**57**	**57**	**No**	**0**	**51**	**6**	**Yes**
R-11a-134	**Residential**	**B**	**66**	**2**	**55**	**56**	**No**	**0**	**50**	**5**	**Yes**
R-11a-135	**Residential**	**B**	**66**	**2**	**54**	**54**	**No**	**0**	**50**	**5**	**Yes**
R-11a-136	Residential	B	66	2	53	53	No	0	50	4	No
R-11a-137	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**59**	**7**	**Yes**
R-11a-138	**Residential**	**B**	**66**	**1**	**64**	**65**	**No**	**0**	**59**	**6**	**Yes**
R-11a-139	Residential	B	66	1	56	56	No	0	52	4	No
R-11a-140	**Residential**	**B**	**66**	**1**	**54**	**55**	**No**	**0**	**49**	**5**	**Yes**
R-11a-142	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**59**	**6**	**Yes**
R-11a-143	Residential	B	66	2	52	52	No	0	48	3	No
R-11a-144	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**59**	**6**	**Yes**
R-11a-145	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**59**	**7**	**Yes**
R-11a-146	**Residential**	**B**	**66**	**1**	**56**	**56**	**No**	**0**	**51**	**5**	**Yes**
R-11a-147	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**59**	**8**	**Yes**
R-11a-148	Residential	B	66	1	52	52	No	0	49	4	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-8 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB10											
R-11a-149	**Residential**	**B**	**66**	**1**	**57**	**57**	**No**	**0**	**51**	**6**	**Yes**
R-11a-150	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**8**	**Yes**
R-11a-151	**Residential**	**B**	**66**	**1**	**57**	**57**	**No**	**0**	**51**	**6**	**Yes**
R-11a-152	Residential	B	66	1	52	52	No	0	50	2	No
R-11a-153	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**8**	**Yes**
R-11a-154	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**52**	**8**	**Yes**
R-11a-155	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**58**	**9**	**Yes**
R-11a-156	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**52**	**7**	**Yes**
R-11a-157	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**57**	**9**	**Yes**
R-11a-158	**Residential**	**B**	**66**	**1**	**54**	**56**	**No**	**3**	**48**	**6**	**Yes**
R-11a-159	Residential	B	66	1	52	56	No	4	48	4	No
R-11a-160	**Residential**	**B**	**66**	**1**	**57**	**58**	**No**	**0**	**52**	**6**	**Yes**
R-11a-161	**Residential**	**B**	**66**	**1**	**65**	**66**	**Yes**	**0**	**57**	**9**	**Yes**
R-11a-162	**Residential**	**B**	**66**	**1**	**64**	**65**	**No**	**0**	**56**	**8**	**Yes**
R-11a-163	**Residential**	**B**	**66**	**1**	**63**	**63**	**No**	**0**	**56**	**8**	**Yes**
R-11a-164	**Residential**	**B**	**66**	**1**	**55**	**56**	**No**	**2**	**50**	**5**	**Yes**
R-11a-165	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**53**	**7**	**Yes**
R-11a-166	**Residential**	**B**	**66**	**1**	**56**	**56**	**No**	**1**	**50**	**6**	**Yes**
R-11a-167	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**53**	**6**	**Yes**
R-11a-168	**Residential**	**B**	**66**	**1**	**57**	**57**	**No**	**0**	**51**	**6**	**Yes**
R-11a-169	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**53**	**7**	**Yes**
R-11a-170	**Residential**	**B**	**66**	**1**	**60**	**61**	**No**	**0**	**54**	**7**	**Yes**
R-11a-171	**Residential**	**B**	**66**	**1**	**62**	**62**	**No**	**0**	**55**	**7**	**Yes**
R-11a-172	**Residential**	**B**	**66**	**1**	**61**	**61**	**No**	**0**	**56**	**5**	**Yes**
R-11a-173	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**56**	**5**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-8 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB10											
R-11a-174	Residential	B	66	1	55	56	No	2	50	4	No
R-11a-175	**Residential**	**B**	**66**	**1**	**56**	**56**	**No**	**1**	**51**	**5**	**Yes**
R-11a-176	**Residential**	**B**	**66**	**1**	**57**	**57**	**No**	**0**	**52**	**6**	**Yes**
R-11a-177	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**54**	**5**	**Yes**
R-11a-178	Residential	B	66	1	55	56	No	2	51	4	No
R-11a-179	Residential	B	66	1	55	56	No	1	52	4	No
R-11a-180	**Residential**	**B**	**66**	**1**	**55**	**56**	**No**	**1**	**51**	**5**	**Yes**
R-11a-181	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**54**	**5**	**Yes**
R-11a-182	**Residential**	**B**	**66**	**1**	**57**	**58**	**No**	**0**	**53**	**5**	**Yes**
R-11a-183	**Residential**	**B**	**66**	**1**	**57**	**57**	**No**	**0**	**53**	**5**	**Yes**
R-11a-184	Residential	B	66	1	57	57	No	0	53	4	No
R-11a-185	Residential	B	66	1	54	56	No	2	52	3	No
R-11a-186	Residential	B	66	1	56	56	No	1	53	3	No
R-11a-187	Residential	B	66	1	55	56	No	1	52	4	No
R-11a-188	Residential	B	66	1	56	56	No	0	53	3	No
R-11a-189	Residential	B	66	1	57	57	No	0	56	1	No
R-11a-190	Residential	B	66	1	57	57	No	0	56	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-9. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB11											
R-11-1	Residential	B	66	1	62	62	No	0	62	0	No
R-11-2	Residential	B	66	1	60	61	No	0	61	0	No
R-11-3	Residential	B	66	1	60	61	No	0	61	0	No
R-11-4	Residential	B	66	1	54	54	No	0	54	1	No
R-11-5	Residential	B	66	1	61	61	No	0	61	0	No
R-11-6	Residential	B	66	1	62	62	No	0	62	0	No
R-11-7	Residential	B	66	2	55	55	No	0	54	1	No
R-11-8	Residential	B	66	1	62	62	No	0	61	0	No
R-11-9	Residential	B	66	1	63	63	No	0	62	1	No
R-11-10	Residential	B	66	2	56	57	No	0	56	1	No
R-11-11	Residential	B	66	2	52	52	No	0	52	1	No
R-11-12	Residential	B	66	1	64	64	No	0	63	1	No
R-11-13	Residential	B	66	1	63	63	No	0	62	2	No
R-11-14	Residential	B	66	2	57	57	No	0	55	2	No
R-11-15	Residential	B	66	2	52	52	No	0	51	1	No
R-11-16	Residential	B	66	1	63	63	No	0	61	2	No
R-11-17	Residential	B	66	2	57	57	No	0	55	2	No
R-11-18	Residential	B	66	1	63	63	No	0	60	3	No
R-11-19	Residential	B	66	2	52	52	No	0	50	2	No
R-11-20	Residential	B	66	1	63	63	No	0	60	3	No
R-11-21	Residential	B	66	1	63	63	No	0	60	3	No
R-11-22	Residential	B	66	2	57	57	No	0	54	3	No
R-11-23	Residential	B	66	2	52	52	No	0	49	3	No
R-11-24	Residential	B	66	2	57	57	No	0	54	3	No
R-11-25	Residential	B	66	1	62	63	No	0	60	3	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-9 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB11											
R-11-26	Residential	B	66	2	52	52	No	0	50	3	No
R-11-27	Residential	B	66	1	63	63	No	0	60	3	No
R-11-28	Residential	B	66	1	54	54	No	0	51	3	No
R-11-29	Residential	B	66	1	57	57	No	0	54	4	No
R-11-30	Residential	B	66	1	63	63	No	0	60	3	No
R-11-31	Residential	B	66	1	63	63	No	0	60	3	No
R-11-32	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**54**	**5**	**Yes**
R-11-33	Residential	B	66	1	54	54	No	0	51	3	No
R-11-34	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**61**	**5**	**Yes**
R-11-35	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**61**	**6**	**Yes**
R-11-36	**Residential**	**B**	**66**	**1**	**54**	**54**	**No**	**0**	**49**	**5**	**Yes**
R-11-37	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**54**	**5**	**Yes**
R-11-38	**Residential**	**B**	**66**	**1**	**57**	**57**	**No**	**0**	**52**	**5**	**Yes**
R-11-39	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**0**	**60**	**6**	**Yes**
R-11-40	**Residential**	**B**	**66**	**1**	**61**	**61**	**No**	**0**	**55**	**6**	**Yes**
R-11-42	**Residential**	**B**	**66**	**1**	**69**	**69**	**Yes**	**0**	**62**	**7**	**Yes**
R-11-43	Residential	B	66	1	55	55	No	0	52	4	No
R-11-44	**Residential**	**B**	**66**	**1**	**68**	**68**	**Yes**	**0**	**60**	**8**	**Yes**
R-11-45	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**57**	**8**	**Yes**
R-11-46	**Residential**	**B**	**66**	**1**	**63**	**64**	**No**	**0**	**56**	**8**	**Yes**
R-11-47**	**Firefighters Park**	**C**	**66**	**88^**	**73**	**73**	**Yes**	**0**	**61**	**10**	**Yes**
R-11-49	**Residential**	**B**	**66**	**1**	**61**	**61**	**No**	**0**	**54**	**7**	**Yes**
R-11-50	**Residential**	**B**	**66**	**1**	**62**	**63**	**No**	**0**	**55**	**7**	**Yes**
R-11-51	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**58**	**7**	**Yes**
R-11-52	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**54**	**5**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

**Results for this receptor show the worst-case future without barrier noise level in the park combined with the most noise reduction gained within the park.

^ Based on dwelling unit equivalent (DUE) calculation for benefits. See Appendix A page A-13 for DUE for 7 dB reduction (60) and 10 dB reduction (1).

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-9 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB11											
R-11-53	**Residential**	**B**	**66**	**1**	**68**	**68**	**Yes**	**0**	**60**	**8**	**Yes**
R-11-54	**Residential**	**B**	**66**	**1**	**72**	**72**	**Yes**	**0**	**65**	**7**	**Yes**
R-11-55	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**52**	**6**	**Yes**
R-11-56	**Residential**	**B**	**66**	**1**	**71**	**72**	**Yes**	**0**	**66**	**6**	**Yes**
R-11-57	**Residential**	**B**	**66**	**1**	**56**	**56**	**No**	**0**	**51**	**5**	**Yes**
R-11-58	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**62**	**5**	**Yes**
R-11-59	**Residential**	**B**	**66**	**2**	**60**	**60**	**No**	**0**	**54**	**7**	**Yes**
R-11-60	Residential	B	66	2	62	63	No	0	59	3	No
R-11-61	**Residential**	**B**	**66**	**1**	**56**	**57**	**No**	**0**	**51**	**6**	**Yes**
R-11-62	**Residential**	**B**	**66**	**1**	**69**	**69**	**Yes**	**0**	**63**	**6**	**Yes**
R-11-63	**Residential**	**B**	**66**	**1**	**70**	**71**	**Yes**	**0**	**66**	**5**	**Yes**
R-11-64	Residential	B	66	1	69	69	Yes	0	66	4	No
R-11-65	Residential	B	66	1	67	68	Yes	0	66	2	No
R-11-66	Residential	B	66	1	64	64	No	0	64	0	No
R-11-67	Residential	B	66	1	64	64	No	0	64	0	No
R-11-68	Residential	B	66	1	66	66	Yes	0	65	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-10. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB12											
R-11-69	Residential	B	66	2	64	65	No	1	64	1	No
R-11-70	Residential	B	66	2	58	58	No	1	58	0	No
R-11-71	**Residential**	**B**	**66**	**2**	**66**	**72**	**Yes**	**6**	**66**	**6**	**Yes**
R-11-72	Residential	B	66	2	50	51	No	1	51	1	No
R-11-73	Residential	B	66	2	51	52	No	1	52	1	No
R-11-74	Residential	B	66	2	54	56	No	2	54	2	No
R-11-75	Residential	B	66	4	50	50	No	1	50	1	No
R-11-76	**Residential**	**B**	**66**	**2**	**64**	**72**	**Yes**	**8**	**64**	**7**	**Yes**
R-11-77	Residential	B	66	2	62	67	Yes	4	63	4	No
R-11-78	Residential	B	66	4	50	50	No	0	50	1	No
R-11-79	Residential	B	66	2	50	51	No	1	51	1	No
R-11-80	Residential	B	66	4	51	51	No	1	51	1	No
R-11-81	Residential	B	66	2	59	62	No	3	60	3	No
R-11-82	Residential	B	66	2	51	51	No	1	51	0	No
R-11-83	Residential	B	66	1	50	51	No	1	50	1	No
R-11-84	Residential	B	66	2	60	63	No	4	60	3	No
R-11-85	Residential	B	66	4	50	50	No	1	50	1	No
R-11-86	Residential	B	66	2	56	59	No	3	56	3	No
R-11-87	Residential	B	66	2	50	52	No	1	50	1	No
R-11-88	Residential	B	66	1	54	56	No	1	55	1	No
R-11-89	**Residential**	**B**	**66**	**2**	**62**	**68**	**Yes**	**6**	**63**	**6**	**Yes**
R-11-90	Residential	B	66	1	48	48	No	0	48	0	No
R-11-91	Residential	B	66	1	51	52	No	1	51	1	No
R-11-92	Residential	B	66	1	54	56	No	2	54	2	No
R-11-93	Residential	B	66	1	53	55	No	2	53	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-10 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB12											
R-11-94	Residential	B	66	2	51	52	No	2	51	2	No
R-11-95	**Residential**	**B**	**66**	**1**	**62**	**67**	**Yes**	**5**	**62**	**5**	**Yes**
R-11-96	Residential	B	66	4	51	52	No	1	51	1	No
R-11-97	**Residential**	**B**	**66**	**1**	**61**	**66**	**Yes**	**5**	**61**	**5**	**Yes**
R-11-98	Residential	B	66	2	49	51	No	1	49	2	No
R-11-99	Residential	B	66	1	51	53	No	2	51	2	No
R-11-100	Residential	B	66	1	59	62	No	3	59	3	No
R-11-101	Residential	B	66	2	58	61	No	3	59	2	No
R-11-102	Residential	B	66	1	52	52	No	1	52	1	No
R-11-103	Residential	B	66	4	51	52	No	1	51	1	No
R-11-104	Residential	B	66	1	50	51	No	1	50	1	No
R-11-105	Residential	B	66	2	58	60	No	2	58	2	No
R-11-106	Residential	B	66	2	53	55	No	1	54	1	No
R-11-107	Residential	B	66	1	50	51	No	1	50	1	No
R-11-108	Residential	B	66	2	51	52	No	1	51	1	No
R-11-109	Residential	B	66	2	61	65	No	4	61	4	No
R-11-110	Residential	B	66	2	55	57	No	2	55	2	No
R-11-111	Residential	B	66	2	52	53	No	2	52	1	No
R-11-112	Residential	B	66	2	53	55	No	2	53	2	No
R-11-113	Residential	B	66	2	53	55	No	2	53	2	No
R-11-114	Residential	B	66	2	52	53	No	2	52	2	No
R-11-115	**Residential**	**B**	**66**	**2**	**62**	**70**	**Yes**	**8**	**62**	**8**	**Yes**
R-11-116	Residential	B	66	1	52	53	No	1	52	1	No
R-11-117	**Residential**	**B**	**66**	**2**	**60**	**67**	**Yes**	**7**	**60**	**7**	**Yes**
R-11-118	Residential	B	66	2	53	55	No	2	53	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-10 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB12											
R-11-119	Residential	B	66	2	56	60	No	4	56	4	No
R-11-120	Residential	B	66	2	56	60	No	4	56	4	No
R-11-121	**Residential**	**B**	**66**	**3**	**59**	**64**	**No**	**5**	**59**	**5**	**Yes**
R-11-122	Residential	B	66	3	53	55	No	2	53	2	No
R-11-123	**Residential**	**B**	**66**	**2**	**62**	**72**	**Yes**	**10**	**62**	**10**	**Yes**
R-11-124	Residential	B	66	3	53	55	No	2	53	2	No
R-11-125	**Residential**	**B**	**66**	**2**	**62**	**74**	**Yes**	**12**	**62**	**12**	**Yes**
R-11-126	**Residential**	**B**	**66**	**2**	**56**	**62**	**No**	**5**	**57**	**5**	**Yes**
R-11-127	Residential	B	66	4	54	56	No	2	54	2	No
R-11-128	**Residential**	**B**	**66**	**2**	**61**	**75**	**Yes**	**14**	**62**	**14**	**Yes**
R-11-129	**Residential**	**B**	**66**	**2**	**55**	**62**	**No**	**7**	**56**	**7**	**Yes**
R-11-130	Residential	B	66	3	53	56	No	2	53	2	No
R-11-131	Residential	B	66	3	53	56	No	3	53	3	No
R-11-132	**Residential**	**B**	**66**	**2**	**61**	**75**	**Yes**	**14**	**61**	**13**	**Yes**
R-11-133	Residential	B	66	4	53	56	No	3	53	3	No
R-11-134	Residential	B	66	4	53	56	No	3	53	3	No
R-11-135	**Residential**	**B**	**66**	**2**	**55**	**63**	**No**	**9**	**55**	**9**	**Yes**
R-11-136	**Residential**	**B**	**66**	**4**	**56**	**62**	**No**	**6**	**56**	**6**	**Yes**
R-11-137	**Residential**	**B**	**66**	**2**	**62**	**72**	**Yes**	**11**	**62**	**11**	**Yes**
R-11-138	**Residential**	**B**	**66**	**3**	**60**	**70**	**Yes**	**10**	**61**	**9**	**Yes**
R-11-139	**Residential**	**B**	**66**	**3**	**58**	**67**	**Yes**	**8**	**58**	**8**	**Yes**
R-11-140	**Residential**	**B**	**66**	**2**	**58**	**66**	**Yes**	**8**	**58**	**8**	**Yes**
R-11-141	**Residential**	**B**	**66**	**2**	**55**	**60**	**No**	**5**	**55**	**5**	**Yes**
R-11-142	**Residential**	**B**	**66**	**4**	**54**	**59**	**No**	**5**	**54**	**5**	**Yes**
R-11-143	**Residential**	**B**	**66**	**2**	**57**	**65**	**No**	**8**	**57**	**7**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-10 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB12											
R-11-144	Residential	B	66	1	53	56	No	3	53	3	No
R-11-145	**Residential**	**B**	**66**	**1**	**62**	**73**	**Yes**	**10**	**63**	**10**	**Yes**
R-11-146	Residential	B	66	1	54	57	No	3	54	3	No
R-11-147	**Residential**	**B**	**66**	**1**	**59**	**66**	**Yes**	**8**	**59**	**7**	**Yes**
R-11-148	**Residential**	**B**	**66**	**1**	**56**	**61**	**No**	**5**	**56**	**5**	**Yes**
R-11-150	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-11-151	**Residential**	**B**	**66**	**1**	**64**	**76**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-152	Residential	B	66	1	54	58	No	4	54	4	No
R-11-153	Residential	B	66	2	52	55	No	3	52	3	No
R-11-154	Residential	B	66	1	55	60	No	5	56	4	No
R-11-155	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-156	**Residential**	**B**	**66**	**1**	**57**	**62**	**No**	**6**	**57**	**5**	**Yes**
R-11-157	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-158	Residential	B	66	2	52	54	No	2	52	2	No
R-11-159	**Residential**	**B**	**66**	**1**	**58**	**64**	**No**	**6**	**58**	**6**	**Yes**
R-11-160	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**11**	**65**	**11**	**Yes**
R-11-161	Residential	B	66	1	55	59	No	4	55	4	No
R-11-162	Residential	B	66	1	54	58	No	4	54	4	No
R-11-163	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-164	Residential	B	66	2	51	53	No	2	51	2	No
R-11-165	Residential	B	66	1	53	57	No	4	53	4	No
R-11-166	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-167	**Residential**	**B**	**66**	**1**	**54**	**61**	**No**	**6**	**54**	**6**	**Yes**
R-11-168	**Residential**	**B**	**66**	**1**	**64**	**75**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-169	Residential	B	66	1	55	60	No	5	56	4	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-10 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB12											
R-11-170	Residential	B	66	2	53	56	No	3	53	3	No
R-11-171	**Residential**	**B**	**66**	**1**	**56**	**63**	**No**	**6**	**57**	**6**	**Yes**
R-11-172	Residential	B	66	1	54	58	No	4	54	4	No
R-11-173	**Residential**	**B**	**66**	**1**	**64**	**74**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-174	**Residential**	**B**	**66**	**1**	**56**	**63**	**No**	**6**	**57**	**6**	**Yes**
R-11-175	**Residential**	**B**	**66**	**1**	**63**	**74**	**Yes**	**11**	**64**	**11**	**Yes**
R-11-176	Residential	B	66	1	54	58	No	4	54	3	No
R-11-177	Residential	B	66	2	53	55	No	3	53	2	No
R-11-179	**Residential**	**B**	**66**	**1**	**56**	**63**	**No**	**7**	**57**	**6**	**Yes**
R-11-180	**Residential**	**B**	**66**	**1**	**63**	**74**	**Yes**	**10**	**64**	**10**	**Yes**
R-11-181	Residential	B	66	1	51	54	No	3	51	3	No
R-11-182	**Residential**	**B**	**66**	**2**	**54**	**58**	**No**	**4**	**54**	**4**	**No**
R-11-183	**Residential**	**B**	**66**	**1**	**56**	**63**	**No**	**6**	**57**	**6**	**Yes**
R-11-184	**Residential**	**B**	**66**	**1**	**52**	**54**	**No**	**2**	**52**	**2**	**No**
R-11-185	**Residential**	**B**	**66**	**1**	**63**	**73**	**Yes**	**10**	**64**	**10**	**Yes**
R-11-186	**Residential**	**B**	**66**	**1**	**56**	**63**	**No**	**7**	**57**	**6**	**Yes**
R-11-187	**Residential**	**B**	**66**	**1**	**63**	**72**	**Yes**	**9**	**63**	**9**	**Yes**
R-11-188	Residential	B	66	1	53	55	No	2	53	2	No
R-11-189	Residential	B	66	2	54	58	No	4	54	3	No
R-11-190	Residential	B	66	1	52	54	No	3	52	2	No
R-11-191	**Residential**	**B**	**66**	**1**	**63**	**72**	**Yes**	**9**	**63**	**9**	**Yes**
R-11-192	**Residential**	**B**	**66**	**1**	**56**	**63**	**No**	**6**	**56**	**6**	**Yes**
R-11-193	Residential	B	66	1	52	55	No	2	52	2	No
R-11-194	**Residential**	**B**	**66**	**1**	**53**	**56**	**No**	**2**	**53**	**2**	**No**
R-11-195	**Residential**	**B**	**66**	**1**	**63**	**71**	**Yes**	**8**	**63**	**8**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-10 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB12											
R-11-196	**Residential**	**B**	**66**	**1**	**56**	**63**	**No**	**6**	**57**	**6**	**Yes**
R-11-197	Residential	B	66	2	53	57	No	4	54	3	No
R-11-198	**Residential**	**B**	**66**	**1**	**63**	**71**	**Yes**	**8**	**63**	**8**	**Yes**
R-11-199	**Residential**	**B**	**66**	**1**	**56**	**62**	**No**	**6**	**57**	**6**	**Yes**
R-11-200	Residential	B	66	1	54	56	No	2	54	2	No
R-11-201	**Residential**	**B**	**66**	**1**	**63**	**70**	**Yes**	**8**	**63**	**7**	**Yes**
R-11-202	**Residential**	**B**	**66**	**1**	**58**	**64**	**No**	**6**	**58**	**6**	**Yes**
R-11-203	Residential	B	66	1	53	56	No	3	53	2	No
R-11-204	Residential	B	66	1	55	58	No	3	55	3	No
R-11-205	**Residential**	**B**	**66**	**1**	**57**	**63**	**No**	**6**	**58**	**5**	**Yes**
R-11-206	**Residential**	**B**	**66**	**1**	**63**	**70**	**Yes**	**7**	**63**	**7**	**Yes**
R-11-207	Residential	B	66	1	57	59	No	2	57	2	No
R-11-208	**Residential**	**B**	**66**	**1**	**58**	**63**	**No**	**5**	**59**	**5**	**Yes**
R-11-209	**Residential**	**B**	**66**	**1**	**63**	**71**	**Yes**	**7**	**64**	**7**	**Yes**
R-11-210	Residential	B	66	2	54	56	No	2	54	2	No
R-11-211	Residential	B	66	2	55	57	No	2	55	2	No
R-11-212	Residential	B	66	2	56	57	No	2	56	1	No
R-11-213	Residential	B	66	2	54	56	No	2	54	2	No
R-11-214	**Residential**	**B**	**66**	**1**	**64**	**70**	**Yes**	**6**	**64**	**6**	**Yes**
R-11-215	Residential	B	66	1	60	63	No	4	60	3	No
R-11-216	Residential	B	66	1	59	62	No	3	59	3	No
R-11-217	Residential	B	66	1	65	69	Yes	5	65	4	No
R-11-218	Residential	B	66	1	66	69	Yes	4	66	3	No
R-11-219	Residential	B	66	1	62	62	No	1	62	0	No
R-11-220	Residential	B	66	1	64	65	No	1	64	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-10 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB12											
R-11-221	Residential	B	66	1	63	63	No	1	63	1	No
R-11-222	Residential	B	66	1	66	69	Yes	3	67	2	No
R-11-223	Residential	B	66	1	63	64	No	1	63	0	No
R-11-224	Residential	B	66	1	64	65	No	1	64	1	No
R-11-225	Residential	B	66	1	64	65	No	1	65	0	No
R-11-226	Residential	B	66	1	66	67	Yes	1	66	1	No

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-11. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB13											
R-12-1	Residential	B	66	1	62	62	No	0	61	1	No
R-12-2	Residential	B	66	1	65	66	Yes	0	64	2	No
R-12-3	Residential	B	66	1	68	68	Yes	0	65	4	No
R-12-4	Residential	B	66	1	64	64	No	0	59	4	No
R-12-5	**Residential**	**B**	**66**	**1**	**68**	**69**	**Yes**	**0**	**64**	**5**	**Yes**
R-12-6	**Residential**	**B**	**66**	**2**	**61**	**61**	**No**	**0**	**54**	**7**	**Yes**
R-12-7	**Residential**	**B**	**66**	**1**	**68**	**69**	**Yes**	**0**	**63**	**5**	**Yes**
R-12-8	**Residential**	**B**	**66**	**2**	**64**	**64**	**No**	**0**	**57**	**7**	**Yes**
R-12-10	**Residential**	**B**	**66**	**1**	**69**	**69**	**Yes**	**0**	**63**	**6**	**Yes**
R-12-11	**Residential**	**B**	**66**	**2**	**62**	**62**	**No**	**0**	**57**	**5**	**Yes**
R-12-12	**Residential**	**B**	**66**	**1**	**70**	**70**	**Yes**	**0**	**62**	**9**	**Yes**
R-12-13	**Residential**	**B**	**66**	**2**	**65**	**65**	**No**	**0**	**57**	**8**	**Yes**
R-12-14	**Residential**	**B**	**66**	**1**	**71**	**72**	**Yes**	**0**	**62**	**10**	**Yes**
R-12-15	**Residential**	**B**	**66**	**1**	**63**	**63**	**No**	**0**	**57**	**6**	**Yes**
R-12-16	**Residential**	**B**	**66**	**1**	**64**	**65**	**No**	**0**	**56**	**8**	**Yes**
R-12-17	**Residential**	**B**	**66**	**1**	**70**	**70**	**Yes**	**0**	**62**	**8**	**Yes**
R-12-18	**Residential**	**B**	**66**	**1**	**60**	**61**	**No**	**0**	**56**	**5**	**Yes**
R-12-19	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**0**	**60**	**7**	**Yes**
R-12-20	**Residential**	**B**	**66**	**1**	**62**	**62**	**No**	**0**	**55**	**7**	**Yes**
R-12-21	**Residential**	**B**	**66**	**1**	**61**	**61**	**No**	**0**	**55**	**6**	**Yes**
R-12-22	**Residential**	**B**	**66**	**1**	**63**	**64**	**No**	**0**	**57**	**7**	**Yes**
R-12-23	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**0**	**61**	**6**	**Yes**
R-12-24	**Residential**	**B**	**66**	**1**	**70**	**71**	**Yes**	**0**	**62**	**9**	**Yes**
R-12-25	**Residential**	**B**	**66**	**2**	**63**	**63**	**No**	**0**	**56**	**7**	**Yes**
R-12-26	**Residential**	**B**	**66**	**2**	**59**	**59**	**No**	**0**	**53**	**6**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

* Change in noise level may appear incorrect due to rounding.

See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-11 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB13											
R-12-27	**Residential**	**B**	**66**	**1**	**71**	**72**	**Yes**	**0**	**64**	**8**	**Yes**
R-12-28	**Residential**	**B**	**66**	**1**	**56**	**56**	**No**	**0**	**51**	**6**	**Yes**
R-12-29	**Residential**	**B**	**66**	**1**	**54**	**54**	**No**	**0**	**50**	**5**	**Yes**
R-12-30	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**54**	**6**	**Yes**
R-12-31	**Residential**	**B**	**66**	**1**	**69**	**69**	**Yes**	**0**	**63**	**6**	**Yes**
R-12-32	Residential	B	66	1	63	63	No	0	61	2	No
R-12-33	**Residential**	**B**	**66**	**1**	**56**	**56**	**No**	**0**	**52**	**5**	**Yes**
R-12-34	Residential	B	66	1	63	63	No	0	61	2	No
R-12-35	Residential	B	66	2	55	55	No	0	51	4	No
R-12-36	Residential	B	66	1	63	63	No	0	62	2	No
R-12-37	Residential	B	66	1	64	64	No	0	63	1	No
R-12-38	**Residential**	**B**	**66**	**1**	**58**	**58**	**No**	**0**	**54**	**5**	**Yes**
R-12-39	Residential	B	66	1	62	63	No	0	60	3	No
R-12-40	**Residential**	**B**	**66**	**1**	**61**	**61**	**No**	**0**	**56**	**5**	**Yes**
R-12-41	**Residential**	**B**	**66**	**1**	**60**	**61**	**No**	**0**	**55**	**6**	**Yes**
R-12-42	**Residential**	**B**	**66**	**1**	**64**	**64**	**No**	**0**	**55**	**9**	**Yes**
R-12-43	**Residential**	**B**	**66**	**1**	**62**	**62**	**No**	**1**	**56**	**7**	**Yes**
R-12-44	**Residential**	**B**	**66**	**1**	**63**	**64**	**No**	**0**	**57**	**7**	**Yes**
R-12-45	**Residential**	**B**	**66**	**1**	**65**	**66**	**Yes**	**1**	**60**	**6**	**Yes**
R-12-46	**Residential**	**B**	**66**	**1**	**60**	**61**	**No**	**0**	**54**	**7**	**Yes**
R-12-47	**Residential**	**B**	**66**	**1**	**66**	**67**	**Yes**	**1**	**60**	**7**	**Yes**
R-12-48	**Residential**	**B**	**66**	**2**	**62**	**62**	**No**	**1**	**55**	**7**	**Yes**
R-12-49	**Residential**	**B**	**66**	**1**	**66**	**67**	**Yes**	**1**	**61**	**6**	**Yes**
R-12-50	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**1**	**60**	**8**	**Yes**
R-12-51	**Residential**	**B**	**66**	**2**	**63**	**63**	**No**	**0**	**57**	**6**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-11 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB13											
R-12-52	**Residential**	**B**	**66**	**2**	**61**	**61**	**No**	**0**	**56**	**5**	**Yes**
R-12-53	**Residential**	**B**	**66**	**1**	**68**	**68**	**Yes**	**1**	**62**	**7**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-12. Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB14											
R-12-54	Residential	B	66	1	60	60	No	0	60	1	No
R-12-55	Residential	B	66	1	60	60	No	0	59	1	No
R-12-56	Residential	B	66	1	55	55	No	0	54	2	No
R-12-57	Residential	B	66	1	56	56	No	0	53	3	No
R-12-58	Residential	B	66	2	55	55	No	0	51	4	No
R-12-59	**Residential**	**B**	**66**	**1**	**64**	**64**	**No**	**0**	**59**	**5**	**Yes**
R-12-60	**Residential**	**B**	**66**	**1**	**66**	**66**	**Yes**	**0**	**59**	**7**	**Yes**
R-12-61	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**54**	**5**	**Yes**
R-12-62	**Residential**	**B**	**66**	**1**	**62**	**62**	**No**	**0**	**57**	**5**	**Yes**
R-12-63	Residential	B	66	1	54	54	No	0	50	4	No
R-12-64	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**53**	**7**	**Yes**
R-12-65	**Residential**	**B**	**66**	**1**	**62**	**62**	**No**	**0**	**57**	**5**	**Yes**
R-12-66	Residential	B	66	2	53	54	No	0	49	4	No
R-12-67	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**52**	**7**	**Yes**
R-12-68	**Residential**	**B**	**66**	**1**	**62**	**62**	**No**	**0**	**58**	**5**	**Yes**
R-12-69	**Residential**	**B**	**66**	**2**	**53**	**53**	**No**	**0**	**48**	**5**	**Yes**
R-12-70	**Residential**	**B**	**66**	**2**	**57**	**58**	**No**	**0**	**52**	**6**	**Yes**
R-12-72	Residential	B	66	1	61	61	No	0	57	4	No
R-12-73	**Residential**	**B**	**66**	**1**	**59**	**60**	**No**	**0**	**55**	**5**	**Yes**
R-12-74	**Residential**	**B**	**66**	**1**	**59**	**59**	**No**	**0**	**54**	**5**	**Yes**
R-12-75	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**56**	**5**	**Yes**
R-12-76	**Residential**	**B**	**66**	**2**	**53**	**54**	**No**	**0**	**49**	**5**	**Yes**
R-12-77	Residential	B	66	1	60	61	No	0	57	4	No
R-12-78	**Residential**	**B**	**66**	**2**	**57**	**57**	**No**	**0**	**52**	**5**	**Yes**
R-12-79	Residential	B	66	2	53	53	No	0	49	4	No

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Table D-12 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB14											
R-12-80	Residential	B	66	1	62	62	No	0	59	3	No
R-12-81	Residential	B	66	1	63	63	No	0	60	4	No
R-12-82	Residential	B	66	2	54	54	No	0	50	4	No
R-12-83	Residential	B	66	1	62	63	No	0	59	3	No
R-12-84	**Residential**	**B**	**66**	**1**	**56**	**56**	**No**	**0**	**51**	**5**	**Yes**
R-12-85	Residential	B	66	1	62	62	No	0	59	3	No
R-12-86	Residential	B	66	2	52	52	No	0	49	3	No
R-12-87	**Residential**	**B**	**66**	**1**	**64**	**64**	**No**	**0**	**59**	**5**	**Yes**
R-12-88	Residential	B	66	2	56	57	No	0	53	4	No
R-12-89	Residential	B	66	1	62	63	No	0	59	4	No
R-12-90	Residential	B	66	1	60	60	No	0	57	3	No
R-12-91	Residential	B	66	2	56	57	No	0	53	4	No
R-12-92	Residential	B	66	1	62	62	No	0	58	4	No
R-12-93	Residential	B	66	1	52	53	No	0	50	3	No
R-12-94	Residential	B	66	1	52	53	No	0	50	3	No
R-12-95	Residential	B	66	1	55	55	No	0	51	4	No
R-12-96	Residential	B	66	1	59	59	No	0	56	4	No
R-12-97	**Residential**	**B**	**66**	**1**	**63**	**63**	**No**	**0**	**58**	**5**	**Yes**
R-12-98	**Residential**	**B**	**66**	**1**	**63**	**64**	**No**	**0**	**59**	**5**	**Yes**
R-12-99	Residential	B	66	2	51	51	No	0	49	3	No
R-12-100	Residential	B	66	2	57	57	No	0	53	4	No
R-12-101	**Residential**	**B**	**66**	**1**	**63**	**63**	**No**	**0**	**58**	**5**	**Yes**
R-12-102	Residential	B	66	1	62	63	No	0	59	4	No
R-12-103	Residential	B	66	1	55	55	No	0	52	3	No
R-12-104	Residential	B	66	2	50	51	No	0	49	2	No

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-12 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB14											
R-12-105	Residential	B	66	1	54	54	No	0	52	3	No
R-12-106	**Residential**	**B**	**66**	**1**	**64**	**64**	**No**	**0**	**59**	**6**	**Yes**
R-12-107	Residential	B	66	1	57	57	No	0	54	3	No
R-12-108	Residential	B	66	2	51	51	No	0	49	2	No
R-12-109	**Residential**	**B**	**66**	**1**	**69**	**69**	**Yes**	**0**	**61**	**8**	**Yes**
R-12-110	Residential	B	66	1	55	55	No	0	52	4	No
R-12-111	Residential	B	66	1	53	53	No	0	52	1	No
R-12-112	Residential	B	66	1	57	57	No	0	55	2	No
R-12-113	Residential	B	66	1	54	54	No	0	52	2	No
R-12-114	Residential	B	66	1	51	51	No	0	49	2	No
R-12-115	**Residential**	**B**	**66**	**1**	**71**	**71**	**Yes**	**0**	**61**	**10**	**Yes**
R-12-116	**Residential**	**B**	**66**	**1**	**70**	**70**	**Yes**	**0**	**61**	**9**	**Yes**
R-12-117	**Residential**	**B**	**66**	**1**	**60**	**61**	**No**	**0**	**55**	**5**	**Yes**
R-12-118	**Residential**	**B**	**66**	**1**	**69**	**70**	**Yes**	**0**	**61**	**9**	**Yes**
R-12-119	Residential	B	66	1	59	59	No	0	55	3	No
R-12-120	**Residential**	**B**	**66**	**1**	**61**	**61**	**No**	**0**	**55**	**5**	**Yes**
R-12-121	Residential	B	66	1	58	58	No	0	55	3	No
R-12-122	Residential	B	66	1	56	56	No	0	54	2	No
R-12-123	**Residential**	**B**	**66**	**1**	**67**	**67**	**Yes**	**0**	**60**	**7**	**Yes**
R-12-124	Residential	B	66	1	57	57	No	0	54	4	No
R-12-125	**Residential**	**B**	**66**	**1**	**68**	**68**	**Yes**	**0**	**60**	**8**	**Yes**
R-12-126	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**55**	**5**	**Yes**
R-12-127	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**60**	**6**	**Yes**
R-12-128	**Residential**	**B**	**66**	**1**	**75**	**76**	**Yes**	**0**	**68**	**8**	**Yes**
R-12-129	**Residential**	**B**	**66**	**1**	**65**	**65**	**No**	**0**	**60**	**5**	**Yes**

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

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See Appendix C for receivers not listed that are not directly behind or benefited by the barrier.

Table D-12 (continued). Abatement Analysis Results per Receiver, dB(A) $L_{eq\ (1h)}$

Receiver ID	Description	Category	Criteria	Dwelling Units / Receptors	Existing	Future w/o Barrier	Approach or Exceed NAC (Impacted)	Increase (Future w/o Barrier - Existing)*	Future w/ Barrier	Noise Barrier Reduction*	Benefited Receptor
Barrier NB14											
R-12-130	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**55**	**5**	**Yes**
R-12-131	**Residential**	**B**	**66**	**1**	**64**	**65**	**No**	**1**	**58**	**7**	**Yes**
R-12-132	**Residential**	**B**	**66**	**1**	**71**	**71**	**Yes**	**0**	**67**	**5**	**Yes**
R-12-133	**Residential**	**B**	**66**	**1**	**60**	**60**	**No**	**0**	**55**	**5**	**Yes**
R-12-134	Residential - Belmar Oakland	B	66	13	51	51	No	0	48	3	No
R-12-135	Residential - Belmar Oakland	B	66	13	64	64	No	0	61	4	No
R-12-136	Residential	B	66	1	52	52	No	0	51	2	No
R-12-137	Residential - Belmar Oakland	B	66	13	50	50	No	0	48	2	No
R-12-138	Residential - Belmar Oakland	B	66	13	65	65	No	0	63	2	No
R-12-139	Residential	B	66	1	63	63	No	0	62	1	No

Boldface indicates the receptor is benefited with 5 dB(A) or more noise reduction.

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