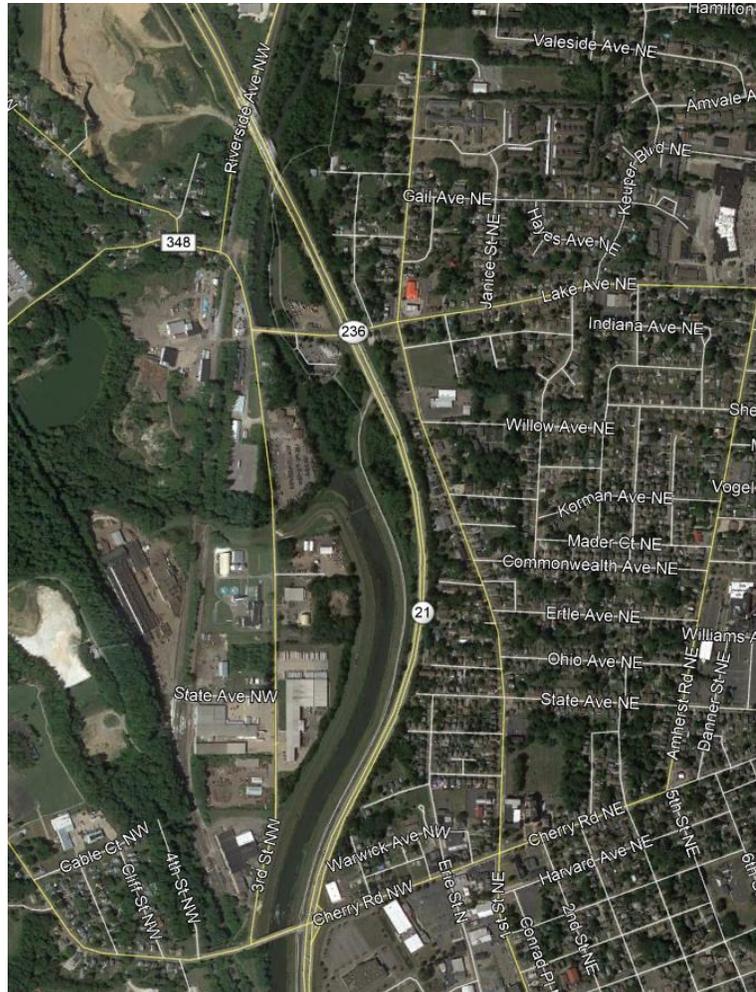


October 18, 2021  
Noise Analysis Report  
STA-SR 21-11.38  
PID: 115521



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*The environmental review, consultation, and other actions required by applicable Federal environmental laws for this project are being, or have been, carried-out by ODOT pursuant to 23 U.S.C. 327 and a Memorandum of Understanding dated June 6, 2018, and executed by FHWA and ODOT.*



**Noise Analysis Report**  
**STA-SR 21-11.38**  
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**APPENDICES**

**Appendix A:** Noise Measurement Plan/Field Noise Measurements /TNM Validation Existing Noise Levels

**Appendix B:** Traffic Data

**Appendix C:** Traffic Noise Model Spreadsheets

## EXECUTIVE SUMMARY

The STA-21-11.38 (PID 115521) project is located in Stark County, Ohio. Within the study area, State Route 21 (SR 21) is a four-lane divided road with two lanes in each northbound and southbound direction with a 50-mph speed limit. The project is approximately 1.13 miles in length. Land use within the study area is mostly residential.

The north project limit is 0.24 miles past the SR 21 interchange at Lake Ave NW and the south project limit is at the SR 21 and Cherry Road NW interchange. A noise analysis was prepared for all noise sensitive receivers located within 500 feet of the existing driving lanes of SR 21.

The study area has two NSAs: NSA 1 is located on the east side of SR 21 north of Lake Avenue and South of Towpath Ave NW. NSA 1 is comprised of 29 residential receptor sites (29 dwelling units). NSA 2 is located on the east side of SR 21 south of Lake Avenue and north of Cherry Road NW. NSA 2 is comprised of 144 residential receptor sites (179 dwelling units). 52 of the receptor sites within the study area were predicted to experience a substantial increase in noise level under the existing year condition. Thus, a noise barrier at the edge of shoulder was modeled for each NSA. The noise barrier wall at NSA 1 and NSA 2 were modeled to be reasonable and feasible. The noise barrier at the edge of shoulder at a height of 14 feet and a length of 1,228 feet for NSA 1 is warranted and recommended. The Noise barrier at a height of 14 feet and a length of 4,093 feet at NSA 2 is warranted and recommended with the barrier being at the right of way from Iveywood Apartments to 1,400 feet south of SR 21 and at the edge of shoulder from Warwick Avenue NW to 740 feet north and from Iveywood Apartments to Lake Avenue.

## **Section 1.0**

# **INTRODUCTION**

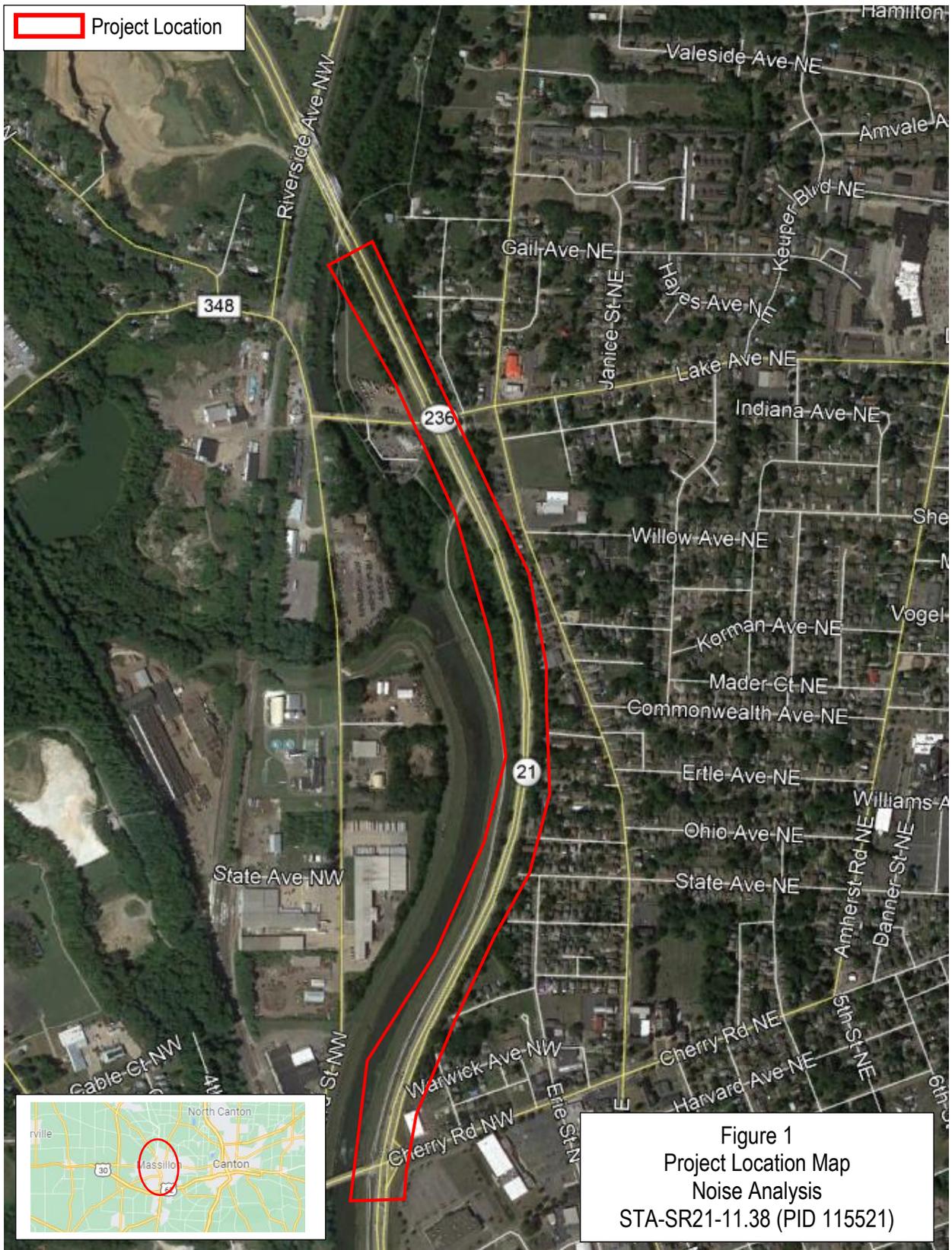
### **Project Description**

The STA-21-11.38 (PID 115521) project is located in Stark County, Ohio. The project location and the study area are shown on Figure 1. Within the study area, State Route 21 (SR 21) is a four-lane divided road with two lanes in each northbound and southbound direction with a 50-mph speed limit. The project is approximately 1.13 miles in length. The proposed project is a Type II noise analysis. A Type II project is used to evaluate noise abatement for lands that were developed or were under substantial construction before the approval of acquisition of the rights-of-way, or construction of, the existing highway. The goal of the Type II or retrofit noise barrier program is to provide abatement for receptors that were in existence prior to the construction of the highway. A noise analysis and test for feasibility and reasonableness as addressed in Title 23 CFR 772 shall be performed for all Type II projects in the same manner as conducted for Type I projects. None of the existing roadway features including the SR 21 mainline travel lanes, entrance and exit ramps, or local roadway alignments will be changed as a result of the project.

The north project limit is 0.24 miles past the SR 21 interchange at Lake Ave NW and the south project limit is at the SR 21 and Cherry Road NW interchange. A noise analysis was prepared for all noise sensitive receivers located within 500 feet of the existing driving lanes of SR 21.

### **Existing Land Use**

Land use within the study area is mostly residential land. Residential dwelling units are located east of SR 21. West of SR 21 includes the Tuscarawas River and a walking trail between the river and SR 21. The walking trail does not meet Type II noise abatement criteria and will not be evaluated.



## **Section 2.0**

### **NOISE ANALYSIS**

The noise analysis prepared for this project was conducted in accordance with the Code of Federal Regulations (CFR), Title 23, Part 772, and the U.S. Department of Transportation, FHWA, *Highway Traffic Noise Analysis and Abatement Policy and Guidance* (FHWA, 2011). The project was further conducted in accordance with the ODOT noise policy pertaining to *Standard Procedure for Analysis and Abatement of Highway Traffic Noise* (ODOT, 2015) and the changes, clarifications and additions incorporated into ODOT's Highway Traffic Noise Analysis manual dated April 2015. The Existing Year 2020 noise levels were modeled using the FHWA Traffic Noise Model (TNM) Version 2.5 (FHWA, 1998). Specific data and assumptions used in this analysis are described as follows:

#### **Applicability**

This noise analysis has been performed in accordance with the policy that applies to Type II projects. A Type II project as described by the ODOT Standard Procedures for Analysis and Abatement of Highway Traffic noise document is a project that is used to evaluate noise abatement for lands that were developed or were under substantial construction before the approval of the acquisition of the rights-of-way, or construction of, the existing highway. The goal of the Type II or retrofit noise barrier program is to provide abatement for receptors that were in existence prior to the construction of the highway. A noise analysis and test for feasibility and reasonableness as addressed in Title 23 CFR 772 shall be performed for all Type II projects in the same manner as conducted for Type I projects.

#### **Analysis Objectives**

The objectives of this noise analysis include: (1) identification of existing noise sensitive areas in the vicinity of the Type II project; (2) characterization of the existing noise environment through computer modeling; (3) comparison of existing year noise levels to applicable FHWA Noise Abatement Criteria to identify noise impact within the project area; (4) evaluation of noise barrier walls to determine the most efficient, reasonable and feasible abatement measures for reducing noise levels by at least 4.5 dB at as many receptor sites as possible where noise impacts are identified.

#### **Noise Descriptors**

Noise descriptors are used to describe the time varying nature of noise. In this report, noise levels will be described as hourly A weighted equivalent sound level in decibels, or **dBA  $L_{eq(h)}$** . Noise is defined as unwanted sound, which is produced by the vibration of sound pressure waves. Sound pressure levels are used to measure the intensity of sound and are described in terms of decibels (**dB**). Decibels are a logarithmic unit, which expresses the ratio of sound pressure level to a standard reference scale. The decibel scale has a range of 0-120 and is used to show the amount of sound pressure at a given location from the general environment of specific sources. An increase or decrease of 10 dB is perceived as doubling or halving of the sound intensity since the decibel scale is logarithmic. In general, the average person cannot detect an increase or decrease in sound pressure level of less than 3 dB. A change in sound pressure level of 5 dB is readily perceptible by most people.

Sound is composed of various frequencies which are measured in cycles per second or Hertz (Hz). The human ear can detect a wide range of frequencies from 20 to 20,000 Hz, but is most sensitive to sounds over

a frequency range of 200 to 5,000 Hz. The human ear does not respond in a uniform manner to different frequency sounds. A sound pressure level of 70 dB will be perceived as much louder at 1,000 Hz than at 100 Hz. To account for this, various weighting methods have been developed to reflect human sensitivity to noise. The purpose of a weighting method is to de-emphasize the frequency ranges in which the human ear is less sensitive. The most commonly used measure of noise level is the A-weighted sound level (**dBA**). The dBA sound level is widely used for transportation related noise measurements and specifications for community noise ordinances and standards. The dBA has been shown to be highly correlated to human response to noise.

In addition to noise fluctuating in frequency, environmental noise will fluctuate in intensity from moment to moment. Over a period of time there will be quiet moments and peak levels resulting from noisy, identifiable sources (trucks, aircraft, etc.). Because of these fluctuations, it is common practice to average these noise level fluctuations over a specified period of time. The equivalent sound level over a given period of interest,  $L_{eq}$ , is widely accepted as a valid measure of community noise. The  $L_{eq}$  is equal to the equivalent steady state noise level which, in a stated time period, would contain the same acoustical energy as the time varying noise levels that actually occurred during the same time period. The hourly value of  $L_{eq}$ , based upon the peak hour percentage of the annual average daily traffic, is referred to as  $L_{eq(h)}$ . Surveys have shown that  $L_{eq}$  properly predicts annoyance, and this descriptor is commonly used for noise measurement, prediction, and impact assessment.

## Noise Sensitive Areas (NSA)

The FHWA has established seven Activity Categories that must be considered for Noise Abatement Criteria (NAC). The Activity Categories are described in Table 1.

Activity Category	Leq(h)	L10(h)	Description of Activity Category
<b>A</b>	57 (Exterior)	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>B</b>	67	70	Residential
<b>C</b>	67 (Exterior)	70 (Exterior)	Active sports areas, amphitheatres, 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, recreational areas, Section 4(f) sites, television studios, trails and trail crossings.
<b>D</b>	52 (Interior)	55 (Interior)	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recording studios, schools and television studios.
<b>E</b>	72 (Exterior)	75 (Exterior)	Hotels, motels, offices, restaurant/bars, and other developed lands properties or activities not included in A-D, or F.
<b>F</b>	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.
<b>G</b>	N/A	N/A	Undeveloped lands that are not permitted.

The study area has two noise sensitive areas (NSA) as shown on Figure 2. The NSAs are described as follows:



Figure 2  
 Noise Sensitive Areas (NSAs)  
 Noise Analysis  
 STA-SR21-11.38 (PID 115521)

## NSA 1

The figure below illustrates the addresses for NSA 1. NSA 1 is located on the east side of SR 21 north of Lake Avenue and South of Towpath Ave NW. NSA 1 is comprised of 29 residential receptor sites (29 dwelling units). All the residential dwelling units were modeled as Activity Category B having a NAC of 67 dBA.

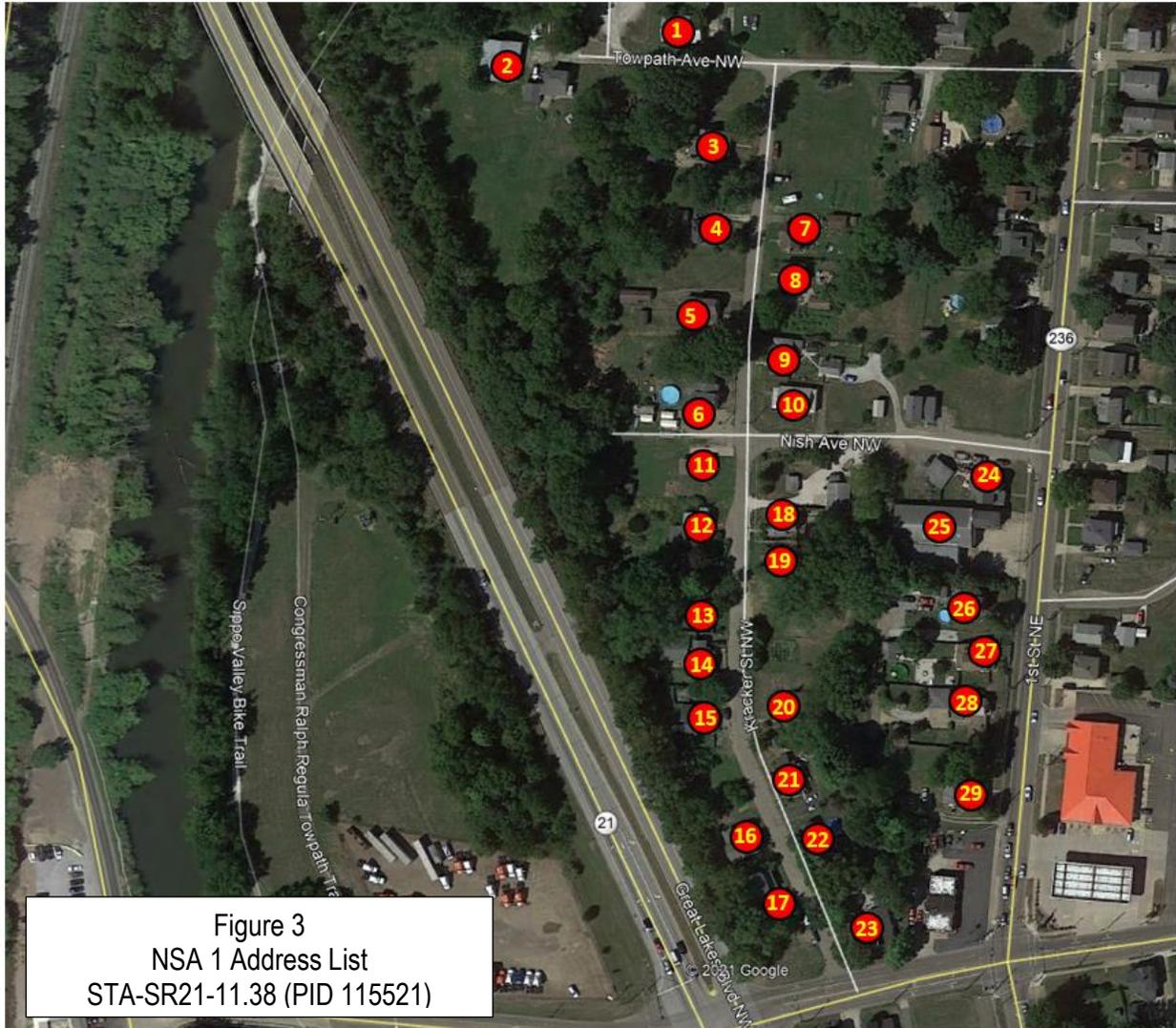


Figure 3  
NSA 1 Address List  
STA-SR21-11.38 (PID 115521)

1. 1st ST NE MASSILLON OH
2. 1519 1ST ST NW MASSILLON OH
3. 1475 KRACKER ST NW MASSILLON OH
4. 1453 KRACKER ST NW MASSILLON OH
5. 1445 KRACKER ST NW MASSILLON OH
6. 1433 KRACKER ST NW MASSILLON OH
7. 1454 KRACKER ST NW MASSILLON OH
8. 1450 KRACKER ST NW MASSILLON OH
9. 1440 KRACKER ST NW MASSILLON OH
10. 1436 KRACKER ST NW MASSILLON OH
11. 1363 KRACKER ST NW MASSILLON OH
12. 1361 KRACKER ST NW MASSILLON OH
13. 1349 KRACKER ST NW MASSILLON OH
14. 1343 KRACKER ST NW MASSILLON OH
15. 1337 KRACKER ST NW MASSILLON OH

16. 1321 KRACKER ST NW MASSILLON OH
17. 1317 KRACKER ST NW MASSILLON OH
18. 1358 KRACKER ST NW MASSILLON OH
19. 1356 KRACKER ST NW MASSILLON OH
20. 1328 KRACKER ST NW MASSILLON OH
21. 1326 KRACKER ST NW MASSILLON OH
22. 1316 KRACKER ST NW MASSILLON OH
23. 14 LAKE AVE NE MASSILLON OH
24. 1425 1ST NE MASSILLON OH
25. 1423 1ST NE MASSILLON OH
26. 1411 1ST NE MASSILLON OH
27. 1407 1ST NE MASSILLON OH
28. 1329 1ST ST NE MASSILLON OH
29. 1323 1ST ST NE MASSILLON OH

## NSA 2

The figure below illustrates the addresses for NSA 2. NSA 2 is located on the east side of SR 21 south of Lake Avenue and north of Cherry Road NW. NSA 2 is comprised of 144 residential receptor sites (179 dwelling units). All the residential dwelling units were modeled as Activity Category B having a NAC of 67 dBA.

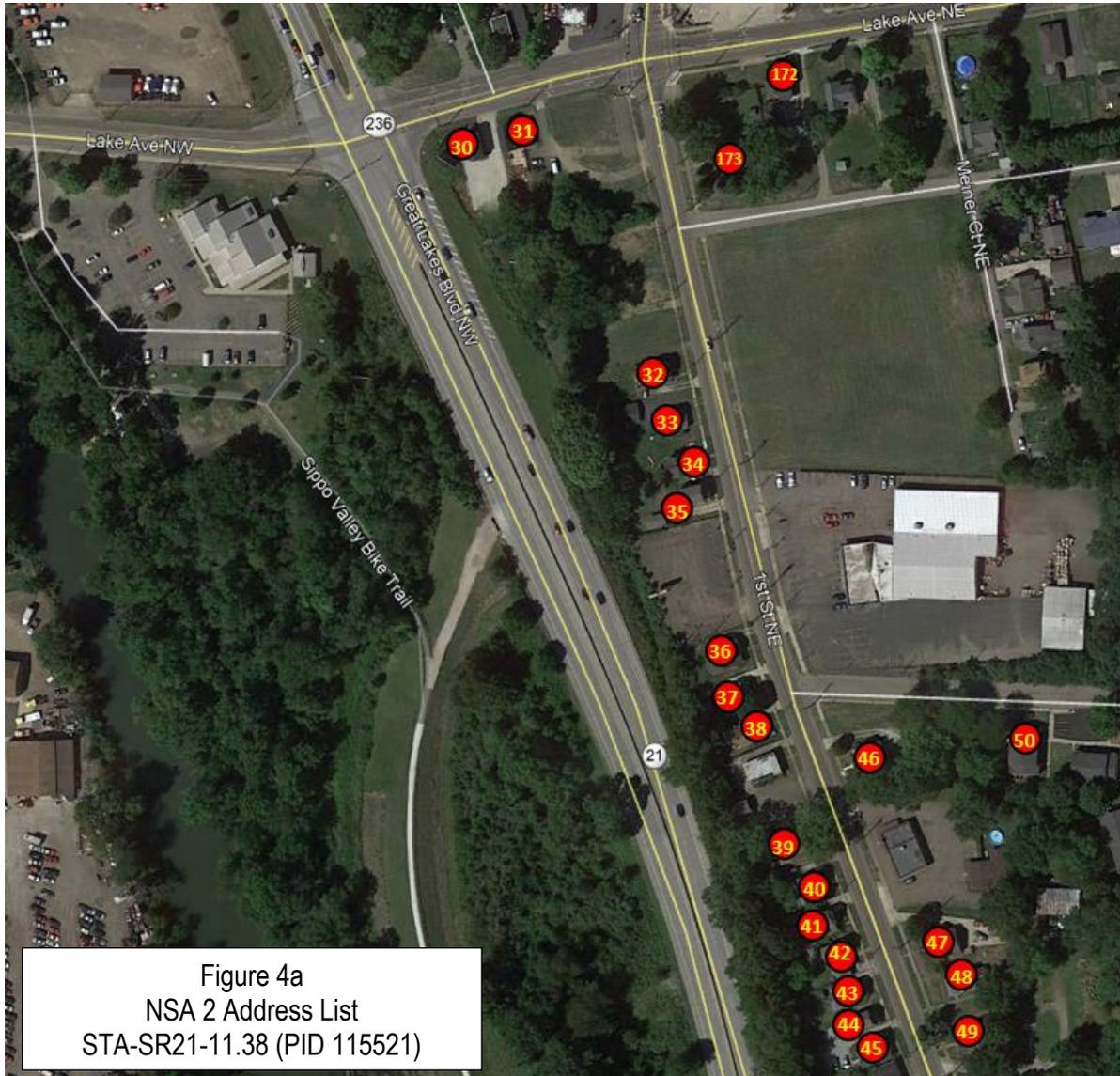


Figure 4a  
NSA 2 Address List  
STA-SR21-11.38 (PID 115521)

30. 23 LAKE AVE NE MASSILLON OH  
31. 19 LAKE AVE NE MASSILLON OH  
32. 1119 1ST ST NE MASSILLON OH  
33. 1113 1ST ST NE MASSILLON OH  
34. 1109 1ST NE MASSILLON OH  
35. 1105 1ST ST NE MASSILLON OH  
36. 1059 1ST ST NE MASSILLON OH  
37. 1053 1ST ST NE MASSILLON OH  
38. 1049 1ST ST NE MASSILLON OH  
39. 1041 1ST ST NE MASSILLON OH  
40. 1029 1ST ST NE MASSILLON OH

41. 1025 1ST ST NE MASSILLON OH  
42. 1021 1ST ST NE MASSILLON OH  
43. 1017 1ST ST NE MASSILLON OH  
44. 1013 1ST ST NE MASSILLON OH  
45. 1009 1ST ST NE MASSILLON OH  
46. 1042 1ST ST NE MASSILLON OH  
47. 1018 1ST ST NE MASSILLON OH  
48. 1014 1ST ST NE MASSILLON OH  
49. 1006 1ST ST NE MASSILLON OH  
50. 113/115/117/119 WILLOW AVE NE MASSILLON OH  
172. 117 LAKE AVE NE MASSILLON OH  
173. 1210 1ST ST NE MASSILLON OH

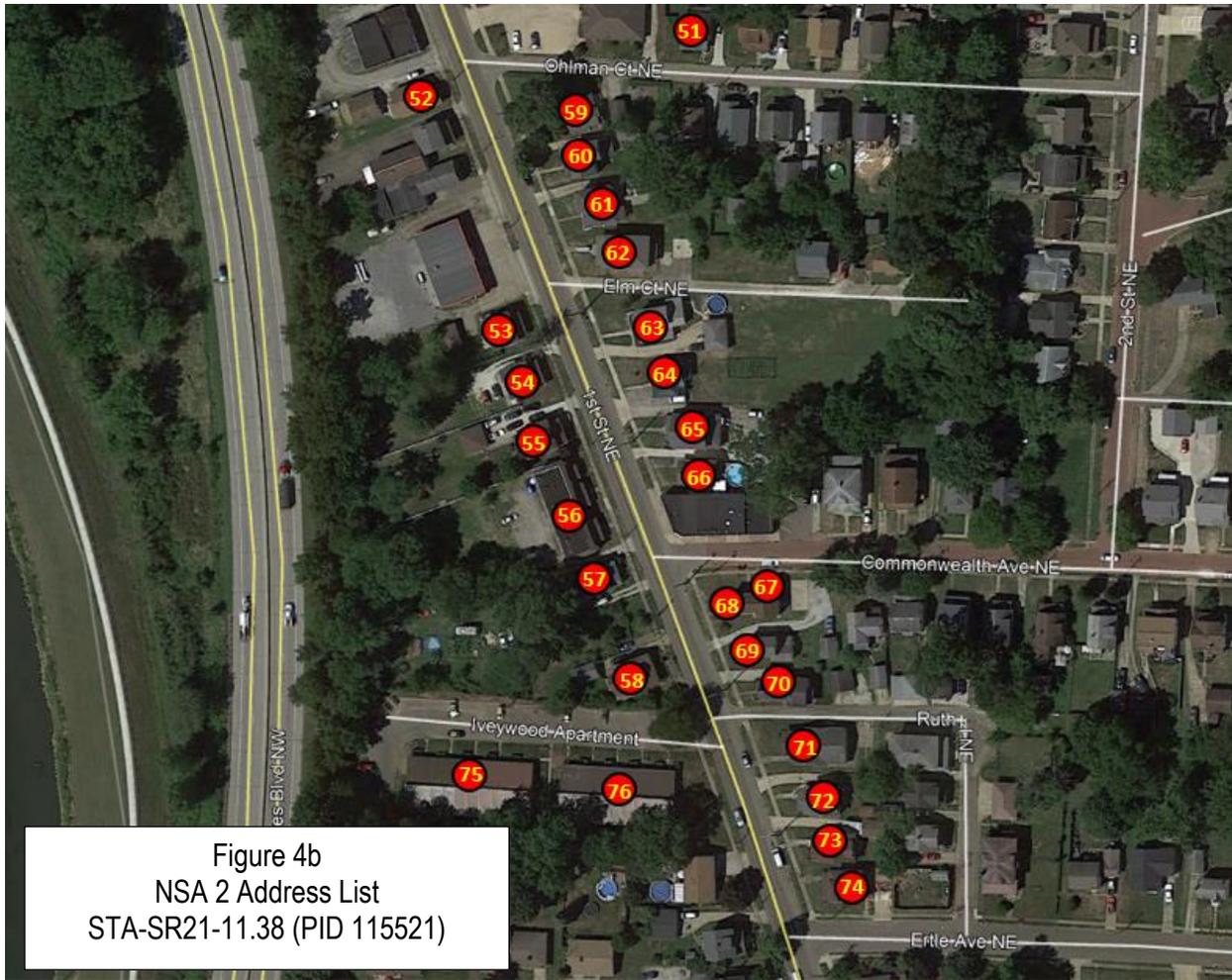


Figure 4b  
NSA 2 Address List  
STA-SR21-11.38 (PID 115521)

- 51. 122 OHLMAN CT NE MASSILLON OH
- 52. 953 1ST ST NE MASSILLON OH
- 53. 929 1ST ST NE MASSILLON OH
- 54. 923 1ST ST NE MASSILLON OH
- 55. 919 1ST ST NE MASSILLON OH
- 56. 907/909/911/913/915 1ST ST NE MASSILLON OH
- 57. 903 1ST ST NE MASSILLON OH
- 58. 893 1ST ST NE MASSILLON OH
- 59. 948 1ST ST NE MASSILLON OH
- 60. 944 1ST ST NE MASSILLON OH
- 61. 938 1ST ST NE MASSILLON OH
- 62. 934/936 1ST ST NE MASSILLON OH
- 63. 926 1ST ST NE MASSILLON OH

- 64. 922 1ST ST NE MASSILLON OH
- 65. 916/918 1ST ST NE MASSILLON OH
- 66. 912 1ST ST NE MASSILLON OH
- 67. 898 1ST ST NE MASSILLON OH
- 68. 109 COMMONWEALTH AVE NE
- 69. 894 1ST ST NE MASSILLON OH
- 70. 888 1ST ST NE MASSILLON OH
- 71. 882 1ST ST NE MASSILLON OH
- 72. 878 1ST ST MASSILLON OH
- 73. 874 1ST ST MASSILLON OH
- 74. 870 1ST ST MASSILLON OH
- 75. 883 1ST ST NE MASSILLON OH
- 76. 881 1ST ST NE MASSILLON OH

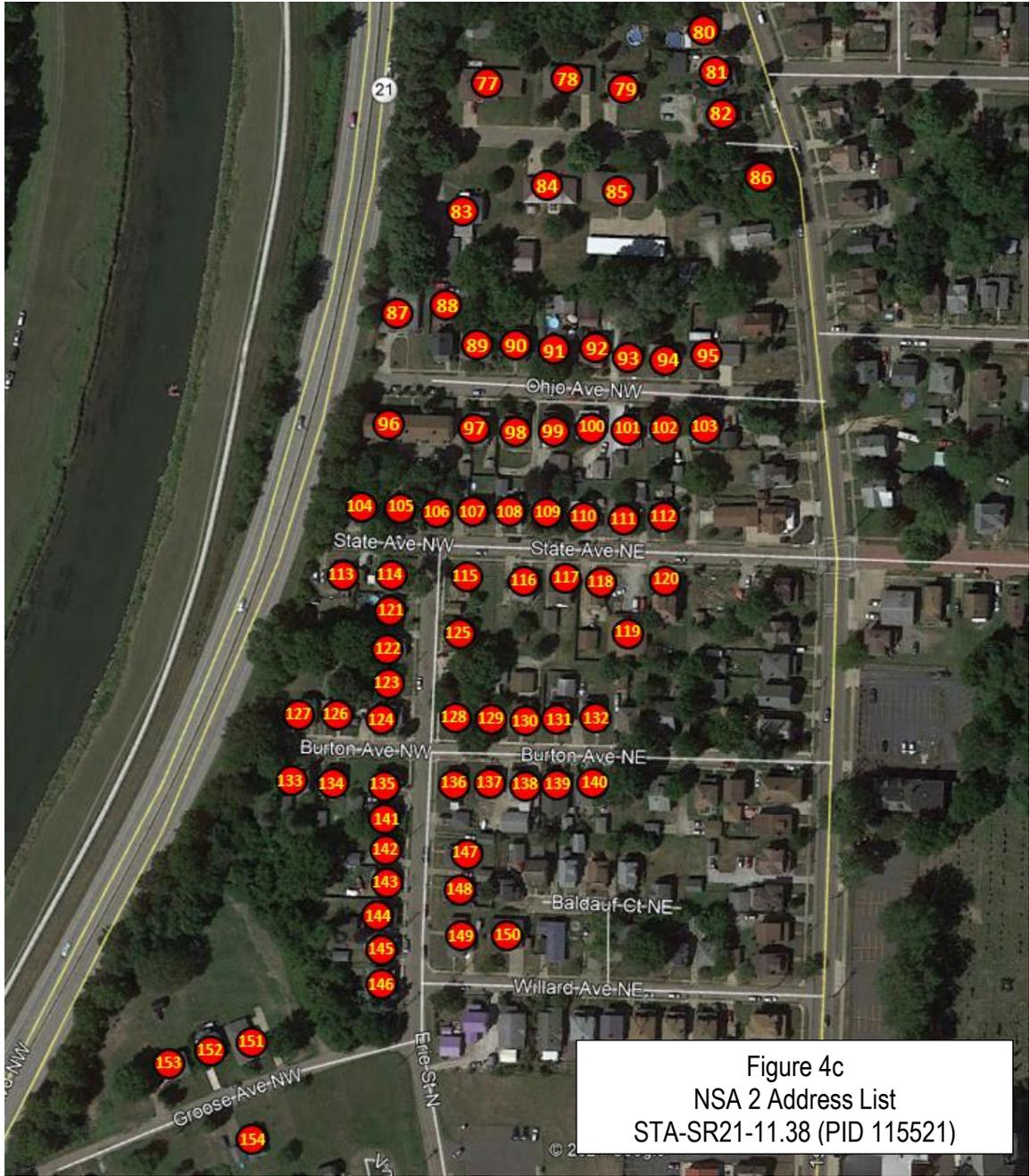


Figure 4c  
NSA 2 Address List  
STA-SR21-11.38 (PID 115521)

- 77. 8 DAVID AVE NE MASSILLON OH
- 78. 18 DAVID AVE NE MASSILLON
- 79. 24 DAVID AVE NE MASSILLON
- 80. 871 1ST ST NE MASSILLON
- 81. 865 1ST ST NE MASSILLON
- 82. 861/863 ST NE MASSILLON
- 83. 5 DAVID AVE NE MASSILLON OH
- 84. 15 DAVID AVE NE MASSILLON OH
- 85. 25 DAVID AVE NE MASSILLON OH
- 86. 853 1ST ST NE MASSILLON OH
- 87. 6 OHIO AVE NE MASSILLON OH
- 88. 2 OHIO AVE NE MASSILLON OH

- 89. 8 OHIO AVE NE MASSILLON OH
- 90. 12 OHIO AVE NE MASSILLON OH
- 91. 16 OHIO AVE NE MASSILLON OH
- 92. 22 OHIO AVE NE MASSILLON OH
- 93. 26 OHIO AVE NE MASSILLON OH
- 94. 30 OHIO AVE NE MASSILLON OH
- 95. 36 OHIO AVE NE MASSILLON OH
- 96. 9 OHIO AVE NE MASSILLON OH
- 97. 7 OHIO AVE NE MASSILLON OH
- 98. 11 OHIO AVE NE MASSILLON OH
- 99. 17 OHIO AVE NE MASSILLON OH
- 100. 23 OHIO AVE NE MASSILLON OH

101. 27 OHIO AVE NE MASSILLON OH  
102. 31 OHIO AVE NE MASSILLON OH  
103. 37 OHIO AVE NE MASSILLON OH  
104. 8 STATE AVE NW MASSILLON OH  
105. 4 STATE AVE NW MASSILLON OH  
106. 2 STATE AVE NW MASSILLON OH  
107. 6 STATE AVE NW MASSILLON OH  
108. 10 STATE AVE NW MASSILLON OH  
109. 16 STATE AVE NW MASSILLON OH  
110. 20 STATE AVE NW MASSILLON OH  
111. 26 STATE AVE NW MASSILLON OH  
112. 30 STATE AVE NW MASSILLON OH  
113. 13 STATE AVE NE MASSILLON OH  
114. 753 ERIE ST N MASSILLON OH  
115. 7 STATE AVE NE MASSILLON  
116. 13 STATE AVE NE MASSILLON  
117. 19 STATE AVE NE MASSILLON  
118. 23 STATE AVE NE MASSILLON  
119. 25 STATE AVE NE MASSILLON  
120. 31/33 STATE AVE NE MASSILLON  
121. 747 ERIE ST N MASSILLON OH  
122. 745 ERIE ST N MASSILLON OH  
123. 739 ERIE ST N MASSILLON OH  
124. 737 ERIE ST N MASSILLON OH  
125. 746 ERIE ST N MASSILLON OH  
126. 12 BURTON AVE NW MASSILLON  
127. 16 BURTON AVE NW MASSILLON  
128. 4 BURTON AVE NE MASSILLON  
129. 8 BURTON AVE NE MASSILLON  
130. 12 BURTON AVE NE MASSILLON  
131. 18 BURTON AVE NE MASSILLON  
132. 22 BURTON AVE NE MASSILLON  
133. 17 BURTON AVE NE MASSILLON  
134. 13 BURTON AVE NE MASSILLON  
135. 727 ERIE ST N MASSILLON  
136. 5 BURTON AVE  
137. 9 BURTON AVE  
138. 15 BURTON AVE  
139. 19 BURTON AVE  
140. 23 BURTON AVE  
141. 723 ERIE ST N MASSILLON  
142. 719 ERIE ST N MASSILLON  
143. 713 ERIE ST N MASSILLON  
144. 709 ERIE ST N MASSILLON  
145. 705 ERIE ST N MASSILLON  
146. 701 ERIE ST N MASSILLON  
147. 716 ERIE ST  
148. 712 ERIE ST  
149. 710 ERIE ST  
150. 10 WILLARD AVE NE  
151. 20 GROOSE AVE NW  
152. 26 GROOSE AVE NW  
153. 30 GROOSE AVE NW  
154. 27 GROOSE AVE



- 155. 33 GROOSE AVE
- 156. 656 1ST ST
- 157. 652 VINE ST
- 158. 16 WARWICK AVE
- 159. 58 WARWICK AVE
- 160. 50 WARWICK AVE
- 161. 44 WARWICK AVE
- 162. 110 WARWICK AVE
- 163. 43 WARWICK AVE
- 164. 630 1ST ST
- 165. 626 1ST ST
- 166. 620 1ST ST
- 167. 612 1ST ST
- 168. 54 CHERRY RD
- 169. 48 CHERRY RD
- 170. 42 CHERRY RD
- 171. 110/114 CHERRY RD

## Traffic

Traffic volumes used in this analysis were provided by the Transportation Data Management System. The percentage of truck traffic on SR 21 was provided by using data from the field visit. Three (3) vehicle types were used in the noise model: automobiles, heavy trucks, and medium trucks. Truck traffic volume percentage calculations for State Route 21, Lake Avenue, and Cherry Road are provided in Appendix B as well as the traffic data used in the analysis by ODOT.

Traffic data used in the analysis are shown in the following table:

<b>Roadway Section</b>	<b>Existing Year</b>	<b>Medium Truck Volume</b>	<b>Heavy Truck Volume</b>
SR 21 Southbound	823	4.5%	19%
SR 21 Northbound	928	11.5%	10%
Lake Avenue (West)	492	10%	
Lake Avenue (East)	1,258	10%	
Cherry Road (West)	550	10%	
Cherry Road (East)	474	10%	

## Ambient Noise Measurements

A field visit was conducted on August 19, 2021 in the project area to measure the existing noise environment at representative locations. Noise measurements were performed in accordance with the FHWA Report Number FHWA-PD-96-046, *Measurement of Highway Related Noise* (May, 1996). Measurements were taken at representative receptor sites for 15-minute intervals. The noise meter was tripod mounted with the microphone at a distance of approximately 4.9 feet above ground level and angled toward the dominate noise source. Noise measurements were recorded with a Quest/3M SD-200 type 2 Data Logging SLM. Ambient noise levels recorded at representative receptor sites are listed in the following table:

<b>Location</b>	<b>Location Description</b>	<b>Measured Noise Level Leq</b>
Location 1	1329 Kracker Street NW	68.6
Location 2	1073 1 <sup>st</sup> NE	61.2
Location 3	881 1 <sup>st</sup> NE	66.5
Location 4	8 David Avenue	67.3
Location 5	2 Ohio Avenue	68.0
Location 6	13 State Avenue	67.2
Location 7	16 Burton Avenue	67.9
Location 8	656 1 <sup>st</sup> NW	67.6

The noise meter continuously measures and records the ambient noise level and integrates these values into a  $L_{eq}$  for the duration of the reading.

### Noise Model Validation

During each of the ambient noise measurement periods described previously, simultaneous data including traffic volume, speed, and vehicle composition were collected. During some of the measurement periods, traffic could be observed on both directions of SR 21. These traffic volumes were input into TNM V2.5 to validate the measured noise level with the modeled noise level at each representative site. The following table presents the TNM predicted noise levels based on the observed traffic data. The table also presents a comparison of the measured levels to the modeled levels at each representative receptor site.

Number	Measured Noise Level ( $L_{eq}$ in dBA)	Modeled Noise Level ( $L_{eq}$ in dBA)	Comparison of Modeled Level to Measured Level (dB)
Location 1	68.6	66.3	2.3
Location 2	61.2	61.5	0.3
Location 3	66.5	63.7	2.8
Location 4	67.3	66.9	0.4
Location 5	68.0	68.4	0.4
Location 6	67.2	66.5	0.7
Location 7	67.9	65.1	2.8
Location 8	67.6	64.9	2.7

As shown by the comparison, TNM's ability to accurately predict traffic noise levels was confirmed. All of the ambient measurement sites are within  $\pm 3$  dB of the TNM predicted noise levels. The TNM Sound Level Results as well as mapping indicating the location of field measurement sites are provided in Appendix C.

## **Section 3.0**

### **NOISE MODELING**

#### **Existing Condition**

The most dominant noise source within the project area is the noise generated by traffic on US 30. The FHWA Transportation Noise Model (TNM) Version 2.5 was used to predict the existing noise levels at sensitive receptor sites. Traffic noise levels for Existing Year 2020 condition was predicted for the peak hour condition using the existing traffic data provided by the ODOT Traffic Information Management System for the existing roadway configuration.

## **Section 4.0**

### **IMPACT ASSESSMENT**

To evaluate the significance of the changes in the predicted noise levels, the FHWA has established NAC, as shown in Table 1, for various categories of land use and represents the upper limits of acceptable traffic generated noise emissions. According to FHWA guidance, a project may have a traffic noise impact if the following condition exists under the design year conditions:

1. The predicted noise levels associated with the Build Alternative approach, meet, or exceed the applicable NAC. According to ODOT, noise levels "approach" the NAC when they are within 1 dB of the applicable NAC.

Almost all of the noise receptor sites modeled in this analysis fall under the NAC Activity Category B having an applicable outdoor NAC of 67 dBA [ $L_{eq(h)}$ ]. As an example, under Activity Category B, a predicted noise level of 66 dBA (rounded up from 65.5 dBA) would approach the NAC and would be considered a noise impact.

#### **Impact Assessment Summary**

The Transportation Data Management System traffic data, provided as average daily traffic, was multiplied by a factor between 0.04 to 0.19 depending on the road of interest, to establish the peak hour traffic volume. The resulting volume was used to represent the worst-case traffic condition and was used for impact assessment for the receptors in the NSA. The TNM-generated peak hour noise levels for the existing condition are the baseline for a comparison to the applicable NAC to determine the extent of noise impact, if any. The impact assessment for all NSA is described as follows:

## **Existing Condition 2019**

### NSA 1

All of the residential dwelling units in NSA 1 were modeled as Activity Category B having a NAC of 67 dBA. Under the existing year, the residential dwelling units were predicted to experience traffic noise levels between 58 to 73 dBA. 11 of the residential dwelling units in NSA 1 were predicted to experience traffic noise levels that would exceed the Activity Category B NAC. TNM output data sheets for the Existing Year 2019 model run are provided in Appendix D. The existing year noise levels for the NSA are summarized in the following table:

**Table 5. NSA 1  
Existing Year Noise Levels**

Receptor		2019 Existing Year	Impact Criteria	
Site	Dwelling Units	Calculated LAeq1h	NAC Activity Category	Impact
		dBa		
1st ST NE MASSILLON OH 44646	1	59.0	B	No
1519 1ST ST NW MASSILLON OH 44646	1	62.7	B	No
1475 KRACKER ST NW MASSILLON OH 44646	1	59.2	B	No
1453 KRACKER ST NW MASSILLON OH 44646	1	60.0	B	No
1445 KRACKER ST NW MASSILLON OH	1	61.2	B	No
1433 KRACKER ST NW MASSILLON OH	1	61.6	B	No
1454 KRACKER ST NW MASSILLON OH 44646	1	58.3	B	No
1450 KRACKER ST NW MASSILLON OH 44646	1	58.6	B	No
1440 KRACKER ST NW MASSILLON OH 44646	1	59.8	B	No
1436 KRACKER ST NW MASSILLON OH 44646	1	60.3	B	No
1363 KRACKER ST NW MASSILLON OH 44646	1	66.2	B	Yes
1361 KRACKER ST NW MASSILLON OH 44646	1	66.2	B	Yes
1349 KRACKER ST NW MASSILLON OH	1	67.8	B	Yes
1343 KRACKER ST NW MASSILLON OH 44646	1	68.5	B	Yes
1337 KRACKER ST NW MASSILLON OH	1	69.8	B	Yes
1321 KRACKER ST NW MASSILLON OH	1	72.7	B	Yes
1317 KRACKER ST NW MASSILLON OH	1	72.2	B	Yes
1358 KRACKER ST NW MASSILLON OH 44646	1	61.5	B	No
1356 KRACKER ST NW MASSILLON OH	1	62.1	B	No
1328 KRACKER ST NW MASSILLON OH	1	66.1	B	Yes
1326 KRACKER ST NW MASSILLON OH	1	66.5	B	Yes
1316 KRACKER ST NW MASSILLON OH	1	66.6	B	Yes
14 LAKE AVE NE MASSILLON OH	1	67.8	B	Yes
1425 1ST NE MASSILLON OH	1	59.1	B	No
1423 1ST NE MASSILLON OH	1	61.3	B	No
1411 1ST NE MASSILLON OH	1	60.9	B	No
1407 1ST NE MASSILLON OH	1	61.2	B	No
1329 1ST ST NE MASSILLON OH	1	62.3	B	No
1323 1ST ST NE MASSILLON OH	1	62.4	B	No
	29			11

## NSA 2

All of the residential dwelling units in NSA 2 were modeled as Activity Category B having a NAC of 67 dBA. Under the existing year, the residential dwelling units were predicted to experience traffic noise levels between 53 to 74 dBA. 41 of the residential dwelling units in NSA 2 were predicted to experience traffic noise levels that would exceed the Activity Category B NAC. TNM output data sheets for the Existing Year 20219 model run are provided in Appendix D. The existing year noise levels for the NSA are summarized in the following table:

Receptor		2019 Existing Year	Impact Criteria	
Site	Dwelling Units	Calculated LAeq1h	NAC Activity Category	Impact
		dBA		
23 LAKE AVE NE MASSILLON OH	1	71.5	B	Yes
19 LAKE AVE NE MASSILLON OH	1	70.5	B	Yes
1119 1ST ST NE MASSILLON OH	1	65.8	B	Yes
1113 1ST ST NE MASSILLON OH	1	65.9	B	Yes
1109 1ST NE MASSILLON OH	1	66.3	B	Yes
1105 1ST ST NE MASSILLON OH	1	66.3	B	Yes
1059 1ST ST NE MASSILLON OH	1	68.9	B	Yes
1053 1ST ST NE MASSILLON OH	1	69.6	B	Yes
1049 1ST ST NE MASSILLON OH	1	69.6	B	Yes
1041 1ST ST NE MASSILLON OH	1	69.2	B	Yes
1029 1ST ST NE MASSILLON OH	1	68.7	B	Yes
1025 1ST ST NE MASSILLON OH	1	68.8	B	Yes
1021 1ST ST NE MASSILLON OH	1	68.3	B	Yes
1017 1ST ST NE MASSILLON OH	1	68.4	B	Yes
1013 1ST ST NE MASSILLON OH	1	68.0	B	Yes
1009 1ST ST NE MASSILLON OH	1	67.9	B	Yes
953 1ST ST NE MASSILLON OH	1	68.6	B	Yes
929 1ST ST NE MASSILLON OH	1	64.0	B	No
923 1ST ST NE MASSILLON OH	1	63.7	B	No
919 1ST ST NE MASSILLON OH	1	63.9	B	No
907/909/911/913/915 1ST ST NE MASSILLON OH	5	62.8	B	No
903 1ST ST NE MASSILLON OH	1	61.9	B	No
893 1ST ST ME MASSILLON OH	1	61.1	B	No
117 LAKE AVE NE MASSILLON OH	1	66.4	B	Yes
1210 1ST ST NE MASSILLON OH	1	62.7	B	No
1042 1ST ST NE MASSILLON OH	1	65.9	B	Yes
1018 1ST ST NE MASSILLON OH	1	62.5	B	No
1014 1ST ST NE MASSILLON OH	1	61.9	B	No
1006 1ST ST NE MASSILLON OH	1	59.8	B	No
113/115/117/119 WILLOW AVE NE MASSILLON OH	4	59.4	B	No

**Table 6. NSA 2  
Existing Year Noise Levels**

Receptor		2019 Existing Year	Impact Criteria	
Site	Dwelling Units	Calculated LAeq1h	NAC Activity Category	Impact
		dBA		
122 OHLMAN CT NE MASSILLON OH	1	58.2	B	No
948 1ST ST NE MASSILLON OH	1	57.0	B	No
944 1ST ST NE MASSILLON OH	1	56.0	B	No
938 1ST ST NE MASSILLON OH	1	53.4	B	No
934/936 1ST ST NE MASSILLON OH	2	54.4	B	No
926 1ST ST NE MASSILLON OH	1	55.0	B	No
922 1ST ST NE MASSILLON OH	1	54.2	B	No
916/918 1ST ST NE MASSILLON OH	2	53.5	B	No
912 1ST ST NE MASSILLON OH	1	53.0	B	No
898 1ST ST NE MASSILLON OH	1	53.6	B	No
109 COMMONWEALTH AVE NE	1	53.9	B	No
894 1ST ST NE MASSILLON OH	1	54.3	B	No
888 1ST ST NE MASSILLON OH	1	53.0	B	No
883 1ST ST NE MASSILLON OH	10	64.9	B	No
881 1ST ST NE MASSILLON OH	10	60.0	B	No
8 DAVID AVE NE MASSILLON OH	1	68.2	B	Yes
18 DAVID AVE NE MASSILLON	1	64.3	B	No
24 DAVID AVE NE MASSILLON	1	62.2	B	No
871 1ST ST NE MASSILLON	1	60.3	B	No
865 1ST ST NE MASSILLON	1	59.5	B	No
861/863 ST NE MASSILLON	2	59.7	B	No
882 1ST ST NE MASSILLON OH	1	57.8	B	No
878 1ST ST MASSILLON OH	1	58.0	B	No
874 1ST ST MASSILLON OH	1	57.9	B	No
870 1ST ST MASSILLON OH	1	58.0	B	No
5 DAVID AVE NE MASSILLON OH	1	68.0	B	Yes
15 DAVID AVE NE MASSILLON OH	1	64.5	B	No
25 DAVID AVE NE MASSILLON OH	1	62.1	B	No
853 1ST ST NE MASSILLON OH	1	56.7	B	No
6 OHIO AVE NE MASSILLON OH	1	70.3	B	Yes
2 OHIO AVE NE MASSILLON OH	1	67.3	B	Yes
8 OHIO AVE NE MASSILLON OH	1	65.3	B	No
12 OHIO AVE NE MASSILLON OH	1	63.5	B	No
16 OHIO AVE NE MASSILLON OH	1	62.0	B	No
22 OHIO AVE NE MASSILLON OH	1	60.5	B	No
26 OHIO AVE NE MASSILLON OH	1	59.4	B	No
30 OHIO AVE NE MASSILLON OH	1	58.2	B	No
36 OHIO AVE NE MASSILLON OH	1	57.2	B	No
9 OHIO AVE NE MASSILLON OH	6	68.8	B	Yes
7 OHIO AVE NE MASSILLON OH	1	64.8	B	No
11 OHIO AVE NE MASSILLON OH	1	63.5	B	No
17 OHIO AVE NE MASSILLON OH	1	62.0	B	No

**Table 6. NSA 2  
Existing Year Noise Levels**

Receptor		2019 Existing Year	Impact Criteria	
Site	Dwelling Units	Calculated LAeq1h	NAC Activity Category	Impact
		dBA		
23 OHIO AVE NE MASSILLON OH	1	60.7	B	No
27 OHIO AVE NE MASSILLON OH	1	59.4	B	No
31 OHIO AVE NE MASSILLON OH	1	58.4	B	No
37 OHIO AVE NE MASSILLON OH	1	57.4	B	No
8 STATE AVE NW MASSILLON OH	1	69.2	B	Yes
4 STATE AVE NW MASSILLON OH	1	66.6	B	Yes
2 STATE AVE NW MASSILLON OH	1	64.8	B	No
6 STATE AVE NW MASSILLON OH	1	63.3	B	No
10 STATE AVE NW MASSILLON OH	1	62.0	B	No
16 STATE AVE NW MASSILLON OH	1	60.8	B	No
20 STATE AVE NW MASSILLON OH	1	59.7	B	No
26 STATE AVE NW MASSILLON OH	1	58.7	B	No
30 STATE AVE NW MASSILLON OH	1	57.7	B	No
13 STATE AVE NE MASSILLON OH	1	71.4	B	Yes
753 ERIE ST N MASSILLON OH	1	66.7	B	Yes
747 ERIE ST N MASSILLON OH	1	66.9	B	Yes
745 ERIE ST N MASSILLON OH	1	66.2	B	Yes
739 ERIE ST N MASSILLON OH	1	65.4	B	No
737 ERIE ST N MASSILLON OH	1	63.6	B	No
12 BURTON AVE NW MASSILLON	1	65.9	B	Yes
16 BURTON AVE NW MASSILLON	1	67.3	B	Yes
7 BURTON AVE NW MASSILLON	1	63.2	B	No
13 STATE AVE NW MASSILLON	1	61.3	B	No
19 STATE AVE NW MASSILLON	1	60.2	B	No
23 STATE AVE NW MASSILLON	1	59.3	B	No
25 STATE AVE NW MASSILLON	1	58.0	B	No
31/33 STATE AVE NW MASSILLON	2	57.0	B	No
746 ERIE ST N MASSILLON OH	1	62.6	B	No
4 BURTON AVE NW MASSILLON	1	60.8	B	No
8 BURTON AVE NW MASSILLON	1	59.7	B	No
12 BURTON AVE NW MASSILLON	1	58.9	B	No
18 BURTON AVE NW MASSILLON	1	59.0	B	No
22 BURTON AVE NW MASSILLON	1	58.3	B	No
17 BURTON AVE NW MASSILLON	1	66.8	B	Yes
13 BURTON AVE NW MASSILLON	1	65.2	B	No
727 ERIE ST N MASSILLON	1	63.7	B	No
723 ERIE ST N MASSILLON	1	63.4	B	No
719 ERIE ST N MASSILLON	1	62.8	B	No
713 ERIE ST N MASSILLON	1	62.2	B	No
709 ERIE ST N MASSILLON	1	61.6	B	No
705 ERIE ST N MASSILLON	1	61.2	B	No
701 ERIE ST N MASSILLON	1	60.9	B	No

**Table 6. NSA 2  
Existing Year Noise Levels**

Receptor		2019 Existing Year	Impact Criteria	
Site	Dwelling Units	Calculated LAeq1h	NAC Activity Category	Impact
		dBA		
20 GROOSE AVE NW	1	64.2	B	No
26 GROOSE AVE NW	1	65.3	B	No
30 GROOSE AVE NW	1	66.0	B	No
5 BURTON AVE	1	60.3	B	No
9 BURTON AVE	1	59.1	B	No
15 BURTON AVE	1	58.3	B	No
19 BURTON AVE	1	59.1	B	No
23 BURTON AVE	1	58.0	B	No
716 ERIE ST	1	60.4	B	No
712 ERIE ST	1	60.1	B	No
710 ERIE ST	1	60.1	B	No
10 WILLARD AVE NE	1	57.8	B	No
27 GROOSE AVE	1	62.7	B	No
33 GROOSE AVE	1	68.0	B	Yes
656 1ST ST	1	70.1	B	Yes
652 VINE ST	1	59.5	B	No
16 WARWICK AVE	1	58.7	B	No
58 WARWICK AVE	1	65.6	B	Yes
50 WARWICK AVE	1	64.0	B	No
44 WARWICK AVE	1	62.8	B	No
110 WARWICK AVE	1	74.4	B	Yes
630 1ST ST	1	63.4	B	No
626 1ST ST	1	62.5	B	No
620 1ST ST	1	62.0	B	No
43 WARWICK AVE	1	59.8	B	No
612 1ST ST	1	61.3	B	No
54 CHERRY RD	1	67.7	B	Yes
48 CHERRY RD	1	67.8	B	Yes
42 CHERRY RD	1	67.4	B	Yes
110/114 CHERRY RD	2	63.1	B	No
	144			<b>41</b>

## **Section 5.0**

### **EVALUATION OF NOISE ABATEMENT MEASURES**

Noise barriers reduce noise levels by blocking the sound path between the noise source and noise sensitive receptors. To be effective, noise barriers must be long, continuous, and sufficiently high to break the line of sight from the highway to the receptor. When designing a noise barrier wall, every attempt should be made to obtain a substantial noise reduction of at least 7 dB at front row receptors wherever possible. Noise barriers are generally designed to provide a minimum reduction of 4.5 dB for receptor sites located closest to the roadway. Noise levels must be reduced by a minimum of 4.5 dB at any sensitive receptor site for that site to be considered a benefited receptor. The construction of a noise barrier is considered a feasible mitigation measure if 40% of the impacted dwelling units receive at least a 4.5 dB noise reduction. The construction of a noise barrier is considered a reasonable mitigation measure if the construction cost is less than \$35,000 per benefited receptor. The cost per square foot of noise barrier wall construction, provided by ODOT is \$25. Reasonableness also includes the desires of the affected property owners to have a noise barrier constructed adjacent to their property.

Noise barrier design was facilitated through the use of TNM Version 2.5. TNM is an interactive computer program with the fundamental purpose of enabling the designer to develop an optimum noise barrier design, one that provides the desired noise reduction at the least cost. Site specific variables used in the computer model include barrier length, the geometry of the roadway to the receptor, barrier height, barrier design material (concrete), and the number of dwelling units benefited by the barrier. Based on the height and length of the modeled barrier, TNM calculates noise barrier effectiveness (noise reduction) and cost. The model can quickly change barrier heights to improve (optimize) the cost efficiency of the barrier system. The effectiveness of a barrier relates to the reduction in noise level the barrier provides, and the number of people benefited by the barrier system.

The following subsections present a summary of the noise barrier wall analyses performed for the project area. TNM spreadsheets detailing the level of noise reduction at each receptor site and a description of the evaluated noise barriers and costs are provided in Appendix C.

#### **Barrier Wall Analysis**

A noise barrier analysis was performed for the impacted dwelling units in the project area to determine if the construction of a noise barrier wall would be a reasonable and feasible measure in abating the design year traffic noise levels. One noise barrier location was evaluated for the receptors in NSA 1 and NSA 2. Location 1 evaluated a noise barrier located along the design edge of shoulder of SR 21. Location 2 evaluated a noise barrier located along the right of way line of SR 21. In the following tables, the noise wall locations were evaluated and compared for each impacted NSA.

## Noise Barrier Evaluation

### NSA 1

Under the existing year condition, 11 residential dwelling unit was predicted to experience traffic noise levels that would meet or exceed the Activity Category B NAC. One noise barrier wall location was evaluated as potential noise abatement for the impacted dwelling units in NSA 1. Barrier 1 was modeled along the edge of shoulder of SR 21. The barrier has a total length of 1,228 feet. The potential impact of Barrier 1 at various heights is shown in Table 1. Figure 5 outlines the benefited receptors in NSA 1 with noise barrier 1.

Table 7. Noise Barrier Height Comparison								
Barrier 1: Noise Barrier Located along the Edge of Shoulder Line								
Location	Barrier Length	Barrier Height	Cost of Barrier	Impacted Receptors	Impacted & Benefited Receptors	Total Benefited Receptors	Feasibility	Cost per Benefited Receptor
<b>BARRIER 1</b>	1,228'	10'	\$307,029	11	5	5	Yes	\$61,406
	1,228'	11'	\$337,732	11	7	7	Yes	\$48,247
	1,228'	12'	\$368,435	11	7	7	Yes	\$52,634
	1,228'	13'	\$399,138	11	7	9	Yes	\$44,349
	1,228'	14'	\$429,841	11	8	13	Yes	\$33,065
	1,228'	15'	\$460,544	11	9	17	Yes	\$27,091



- Receptors Impacted and Benefited
- Receptors Not Impacted yet Benefited
- Receptors Not Impacted and Not Benefited
- Receptors Impacted and Not Benefited
- Evaluated Edge of Shoulder Line Noise Barrier Wall

Figure 5  
 NSA 1 Barrier 1  
 Benefited Receptors with Noise Barrier  
 STA- SR 21-11.38 (PID115521)

As shown on Figure 5 and in Table 7 above, the height that would benefit the most receptors for a barrier in NSA 1 would be 14 feet. Increasing the height to 15 feet benefits only one additional impacted receptor. According to ODOT guidance, the threshold of noise reduction, which establishes a benefited property, is at least 4.5 dB. In addition, a barrier is considered feasible if at least one receptor has a noise reduction of at least 7 dB. NSA 1 barrier 1 at 14 feet has at least one receptor with a noise reduction is greater than 7 dB. The barrier also meets the cost reasonable criterion of less than \$35,000 per benefited receptor.

NSA 2

Under the existing year condition, 41 residential dwelling unit was predicted to experience traffic noise levels that would meet or exceed the Activity Category B NAC. One noise barrier wall location was evaluated as potential noise abatement for the impacted dwelling units in NSA 2. Barrier 2 was modeled along the east edge of shoulder of SR 21. Barrier 2 has a total length of 4,450 feet. The potential impact of Barrier 2 at various heights is shown in Table 8. Figure 6 outlines the benefited receptors in NSA 2 with Barrier 2.

<b>Table 8. Noise Barrier Height Comparison</b>								
<b>Barrier 2: Noise Barrier Located along the Edge of Shoulder Line</b>								
Location	Barrier Length	Barrier Height	Cost of Barrier	Impacted Receptors	Impacted & Benefited Receptors	Total Benefited Receptors	Feasibility	Cost per Benefited Receptor
<b>BARRIER 2</b>	4,093'	10'	\$1,023,298	41	7	5	Yes	\$204,660
	4,093'	11'	\$1,125,627	41	8	12	Yes	\$93,802
	4,093'	12'	\$1,227,957	41	15	30	Yes	\$40,932
	4,093'	13'	\$1,330,287	41	15	54	Yes	\$24,635
	4,093'	14'	\$1,432,617	41	15	106	Yes	\$13,515
	4,093'	15'	\$1,534,946	41	15	129	Yes	\$11,899



- Receptors Impacted and Benefited
- Receptors Not Impacted yet Benefited
- Receptors Not Impacted and Not Benefited
- Receptors Impacted and Not Benefited
- Evaluated Edge of Shoulder Line Noise Barrier Wall

Figure 6a  
 Barrier 2  
 Benefited Receptors with Noise Barrier  
 STA- SR 21-11.38 (PID115521)



- Receptors Impacted and Benefited
- Receptors Not Impacted yet Benefited
- Receptors Not Impacted and Not Benefited
- Receptors Impacted and Not Benefited
- Evaluated Edge of Shoulder Line Noise Barrier Wall

Figure 6b  
Barrier 2  
Benefited Receptors with Noise Barrier  
STA- SR 21-11.38 (PID115521)



- Receptors Impacted and Benefited
- Receptors Not Impacted yet Benefited
- Receptors Not Impacted and Not Benefited
- Receptors Impacted and Not Benefited
- Evaluated Edge of Shoulder Line Noise Barrier Wall

Figure 6c  
 Barrier 2  
 Benefited Receptors with Noise Barrier  
 STA- SR 21-11.38 (PID115521)



- Receptors Impacted and Benefited
- Receptors Not Impacted yet Benefited
- Receptors Not Impacted and Not Benefited
- Receptors Impacted and Not Benefited
- Evaluated Edge of Shoulder Line Noise Barrier Wall

Figure 6d  
 Barrier 2  
 Benefited Receptors with Noise Barrier  
 STA- SR 21-11.38 (PID115521)

As shown in Figure 6 and Table 8 above, the height that would benefit the most receptors for a barrier in NSA 2 would be 14 feet. Increasing the height to 15 feet benefits only one additional impacted receptor. According to ODOT guidance, the threshold of noise reduction, which establishes a benefited property, is at least 4.5 dB. In addition, a barrier is considered feasible if at least one receptor has a noise reduction of at least 7 dB. NSA 2 barrier at a height of 14 feet has at least one receptor with a noise reduction is greater than 7 dB. The barrier also meets the cost reasonable criterion of less than \$35,000 per benefited receptor

## **Section 6.0**

### **CONSTRUCTION NOISE**

Noise sensitive receptors will also be subjected to noise impacts associated with the construction phase of the proposed project. Construction noise will generate temporary noise impacts on adjacent and nearby properties, particularly those in residential land use. Construction noise will be emitted intermittently by a range of construction equipment at varying levels of intensity based on the types of operations being performed and the number of pieces of equipment in operation at any given time. Depending on project circumstances, options are available to minimize the temporary adverse noise impacts, including the proper maintenance of equipment, most notably adequate lubrication, and non-leaking mufflers, equipment restriction modifications to reduce noise emissions and restrict the use of certain equipment by location and time of day, controlling non construction traffic by limiting heavy truck movements on residential streets, maximizing the distance between equipment and receptors where possible and, enclosing or screening noisy activities or stationary equipment.

## **Section 7.0**

### **CONCLUSION AND RECOMMENDATION**

A Type II noise analysis was prepared for all noise sensitive receivers located within 500 feet of the existing driving lanes of SR 21.

Noise levels were predicted for the Existing Year 2020 based on the existing SR 21 highway alignment. The FHWA TNM predicted traffic noise impacts at 173 receptor sites (208 dwelling units) within the project corridor. Of the impacted receptor sites, all would experience peak hour traffic noise levels in excess of the Category B NAC of 67 dBA.

According to ODOT guidance, the criteria to determine the feasibility and reasonableness of noise barrier walls should consider the following items:

The amount of noise reduction provided: When considering noise abatement measures, every reasonable effort should be made to obtain a substantial noise reduction at sensitive receptor sites. In Ohio, a substantial reduction is 7 dB or more.

The number of dwelling units benefited: The threshold of noise reduction, which establishes a benefited property, is at least 4.5 dB. This reduction is determined at an exterior point where frequent human use occurs and a lowered noise level would be of benefit regardless of whether or not the property was identified as impacted. Forty percent of the impacted receptor sites should be benefited by the noise barrier to be a feasible abatement measure.

The cost of the abatement: A reasonable cost for noise barrier walls is determined using a cost index based on total cost per dwelling unit benefited, as well as the unit cost per square foot of the noise barrier material installed for the walls. For a unit cost of \$25.00 per square foot of barrier wall a cost index of \$35,000 per benefited unit should be used.

The study area has two NSAs, NSA 1 is located on the east side of SR 21 north of Lake Avenue and South of Towpath Ave NW. NSA 1 is comprised of 29 residential dwelling units. NSA 2 is located on the east side of SR 21 south of Lake Avenue and north of Cherry Road NW. NSA 2 is comprised of 144 residential dwelling units.

Both NSAs were predicted to have levels above 66 dBA. Thus, a noise barrier at the edge of shoulder was modeled for each NSA. The noise barrier wall at NSA 1 and NSA 2 were modeled to be reasonable and feasible. The noise barrier at the edge of shoulder at a height of 14 feet and a length of 1,228 feet for NSA 1 is warranted and recommended. The Noise barrier at a height of 14 feet and a length of 4,093 feet at NSA 2 is warranted and recommended with the barrier being at the right of way from Iveywood Apartments to 1,400 feet south of SR 21 and at the edge of shoulder from Warwick Avenue NW to 740 feet north and from Iveywood Apartments to Lake Avenue. The noise barriers evaluated for each NSA are summarized in Table 9 on page 33.

**Table 9. Noise Barriers Summary**

Barrier	Barrier Length (feet)	Barrier Height (feet)	Square Footage of Barrier	Maximum Insertion Loss <sup>a</sup> (dB)	Impacted Receptor	Benefitted Receptor <sup>b</sup>	Barrier Cost <sup>c</sup>	Cost per benefitted receptor	Effectiveness		Barrier Location <sup>f</sup>	Barrier Recommended <sup>g</sup>
									Feasible <sup>d</sup>	Reasonable <sup>e</sup>		
Barrier 1	1,228'	14'	17,192'	10.6	11	13	\$429,841	\$33,065	Yes	Yes	EOS	Yes
Barrier 2	4,093'	14'	57,302'	12.5	41	106	\$1,432,617	\$13,515	Yes	Yes	EOS/ROW	Yes

<sup>a</sup> Insertion Loss (IL) is the maximum noise reduction provided by the noise barrier.

<sup>b</sup> A receptor is considered benefitted by the noise barrier if the IL is 5dB or greater.

<sup>c</sup> Cost is based on \$25 per square foot of noise barrier constructed on ground and \$100 per square foot constructed on structure.

<sup>d</sup> A noise barrier is considered feasible if it can provide a substantial noise reduction of at least 7dB at one receptor location.

<sup>e</sup> A noise barrier is considered cost reasonable if the cost per benefitted receptor is less than \$35,000.

<sup>f</sup> The location of the noise barrier wall: ROW=noise barrier is located along the right of way line; EOS=noise barrier is located along the edge of shoulder.

<sup>g</sup> Noise barrier recommendation is based on the number of benefitted receptors and the relative cost per benefitted receptor.

## Section 8.0 REFERENCES

Code of Federal Regulations (CFR) Title 23, Part 772, U.S. Department of Transportation, Federal Highway Administration (FHWA), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*. Washington, D.C.

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---

**APPENDIX A**

Noise Measurement Plan

Field Noise Measurements

TNM Validation

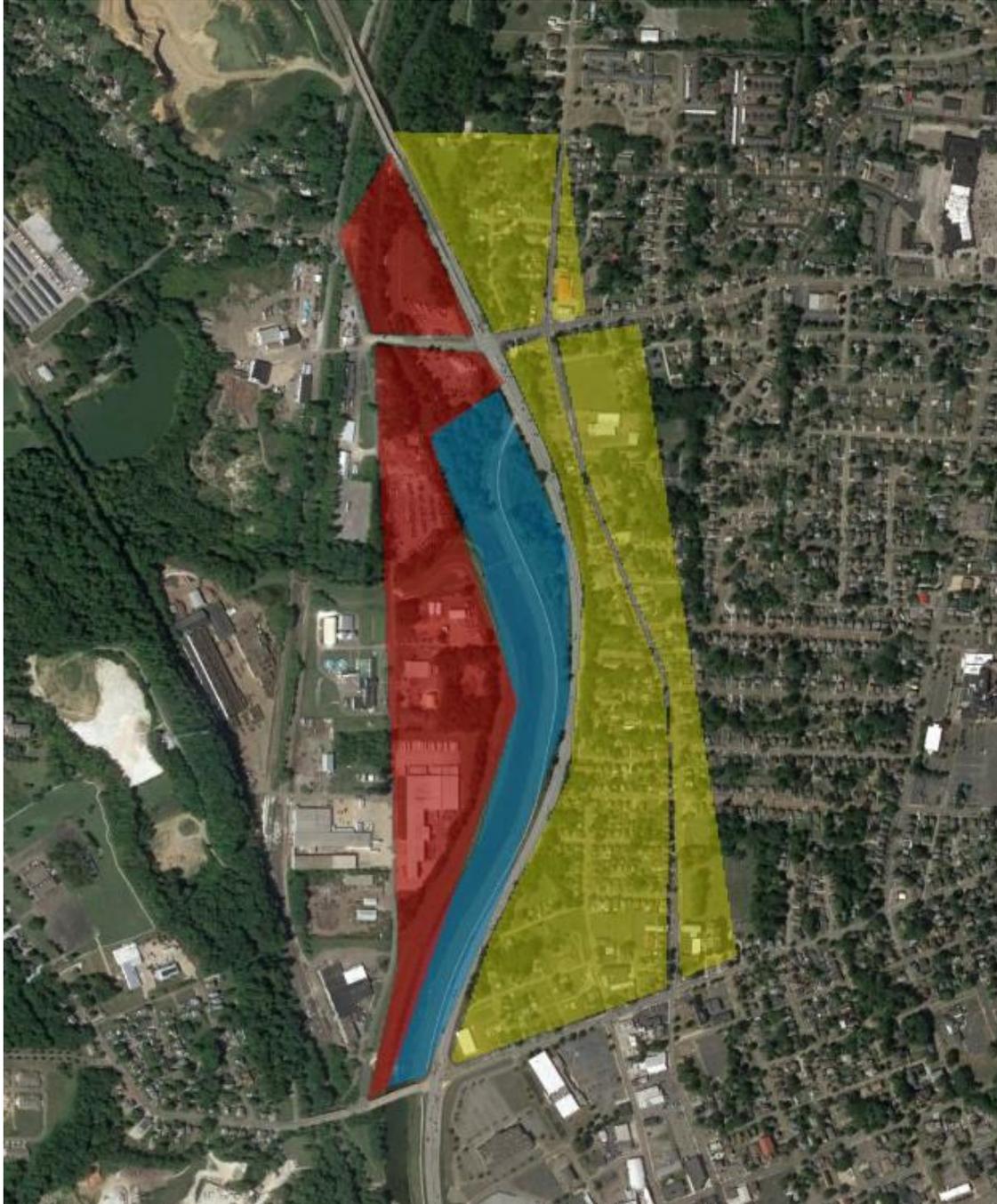
**Noise Measurement Plan**  
**STA-21-11.38 (PID 115521)**

As shown on the attached Land Use Map the study area is comprised of residential, indoor, and outdoor land. As shown on the Field Measurement Location Maps, eight locations are proposed for noise measurements. The location has areas where frequent outdoor use would occur (front porch, side yard).

Measurements will be taken over a 10-minute period in Leq dB(A) with cumulative measurements recorded for each minute. During the measurement periods, traffic will be counted for automobiles, medium truck and heavy truck traffic.



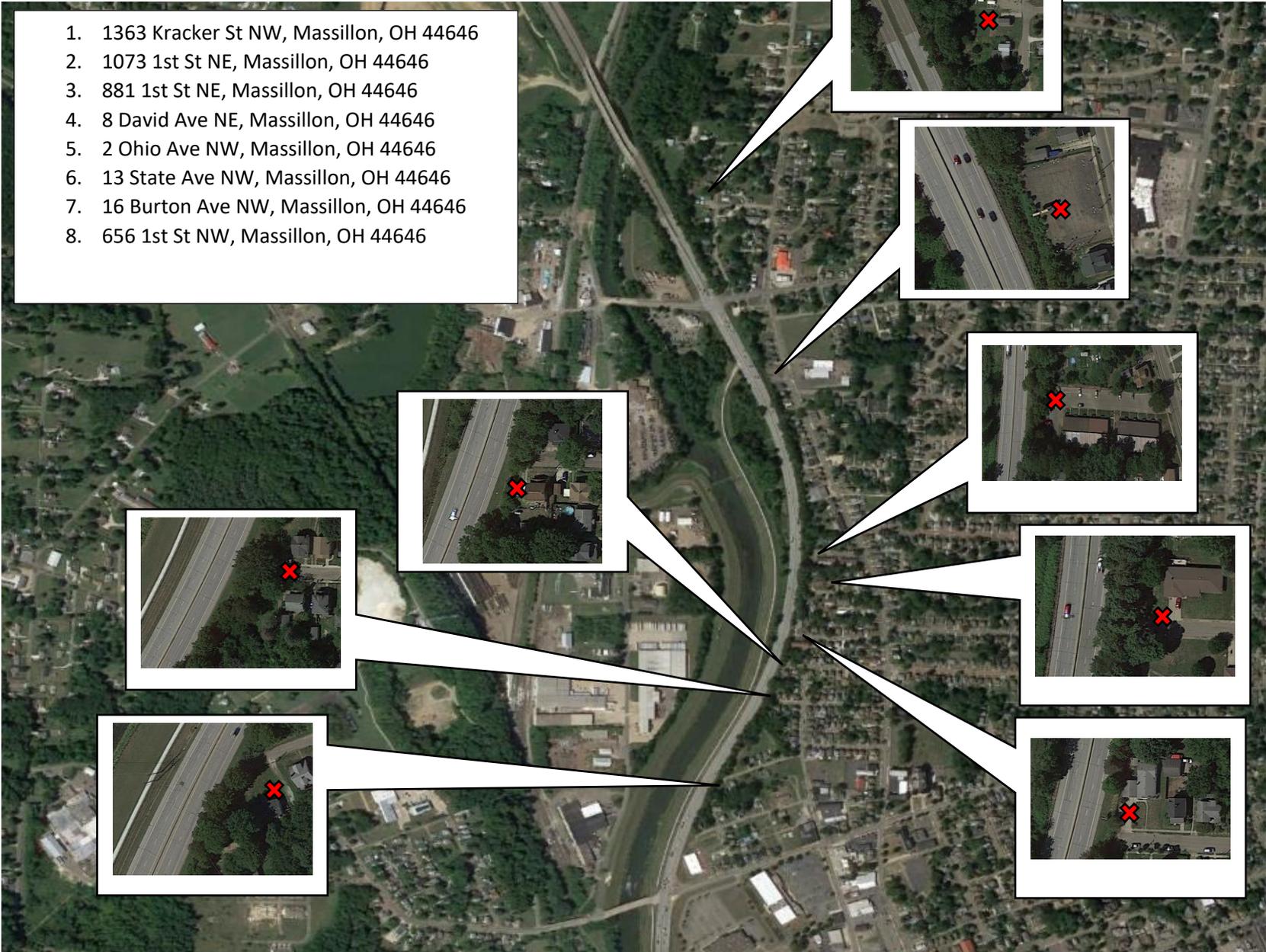
Project Location Map  
Type II Noise Analysis  
STA-21-11.38 (PID 115521)



	Residential-Activity Category B
	Outdoor-Activity Category C
	Indoor- Activity Category D
	Manufacturing- Activity Category F
	Undeveloped- Activity Category G

Land Use Map  
Type II Noise Analysis  
STA-21-11.38 (PID 115521)

1. 1363 Kracker St NW, Massillon, OH 44646
2. 1073 1st St NE, Massillon, OH 44646
3. 881 1st St NE, Massillon, OH 44646
4. 8 David Ave NE, Massillon, OH 44646
5. 2 Ohio Ave NW, Massillon, OH 44646
6. 13 State Ave NW, Massillon, OH 44646
7. 16 Burton Ave NW, Massillon, OH 44646
8. 656 1st St NW, Massillon, OH 44646



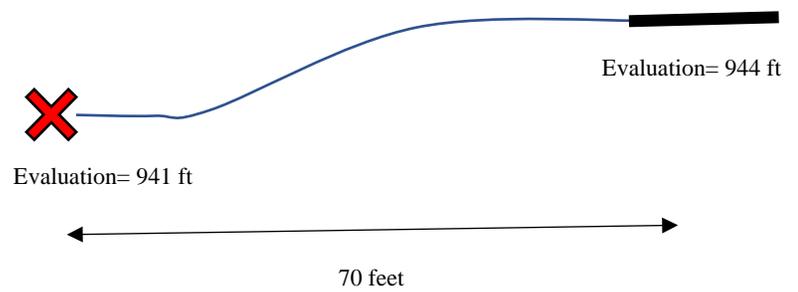
Noise Measurement Plan  
Type II Noise Analysis  
STA-21-11.38 (PID 115521)

Field Worksheet  
STA-SR 21-11.38

Plan View



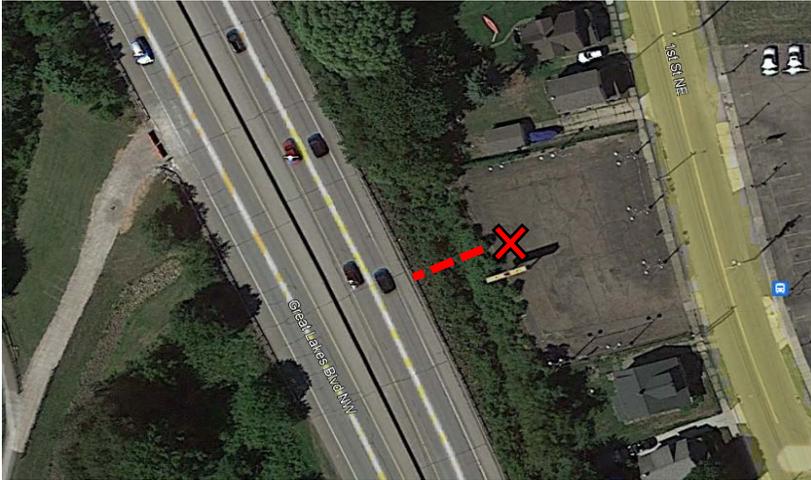
Cross Section



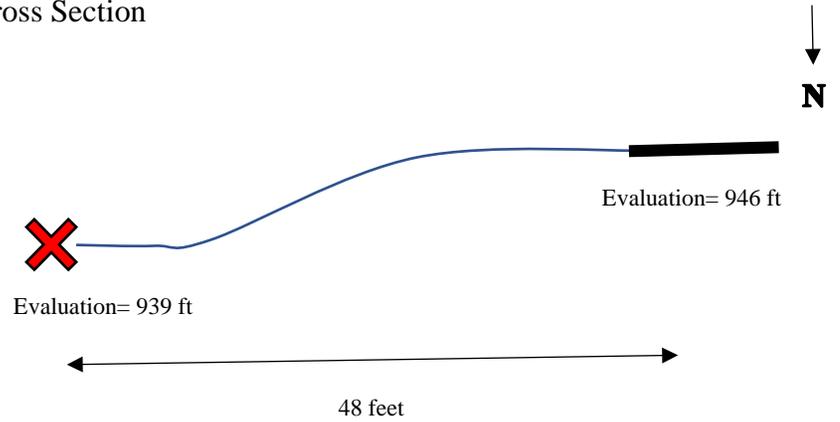
Traffic Volume				Measurement Site	Sound Measurements (Leq)		
Roadway	Classification	Southbound	Northbound	Location: 1329 Kracker St NW	Each block = 1 minute (read left to right)		
	Auto	<b>306</b>	<b>180</b>		Date: 9-19-2021 Time: 1:08pm Weather: 79°, RH= 66%, Press= 30.07 mb and Wind = 6 mph from NNW	59.5	67.5
	Medium Truck	<b>18</b>	<b>36</b>	70.9		69.7	70.0
	Heavy Truck	<b>60</b>	<b>24</b>	69.4		69.1	68.8
		Eastbound	Westbound	Events:	68.3	X	X
	Auto				X	X	X
	Medium Truck				15 minute L <sub>eq</sub> = 68.6		
	Heavy Truck						

**Field Worksheet**  
**STA-SR 21-11.38**

Plan View



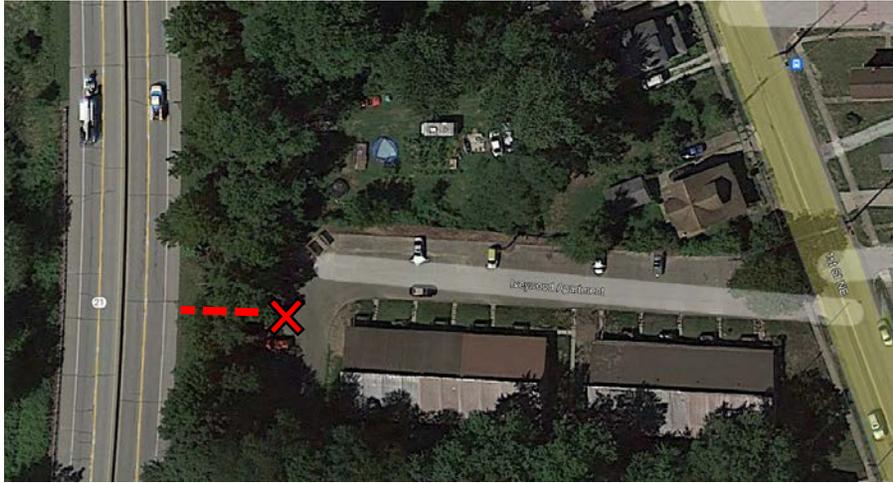
Cross Section



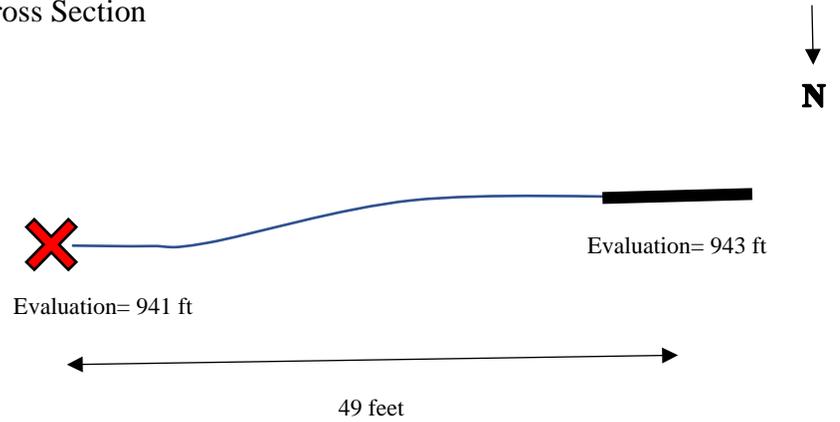
Traffic Volume				Measurement Site	Sound Measurements (Leq)		
Roadway	Classification	Southbound	Northbound		Each block = 1 minute (read left to right)		
	Auto	<b>330</b>	<b>264</b>	Location: 1073 1 <sup>st</sup> NE  Date: 9-19-2021 Time: 12:50 pm Weather: 79°, RH= 66%, Press= 30.07 mb and Wind = 6 mph from NNW	59.2	60.0	60.0
	Medium Truck	<b>18</b>	<b>18</b>		59.8	60.2	60.1
	Heavy Truck	<b>96</b>	<b>42</b>		60.8	61.3	61.4
		Eastbound	Westbound		61.1	X	X
	Auto				X	X	X
	Medium Truck			Events:	15 minute L <sub>eq</sub> = 61.2		
	Heavy Truck						

Field Worksheet  
STA-SR 21-11.38

Plan View



Cross Section



**Traffic Volume**

Roadway	Classification	Southbound	Northbound
	Auto	<b>330</b>	<b>264</b>
	Medium Truck	<b>18</b>	<b>18</b>
	Heavy Truck	<b>96</b>	<b>42</b>
		Eastbound	Westbound
	Auto		
	Medium Truck		
	Heavy Truck		

**Measurement Site**

Location:  
Near 881 1<sup>st</sup> NE

Date: 9-19-2021  
Time: 12:36pm

Weather: 79°, RH= 66%,  
Press= 30.07 mb and  
Wind = 6 mph from NNW

Events:

**Sound Measurements  
Leq)**

Each block = 1 minute  
(read left to right)

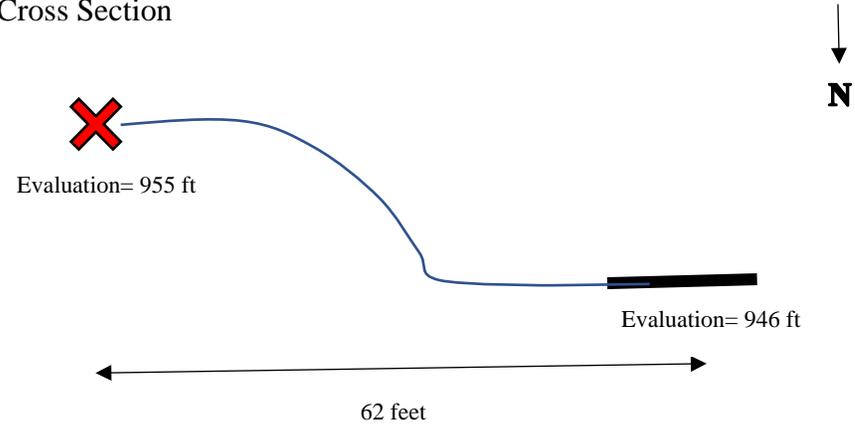
55.2	65.1	66.0
66.2	65.9	65.4
66.1	65.9	66.4
66.6	X	X
X	X	X
<b>15 minute L<sub>eq</sub> = 66.5</b>		

**Field Worksheet**  
**STA-SR 21-11.38**

**Plan View**



**Cross Section**



**Traffic Volume**

Roadway	Classification	Southbound	Northbound
	Auto	<b>330</b>	<b>264</b>
	Medium Truck	<b>18</b>	<b>18</b>
	Heavy Truck	<b>96</b>	<b>42</b>
		Eastbound	Westbound
	Auto		
	Medium Truck		
	Heavy Truck		

**Measurement Site**

Location: 8 David Ave
Date: 9-19-2021
Time: 11:15 am
Weather: 77°, RH= 72%, Press= 30.08 mb and Wind = 6 mph from N
Events:

**Sound Measurements**

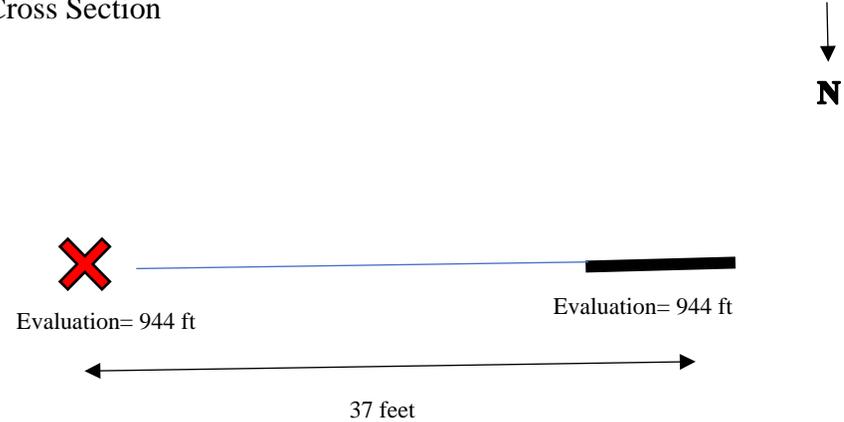
<b>Leq)</b>		
Each block = 1 minute (read left to right)		
71.1	66.5	67.9
68.2	67.5	67.7
67.7	67.6	67.5
67.3	X	X
X	X	X
<b>15 minute L<sub>eq</sub> = 67.3</b>		

**Field Worksheet**  
**STA-SR 21-11.38**

Plan View



Cross Section



**Traffic Volume**

Roadway	Classification	Southbound	Northbound
	Auto	<b>330</b>	<b>264</b>
	Medium Truck	<b>18</b>	<b>18</b>
	Heavy Truck	<b>96</b>	<b>42</b>
		Eastbound	Westbound
	Auto		
	Medium Truck		
	Heavy Truck		

**Measurement Site**

Location: 2 Ohio Ave
Date: 9-19-2021
Time: 11:15 am
Weather: 75°, RH= 78%, Press= 30.08 mb and Wind = 6 mph from NNW
Events:

**Sound Measurements  
Leq)**

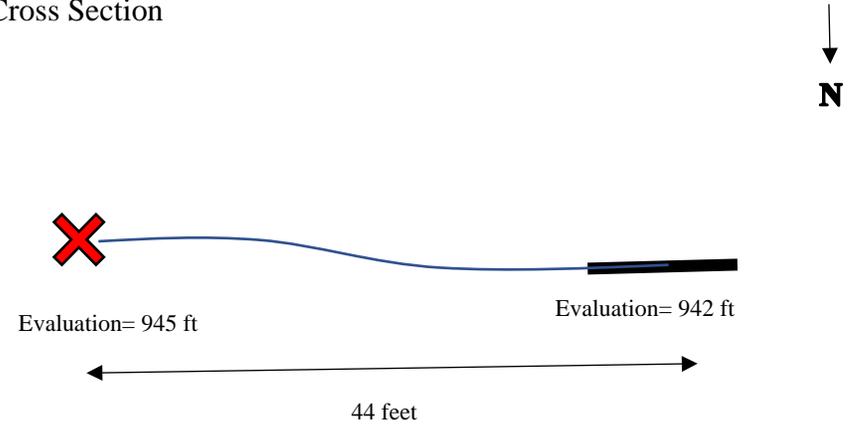
Each block = 1 minute (read left to right)		
58.2	72.1	69.9
69.2	68.5	67.9
67.8	67.8	67.8
67.7	X	X
X	X	X
<b>15 minute L<sub>eq</sub> = 68.0</b>		

**Field Worksheet**  
**STA-SR 21-11.38**

Plan View



Cross Section



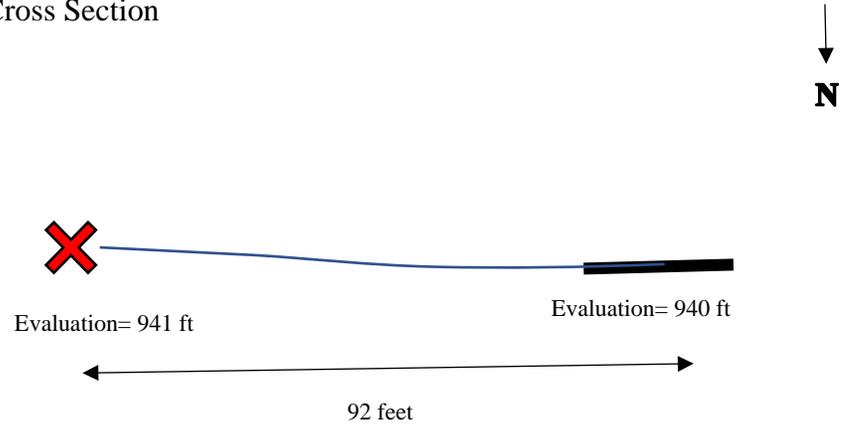
Traffic Volume				Measurement Site	Sound Measurements (Leq)		
Roadway	Classification	Southbound	Northbound	Location: 13 State Ave NW	Each block = 1 minute (read left to right)		
	Auto	<b>330</b>	<b>264</b>			69.2	69.1
	Medium Truck	<b>18</b>	<b>18</b>	Date: 9-19-2021	66.2	66.8	66.8
	Heavy Truck	<b>96</b>	<b>42</b>	Time: 12:17 pm	66.8	66.7	66.4
		Eastbound	Westbound	Weather: 79°, RH= 68%, Press= 30.07 mb and Wind = 6 mph from NNW	67.1	X	X
	Auto				X	X	X
	Medium Truck			Events:	15 minute L <sub>eq</sub> = 67.2		
	Heavy Truck						

Field Worksheet  
STA-SR 21-11.38

Plan View



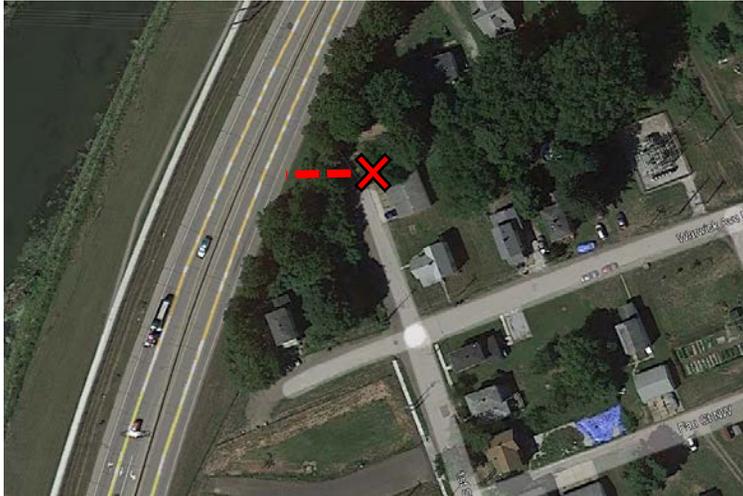
Cross Section



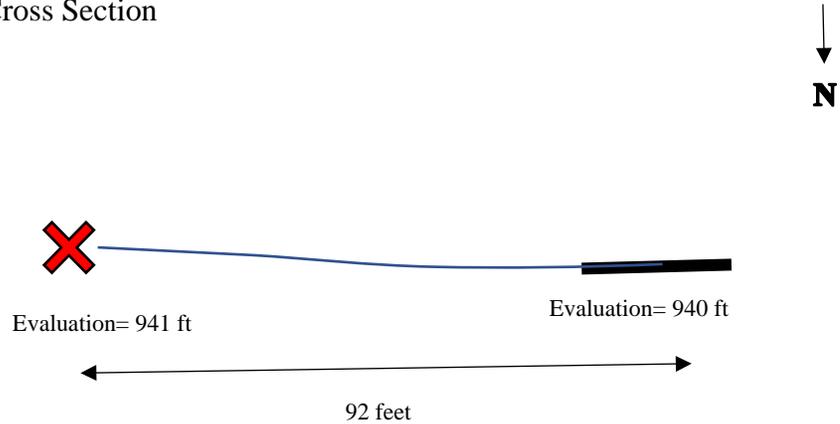
Traffic Volume				Measurement Site	Sound Measurements (Leq)			
Roadway	Classification	Southbound	Northbound		Each block = 1 minute (read left to right)			
	Auto	<b>330</b>	<b>264</b>	Location: 16 Burton Ave	67.6	70.0	67.5	
	Medium Truck	<b>18</b>	<b>18</b>		Date: 9-19-2021	68.3	68.2	67.4
	Heavy Truck	<b>96</b>	<b>42</b>		Time: 10:30am	67.8	67.8	67.8
		Eastbound	Westbound	Weather: 75°, RH= 79%, Press= 30.09 mb and Wind = 6 mph from NNW	68.2	X	X	
	Auto				X	X	X	
	Medium Truck				Events:	15 minute L <sub>eq</sub> = 67.9		
	Heavy Truck							

**Field Worksheet  
STA-SR 21-11.38**

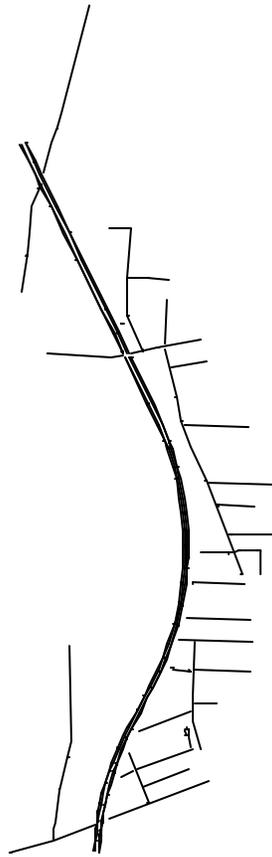
Plan View



Cross Section



Traffic Volume				Measurement Site	Sound Measurements (Leq)		
Roadway	Classification	Southbound	Northbound	Location: 656 1 <sup>st</sup> NW	Each block = 1 minute (read left to right)		
	Auto	<b>330</b>	<b>264</b>		Date: 9-19-2021 Time: 10:12am	65.5	64.9
	Medium Truck	<b>18</b>	<b>18</b>	65.2		66.0	67.0
	Heavy Truck	<b>96</b>	<b>42</b>	66.8		66.3	68.3
		Eastbound	Westbound	Weather: 75°, RH= 79%, Press= 30.09 mb and Wind = 6 mph from NNW	68.0	X	X
	Auto				X	X	X
	Medium Truck			Events:	15 minute L <sub>eq</sub> = 67.6		
	Heavy Truck						



VALIDATION RUN		Sheet 1 of 1	15 Oct 2021
Plan View		LAWHON & ASSOCIATES	
Run name: Validation Model 922		Project/Contract No. STA-SR 21-11.38	
Scale: 		TNM Version 2.5, Feb 2004	
Analysis By: CA			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	



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**APPENDIX B**  
**TRAFFIC DATA**  
**NOISE LEVELS WITHOUT AND WITH NOISE BARRIER TABLES**

# Traffic Data- Provided by ODOT MS2 Transportation Data Management System

## State Route 21

Location ID	1376	MPO ID	
Type	SPOT	HPMS ID	
On NHS	Yes	On HPMS	Yes
LRS ID	SSASR00021**C	LRS Loc Pt	8.31
SF Group	URBAN_FREEWAY_EXPRESSWAY	Route Type	SR
AF Group	URBAN_FREEWAY_EXPRESSWAY	Route	00021
GF Group	URBAN_FREEWAY_EXPRESSWAY	Active	Yes
Class Dist Grp		Category	State Program
Seas Class Grp	URBAN_FREEWAY_EXPRESSWAY		
WIM Group			
QC Group	Default		
Functl Class	Freeway & Expressway	Milepost	
Located On	SR-21		
Loc On Alias			
More Detail	SR21 S OF US30, IN MASSILLON		

**STATION DATA**

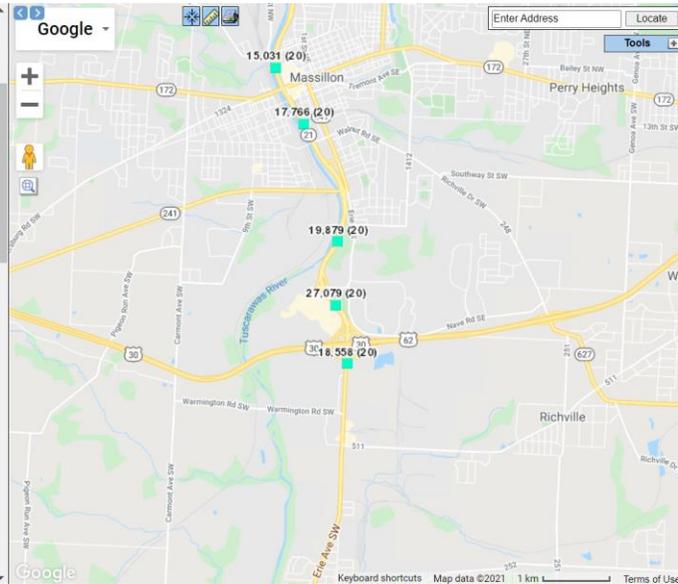
Directions: 2-WAY NB SB

1 2 1 2

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2020	18,558 <sup>3</sup>		8	53	16,983 (92%)	1,575 (8%)	Grown from 2019
2019	21,885 <sup>3</sup>		8	53	20,028 (92%)	1,857 (8%)	Grown from 2018
2018	21,372	1,744	8	53	19,559 (92%)	1,813 (8%)	
2017	20,814 <sup>3</sup>		9	57	19,077 (92%)	1,736 (8%)	Grown from 2016
2016	20,227 <sup>3</sup>		9	57	18,538 (92%)	1,688 (8%)	Grown from 2015

**Travel Demand Model**

Model	Model	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV



## Cherry Road East

Location ID	9277698	MPO ID	5836
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	CSTACR00513**C	LRS Loc Pt	1.157
SF Group	Urban Minor Arterial (4) Collector(5-6) Local(7)	Route Type	CR
AF Group	URBAN_MAJOR_COLLECTOR	Route	00513
GF Group	URBAN_MAJOR_COLLECTOR	Active	Yes
Class Dist Grp		Category	Local
Seas Class Grp	Urban Minor Arterial (4) Collector(5-6) Local(7)		
WIM Group			
QC Group	Default		
Functl Class	Major Collector	Milepost	
Located On	CHERRY RD		
Loc On Alias	WEST OF ERIE ST		
More Detail			

**STATION DATA**

Directions: 2-WAY

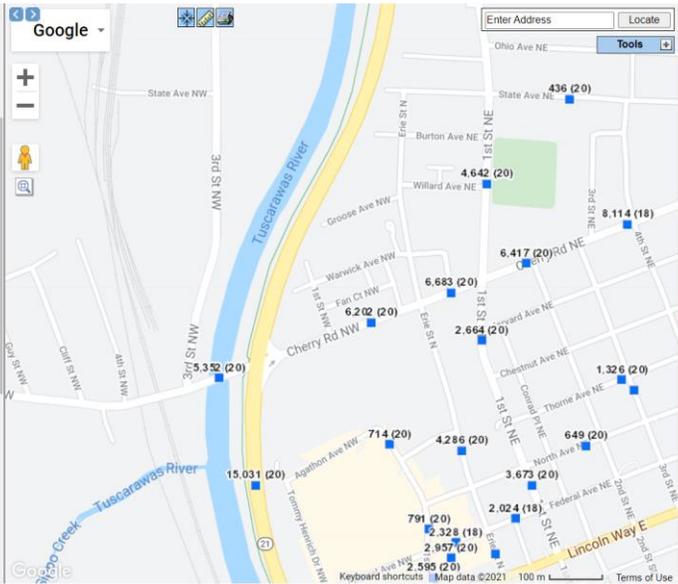
Year	AADT	DHV-30	K %	D %	PA	BC	Src
2020	6,202 <sup>3</sup>						Grown from 2019
2019	6,876						
2018	6,554 <sup>3</sup>						Grown from 2017
2017	6,476 <sup>3</sup>						Grown from 2016
2016	6,300						SCATS

**Travel Demand Model**

Model	Model	AM PHV	AM PPV	MD PHV	MD PPV	PM PHV	PM PPV	NT PHV	NT PPV

**VOLUME COUNT**

**VOLUME TREND**



## Cherry Road West

List View All DIRs

Record 1 of 1 Goto Record

Location ID	9367698	MPO ID	5889
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	CSTACR00513**C	LRS Loc Pt	0.971
SF Group	Urban Minor Arterial (4) Collector(5-6) Local(7)	Route Type	CR
AF Group	URBAN_MAJOR_COLLECTOR	Route	00513
GF Group	URBAN_MAJOR_COLLECTOR	Active	Yes
Class Dist Grp		Category	Local
Seas Class Grp	Urban Minor Arterial (4) Collector(5-6) Local(7)		
WIM Group			
QC Group	Default		
Functl Class	Major Collector	Milepost	
Located On	CHERRY RD		
Loc On Alias			
BETWEEN	GREAT LAKES BLVD AND 3RD ST		

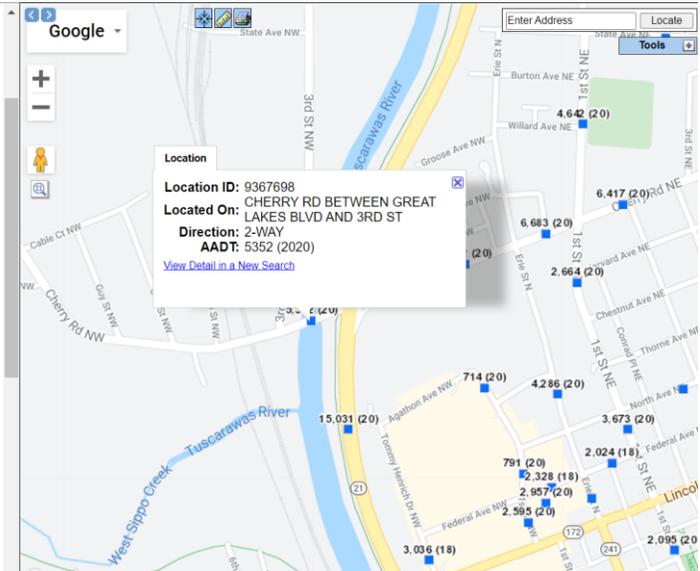
More Detail

**STATION DATA**

Directions: 2-WAY

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2020	5,352 <sup>3</sup>						Grown from 2019
2019	5,934						
2018	5,513 <sup>3</sup>						Grown from 2017
2017	5,448 <sup>3</sup>						Grown from 2016
2016	5,300						SCATS

Travel Demand Model



## Lake Ave East

Record 1 of 1 Goto Record

Location ID	81376	MPO ID	
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	SSTASR00236**C	LRS Loc Pt	0.047
SF Group	Urban Minor Arterial (4) Collector(5-6) Local(7)	Route Type	SR
AF Group	URBAN_MINOR_ARTERIAL	Route	00236
GF Group	URBAN_MINOR_ARTERIAL	Active	Yes
Class Dist Grp		Category	State Program
Seas Class Grp	Urban Minor Arterial (4) Collector(5-6) Local(7)		
WIM Group			
QC Group	Default		
Functl Class	Minor Arterial	Milepost	
Located On	ERIE AVE		
Loc On Alias			
BETWEEN	SR236 LAKE AVE W OF 1ST ST, IN MASSILLON		

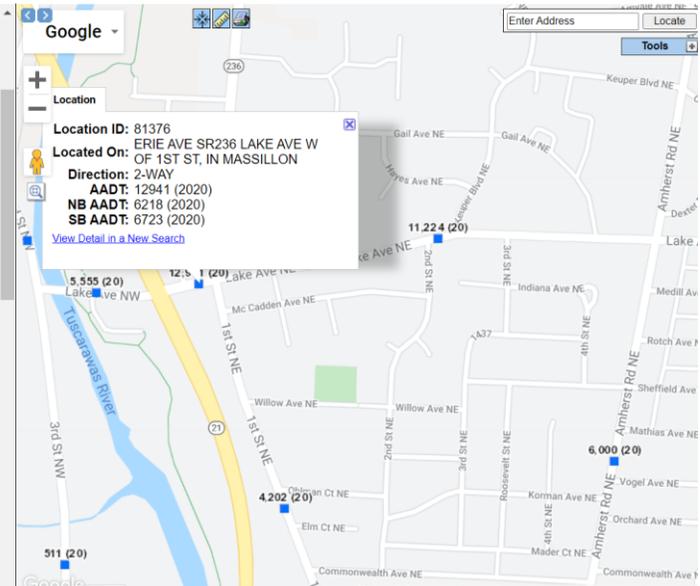
More Detail

**STATION DATA**

Directions: 2-WAY NB SB

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2020	12,941 <sup>3</sup>		9	55	11,648 (90%)	1,293 (10%)	Grown from 2019
2019	13,975 <sup>3</sup>		9	55	12,579 (90%)	1,396 (10%)	Grown from 2018
2018	13,878	1,280	9	55	12,492 (90%)	1,386 (10%)	
2017	14,265 <sup>3</sup>		8	52	12,831 (90%)	1,433 (10%)	Grown from 2016
2016	13,890 <sup>3</sup>		8	52	12,494 (90%)	1,395 (10%)	Grown from 2015

1-5 of 15



# Lake Ave West

Record 1 of 1 Goto Record 100

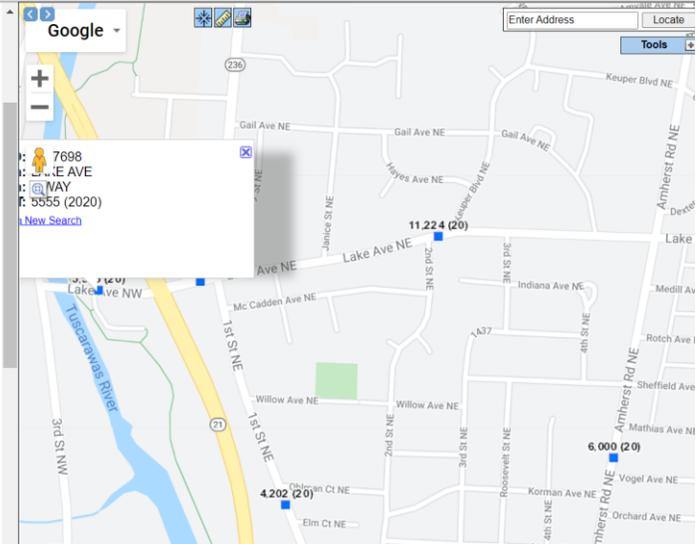
Location ID	4197698	MPO ID	5675
Type	SPOT	HPMS ID	
On NHS	No	On HPMS	No
LRS ID	CSTACR00515**C	LRS Loc Pt	0.065
SF Group	Urban Minor Arterial (4) Collector(5-6) Local(7)	Route Type	CR
AF Group	URBAN_MAJOR_COLLECTOR	Route	00515
GF Group	URBAN_MAJOR_COLLECTOR	Active	Yes
Class Dist Grp		Category	Local
Seas Class Grp	Urban Minor Arterial (4) Collector(5-6) Local(7)		
WIM Group			
QC Group	Default		
Functl Class	Major Collector		
Located On	LAKE AVE	Milepost	
Loc On Alias			

More Detail

**STATION DATA**

Directions: 2-WAY

Year	AADT	DHV-30	K %	D %	PA	BC	Src
2020	5,555 <sup>3</sup>						Grown from 2019
2019	6,159						
2018	5,722 <sup>3</sup>						Grown from 2017
2017	5,654 <sup>3</sup>						Grown from 2016
2016	5,500						SCATS



Address	Existing Sound Level	With Barrier Sound Level	Change in Sound Level
1st ST NE MASSILLON OH 44646	59	56.3	2.7
1519 1ST ST NW MASSILLON OH 44646	62.3	59.8	2.5
1475 KRACKER ST NW MASSILLON OH 44646	59.2	55.9	3.3
1453 KRACKER ST NW MASSILLON OH 44646	60	55.6	4.6
1445 KRACKER ST NW MASSILLON OH	61.2	56	5.2
1433 KRACKER ST NW MASSILLON OH	61.6	56.2	5.4
1454 KRACKER ST NW MASSILLON OH 44646	58.3	54.2	4.1
1450 KRACKER ST NW MASSILLON OH 44646	58.5	54.5	4
1440 KRACKER ST NW MASSILLON OH 44646	59.7	55.3	4.4
1436 KRACKER ST NW MASSILLON OH 44646	60.2	55.8	4.4
1363 KRACKER ST NW MASSILLON OH 44646	66.1	58.3	7.8
1361 KRACKER ST NW MASSILLON OH 44646	66.1	57.9	8.2
1349 KRACKER ST NW MASSILLON OH	67.8	58.3	9.5
1343 KRACKER ST NW MASSILLON OH 44646	68.5	58.5	10
1337 KRACKER ST NW MASSILLON OH	69.8	59.2	10.6
1321 KRACKER ST NW MASSILLON OH	72.8	62.4	10.4
1317 KRACKER ST NW MASSILLON OH	72.9	64.7	8.2
1358 KRACKER ST NW MASSILLON OH 44646	61.5	56.9	4.6
1356 KRACKER ST NW MASSILLON OH	62.1	57.2	4.9
1328 KRACKER ST NW MASSILLON OH	66.2	62.8	3.4
1326 KRACKER ST NW MASSILLON OH	66.6	61.4	5.2
1316 KRACKER ST NW MASSILLON OH	66.7	63.3	3.4
14 LAKE AVE NE MASSILLON OH	67.9	66.5	1.4
1425 1ST NE MASSILLON OH	59.2	57	2.2
1423 1ST NE MASSILLON OH	61.3	59.3	2
1411 1ST NE MASSILLON OH	60.9	59.6	1.3
1407 1ST NE MASSILLON OH	61.3	60.1	1.2
1329 1ST ST NE MASSILLON OH	62.4	61	1.4
1323 1ST ST NE MASSILLON OH	62.4	61.3	1.1

Address	Existing Sound Level	With Barrier Sound Level	Change in Sound Level
23 LAKE AVE NE MASSILLON OH	71.6	70.1	1.5
19 LAKE AVE NE MASSILLON OH	70.5	69.6	0.9
117 LAKE AVE NE MASSILLON OH	66.4	66	0.4
1119 1ST ST NE MASSILLON OH	65.8	58.4	7.4
1113 1ST ST NE MASSILLON OH	65.8	57.8	8
1109 1ST NE MASSILLON OH	66.3	57.6	8.7
1105 1ST ST NE MASSILLON OH	66.2	57.8	8.4
1059 1ST ST NE MASSILLON OH	69	59.1	9.9
1053 1ST ST NE MASSILLON OH	69.6	59.3	10.3
1049 1ST ST NE MASSILLON OH	69.8	60.2	9.6
1041 1ST ST NE MASSILLON OH	69.6	60.6	9
1029 1ST ST NE MASSILLON OH	69	60.4	8.6
1025 1ST ST NE MASSILLON OH	69.1	60.4	8.7
1021 1ST ST NE MASSILLON OH	68.5	60.1	8.4
1017 1ST ST NE MASSILLON OH	68.5	59.2	9.3
1013 1ST ST NE MASSILLON OH	68.1	59.1	9
1009 1ST ST NE MASSILLON OH	68.1	59.5	8.6
953 1ST ST NE MASSILLON OH	69	60.3	8.7
929 1ST ST NE MASSILLON OH	64.2	57.5	6.7
923 1ST ST NE MASSILLON OH	63.9	57.2	6.7
919 1ST ST NE MASSILLON OH	64	57.1	6.9
907/909/911/913/915 1ST ST NE MASSILLON OH	63	56.3	6.7
903 1ST ST NE MASSILLON OH	62	55.3	6.7
893 1ST ST ME MASSILLON OH	61.2	54.8	6.4
1210 1ST ST NE MASSILLON OH	62.8	60.6	2.2
1042 1ST ST NE MASSILLON OH	66	61	5
1018 1ST ST NE MASSILLON OH	62.7	57.3	5.4
1014 1ST ST NE MASSILLON OH	62	57.1	4.9
1006 1ST ST NE MASSILLON OH	59	54.8	4.2
113/115/117/119 WILLOW AVE NE MASSILLON OH	59.4	54.9	4.5
122 OHLMAN CT NE MASSILLON OH	57.4	52.9	4.5
948 1ST ST NE MASSILLON OH	55.9	51.8	4.1
944 1ST ST NE MASSILLON OH	55	50.5	4.5
938 1ST ST NE MASSILLON OH	52.8	48.4	4.4

934/936 1ST ST NE MASSILLON OH	53.7	49.8	3.9
926 1ST ST NE MASSILLON OH	54.5	50.5	4
922 1ST ST NE MASSILLON OH	53.6	50.5	3.1
916/918 1ST ST NE MASSILLON OH	52.9	49.5	3.4
912 1ST ST NE MASSILLON OH	52.5	48.5	4
898 1ST ST NE MASSILLON OH	53.2	49.3	3.9
109 COMMONWEALTH AVE NE	53.4	49.7	3.7
894 1ST ST NE MASSILLON OH	53.8	49.8	4
888 1ST ST NE MASSILLON OH	52.3	47.6	4.7
883 1ST ST NE MASSILLON OH	65.1	57.3	7.8
881 1ST ST NE MASSILLON OH	60	54.1	5.9
8 DAVID AVE NE MASSILLON OH	68.4	65.1	3.3
18 DAVID AVE NE MASSILLON	64.5	61.7	2.8
24 DAVID AVE NE MASSILLON	62.5	59.8	2.7
871 1ST ST NE MASSILLON	60.3	55.8	4.5
865 1ST ST NE MASSILLON	59.5	55.9	3.6
861/863 ST NE MASSILLON	59.9	56.8	3.1
882 1ST ST NE MASSILLON OH	57.7	53.7	4
878 1ST ST MASSILLON OH	57.9	53.7	4.2
874 1ST ST MASSILLON OH	57.7	53.4	4.3
870 1ST ST MASSILLON OH	57.7	53.2	4.5
5 DAVID AVE NE MASSILLON OH	68.4	64.5	3.9
15 DAVID AVE NE MASSILLON OH	64.7	61.5	3.2
25 DAVID AVE NE MASSILLON OH	62.3	59.2	3.1
853 1ST ST NE MASSILLON OH	56.7	52.7	4
6 OHIO AVE NE MASSILLON OH	70.7	61.3	9.4
2 OHIO AVE NE MASSILLON OH	67.4	60	7.4
8 OHIO AVE NE MASSILLON OH	65.4	59	6.4
12 OHIO AVE NE MASSILLON OH	63.6	57.5	6.1
16 OHIO AVE NE MASSILLON OH	62	56	6
22 OHIO AVE NE MASSILLON OH	60.6	54.9	5.7
26 OHIO AVE NE MASSILLON OH	59.4	54	5.4
30 OHIO AVE NE MASSILLON OH	58.2	53.1	5.1
36 OHIO AVE NE MASSILLON OH	57.2	52.3	4.9
9 OHIO AVE NE MASSILLON OH	69	60.7	8.3

7 OHIO AVE NE MASSILLON OH	65	58.3	6.7
11 OHIO AVE NE MASSILLON OH	63.7	57.4	6.3
17 OHIO AVE NE MASSILLON OH	62	56.1	5.9
23 OHIO AVE NE MASSILLON OH	60.7	55	5.7
27 OHIO AVE NE MASSILLON OH	59.4	53.9	5.5
31 OHIO AVE NE MASSILLON OH	58.4	53.4	5
37 OHIO AVE NE MASSILLON OH	57.3	52.7	4.6
8 STATE AVE NW MASSILLON OH	69.5	60.9	8.6
4 STATE AVE NW MASSILLON OH	66.7	59.2	7.5
2 STATE AVE NW MASSILLON OH	65	57.9	7.1
6 STATE AVE NW MASSILLON OH	63.4	56.9	6.5
10 STATE AVE NW MASSILLON OH	62.2	56	6.2
16 STATE AVE NW MASSILLON OH	60.8	55	5.8
20 STATE AVE NW MASSILLON OH	59.8	54.3	5.5
26 STATE AVE NW MASSILLON OH	58.8	53.6	5.2
30 STATE AVE NW MASSILLON OH	57.7	52.9	4.8
13 STATE AVE NE MASSILLON OH	71.8	61.6	10.2
753 ERIE ST N MASSILLON OH	66.8	58.9	7.9
747 ERIE ST N MASSILLON OH	67.1	59.2	7.9
745 ERIE ST N MASSILLON OH	66.4	58.9	7.5
739 ERIE ST N MASSILLON OH	65.4	58.2	7.2
737 ERIE ST N MASSILLON OH	63.7	57	6.7
12 BURTON AVE NW MASSILLON	66	58.4	7.6
16 BURTON AVE NW MASSILLON	67.4	59.1	8.3
7 STATE AVE NW MASSILLON	63.2	56.4	6.8
13 STATE AVE NW MASSILLON	61.4	55.2	6.2
19 STATE AVE NW MASSILLON	60.3	54.6	5.7
23 STATE AVE NW MASSILLON	59.4	54	5.4
25 STATE AVE NW MASSILLON	57.9	53.1	4.8
31/33 STATE AVE NW MASSILLON	56.9	52.5	4.4
746 ERIE ST N MASSILLON OH	62.6	56.1	6.5
4 BURTON AVE NW MASSILLON	60.8	55.2	5.6
8 BURTON AVE NW MASSILLON	59.6	54.2	5.4
12 BURTON AVE NW MASSILLON	58.7	53.9	4.8
18 BURTON AVE NW MASSILLON	58.3	52.6	5.7

22 BURTON AVE NW MASSILLON	57.3	51.9	5.4
17 BURTON AVE NW MASSILLON	66.9	58.7	8.2
13 BURTON AVE NW MASSILLON	65.3	57.9	7.4
727 ERIE ST N MASSILLON	63.7	56.9	6.8
723 ERIE ST N MASSILLON	63.5	57.2	6.3
719 ERIE ST N MASSILLON	62.9	57.1	5.8
713 ERIE ST N MASSILLON	62.4	57.1	5.3
709 ERIE ST N MASSILLON	61.9	56.9	5
705 ERIE ST N MASSILLON	61.4	56.8	4.6
701 ERIE ST N MASSILLON	61.1	56.6	4.5
20 GROOSE AVE NW	64.3	56.8	7.5
26 GROOSE AVE NW	65.3	57.3	8
30 GROOSE AVE NW	66	57.7	8.3
5 BURTON AVE	60.2	54.8	5.4
9 BURTON AVE	59	54	5
15 BURTON AVE	58	53.2	4.8
19 BURTON AVE	58.2	52.7	5.5
23 BURTON AVE	57.3	52	5.3
716 ERIE ST	60.5	55.2	5.3
712 ERIE ST	60.2	55.1	5.1
710 ERIE ST	60.2	55.7	4.5
10 WILLARD AVE NE	57.9	53.7	4.2
27 GROOSE AVE	62	54.9	7.1
33 GROOSE AVE	68.2	58	10.2
656 1ST ST	69.6	59.1	10.5
652 VINE ST	59.3	53.5	5.8
16 WARWICK AVE	58.6	53.6	5
58 WARWICK AVE	65.6	58.7	6.9
50 WARWICK AVE	64	57.2	6.8
44 WARWICK AVE	62.8	56.5	6.3
110 WARWICK AVE	74.3	61.8	12.5
630 1ST ST	63.4	59.5	3.9
626 1ST ST	62.5	59.4	3.1
620 1ST ST	62	59.4	2.6
43 WARWICK AVE	59.7	56	3.7

612 1ST ST	61.3	59.5	1.8
54 CHERRY RD	67.7	67.6	0.1
48 CHERRY RD	67.8	67.6	0.2
42 CHERRY RD	67.4	67.2	0.2
110/114 CHERRY RD	63.1	62.2	0.9

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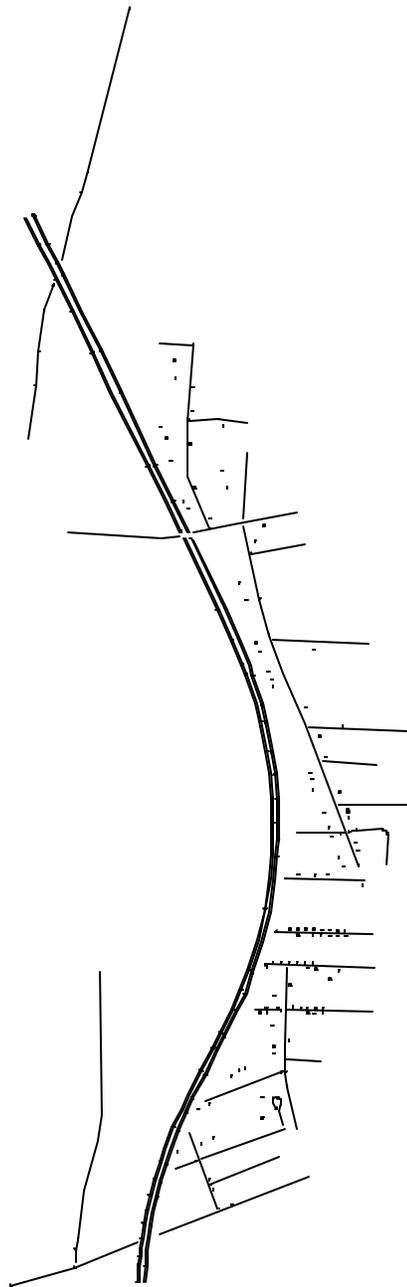
**APPENDIX C**

SPREADSHEETS FOR EXISTING MODEL

SPREADSHEETS COMMON FOR ALL DESIGN MODELS

SPREADSHEETS FOR NSA 1 BARRIER EDGE OF SHOULDER

SPREADSHEETS FOR NSA 2 BARRIER EDGE OF SHOULDER



Plan View		Sheet 1 of 1	14 Oct 2021
Run name: Existing Model 922		Project/Contract No.	
Scale:  1000 feet		TNM Version 2.5, Feb 2004	
		Analysis By:	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

2235000 2236000 2237000 2238000 2239000 2240000 2241000 2242000 2243000



**RESULTS: SOUND LEVELS**

**STA- SR 21-11.38**

1423 1ST NE MASSILLON OH	29	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
1411 1ST NE MASSILLON OH	30	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
1407 1ST NE MASSILLON OH	31	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
1329 1ST ST NE MASSILLON OH	32	1	0.0	62.3	66	62.3	10	----	62.3	0.0	8	-8.0
1323 1ST ST NE MASSILLON OH	33	1	0.0	62.4	66	62.4	10	----	62.4	0.0	8	-8.0
23 LAKE AVE NE MASSILLON OH	34	1	0.0	71.5	66	71.5	10	Snd Lvl	71.5	0.0	8	-8.0
19 LAKE AVE NE MASSILLON OH	35	1	0.0	70.5	66	70.5	10	Snd Lvl	70.5	0.0	8	-8.0
1119 1ST ST NE MASSILLON OH	36	1	0.0	65.8	66	65.8	10	----	65.8	0.0	8	-8.0
1113 1ST ST NE MASSILLON OH	37	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
1109 1ST NE MASSILLON OH	38	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
1105 1ST ST NE MASSILLON OH	39	1	0.0	66.3	66	66.3	10	Snd Lvl	66.3	0.0	8	-8.0
1059 1ST ST NE MASSILLON OH	40	1	0.0	68.9	66	68.9	10	Snd Lvl	68.9	0.0	8	-8.0
1053 1ST ST NE MASSILLON OH	41	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
1049 1ST ST NE MASSILLON OH	42	1	0.0	69.6	66	69.6	10	Snd Lvl	69.6	0.0	8	-8.0
1041 1ST ST NE MASSILLON OH	43	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
1029 1ST ST NE MASSILLON OH	44	1	0.0	68.7	66	68.7	10	Snd Lvl	68.7	0.0	8	-8.0
1025 1ST ST NE MASSILLON OH	45	1	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
1021 1ST ST NE MASSILLON OH	46	1	0.0	68.3	66	68.3	10	Snd Lvl	68.3	0.0	8	-8.0
1017 1ST ST NE MASSILLON OH	47	1	0.0	68.4	66	68.4	10	Snd Lvl	68.4	0.0	8	-8.0
1013 1ST ST NE MASSILLON OH	48	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
1009 1ST ST NE MASSILLON OH	49	1	0.0	67.9	66	67.9	10	Snd Lvl	67.9	0.0	8	-8.0
953 1ST ST NE MASSILLON OH	50	1	0.0	68.6	66	68.6	10	Snd Lvl	68.6	0.0	8	-8.0
929 1ST ST NE MASSILLON OH	51	1	0.0	64.0	66	64.0	10	----	64.0	0.0	8	-8.0
923 1ST ST NE MASSILLON OH	52	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
919 1ST ST NE MASSILLON OH	53	1	0.0	63.9	66	63.9	10	----	63.9	0.0	8	-8.0
907/909/911/913/915 1ST ST NE MASSILLON OH	54	5	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
903 1ST ST NE MASSILLON OH	55	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
893 1ST ST NE MASSILLON OH	56	1	0.0	61.1	66	61.1	10	----	61.1	0.0	8	-8.0
117 LAKE AVE NE MASSILLON OH	57	1	0.0	66.4	66	66.4	10	Snd Lvl	66.4	0.0	8	-8.0
1210 1ST ST NE MASSILLON OH	58	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
1042 1ST ST NE MASSILLON OH	59	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
1018 1ST ST NE MASSILLON OH	60	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
1014 1ST ST NE MASSILLON OH	61	1	0.0	61.9	66	61.9	10	----	61.9	0.0	8	-8.0
1006 1ST ST NE MASSILLON OH	62	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
113/115/117/119 WILLOW AVE NE MASSILLON OH	63	4	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
122 OHLMAN CT NE MASSILLON OH	64	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
948 1ST ST NE MASSILLON OH	65	1	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
944 1ST ST NE MASSILLON OH	66	1	0.0	56.0	66	56.0	10	----	56.0	0.0	8	-8.0
938 1ST ST NE MASSILLON OH	67	1	0.0	53.4	66	53.4	10	----	53.4	0.0	8	-8.0
934/936 1ST ST NE MASSILLON OH	68	2	0.0	54.4	66	54.4	10	----	54.4	0.0	8	-8.0
926 1ST ST NE MASSILLON OH	69	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**STA- SR 21-11.38**

922 1ST ST NE MASSILLON OH	70	1	0.0	54.2	66	54.2	10	----	54.2	0.0	8	-8.0
916/918 1ST ST NE MASSILLON OH	71	2	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
912 1ST ST NE MASSILLON OH	72	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
898 1ST ST NE MASSILLON OH	73	1	0.0	53.6	66	53.6	10	----	53.6	0.0	8	-8.0
109 COMMONWEALTH AVE NE	74	1	0.0	53.9	66	53.9	10	----	53.9	0.0	8	-8.0
894 1ST ST NE MASSILLON OH	75	1	0.0	54.3	66	54.3	10	----	54.3	0.0	8	-8.0
888 1ST ST NE MASSILLON OH	76	1	0.0	53.0	66	53.0	10	----	53.0	0.0	8	-8.0
883 1ST ST NE MASSILLON OH	77	10	0.0	64.9	66	64.9	10	----	64.9	0.0	8	-8.0
881 1ST ST NE MASSILLON OH	78	10	0.0	60.0	66	60.0	10	----	60.0	0.0	8	-8.0
8 DAVID AVE NE MASSILLON OH	79	1	0.0	68.2	66	68.2	10	Snd Lvl	68.2	0.0	8	-8.0
18 DAVID AVE NE MASSILLON	80	1	0.0	64.3	66	64.3	10	----	64.3	0.0	8	-8.0
24 DAVID AVE NE MASSILLON	81	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
871 1ST ST NE MASSILLON	82	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0
865 1ST ST NE MASSILLON	83	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
861/863 ST NE MASSILLON	84	2	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
882 1ST ST NE MASSILLON OH	85	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
878 1ST ST MASSILLON OH	86	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
874 1ST ST MASSILLON OH	87	1	0.0	57.9	66	57.9	10	----	57.9	0.0	8	-8.0
870 1ST ST MASSILLON OH	88	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
5 DAVID AVE NE MASSILLON OH	90	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
15 DAVID AVE NE MASSILLON OH	91	1	0.0	64.5	66	64.5	10	----	64.5	0.0	8	-8.0
25 DAVID AVE NE MASSILLON OH	92	1	0.0	62.1	66	62.1	10	----	62.1	0.0	8	-8.0
853 1ST ST NE MASSILLON OH	93	1	0.0	56.7	66	56.7	10	----	56.7	0.0	8	-8.0
6 OHIO AVE NE MASSILLON OH	94	1	0.0	70.3	66	70.3	10	Snd Lvl	70.3	0.0	8	-8.0
2 OHIO AVE NE MASSILLON OH	95	1	0.0	67.3	66	67.3	10	Snd Lvl	67.3	0.0	8	-8.0
8 OHIO AVE NE MASSILLON OH	96	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
12 OHIO AVE NE MASSILLON OH	97	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
16 OHIO AVE NE MASSILLON OH	98	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
22 OHIO AVE NE MASSILLON OH	99	1	0.0	60.5	66	60.5	10	----	60.5	0.0	8	-8.0
26 OHIO AVE NE MASSILLON OH	100	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
30 OHIO AVE NE MASSILLON OH	101	1	0.0	58.2	66	58.2	10	----	58.2	0.0	8	-8.0
36 OHIO AVE NE MASSILLON OH	102	1	0.0	57.2	66	57.2	10	----	57.2	0.0	8	-8.0
9 OHIO AVE NE MASSILLON OH	103	6	0.0	68.8	66	68.8	10	Snd Lvl	68.8	0.0	8	-8.0
7 OHIO AVE NE MASSILLON OH	104	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0
11 OHIO AVE NE MASSILLON OH	105	1	0.0	63.5	66	63.5	10	----	63.5	0.0	8	-8.0
17 OHIO AVE NE MASSILLON OH	106	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
23 OHIO AVE NE MASSILLON OH	107	1	0.0	60.7	66	60.7	10	----	60.7	0.0	8	-8.0
27 OHIO AVE NE MASSILLON OH	108	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
31 OHIO AVE NE MASSILLON OH	109	1	0.0	58.4	66	58.4	10	----	58.4	0.0	8	-8.0
37 OHIO AVE NE MASSILLON OH	110	1	0.0	57.4	66	57.4	10	----	57.4	0.0	8	-8.0
8 STATE AVE NW MASSILLON OH	111	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**STA- SR 21-11.38**

4 STATE AVE NW MASSILLON OH	113	1	0.0	66.6	66	66.6	10	Snd Lvl	66.6	0.0	8	-8.0
2 STATE AVE NW MASSILLON OH	114	1	0.0	64.8	66	64.8	10	----	64.8	0.0	8	-8.0
6 STATE AVE NW MASSILLON OH	115	1	0.0	63.3	66	63.3	10	----	63.3	0.0	8	-8.0
10 STATE AVE NW MASSILLON OH	116	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
16 STATE AVE NW MASSILLON OH	117	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
20 STATE AVE NW MASSILLON OH	118	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
26 STATE AVE NW MASSILLON OH	119	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
30 STATE AVE NW MASSILLON OH	120	1	0.0	57.7	66	57.7	10	----	57.7	0.0	8	-8.0
13 STATE AVE NE MASSILLON OH	121	1	0.0	71.4	66	71.4	10	Snd Lvl	71.4	0.0	8	-8.0
753 ERIE ST N MASSILLON OH	122	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8	-8.0
747 ERIE ST N MASSILLON OH	123	1	0.0	66.9	66	66.9	10	Snd Lvl	66.9	0.0	8	-8.0
745 ERIE ST N MASSILLON OH	124	1	0.0	66.2	66	66.2	10	Snd Lvl	66.2	0.0	8	-8.0
739 ERIE ST N MASSILLON OH	125	1	0.0	65.4	66	65.4	10	----	65.4	0.0	8	-8.0
737 ERIE ST N MASSILLON OH	126	1	0.0	63.6	66	63.6	10	----	63.6	0.0	8	-8.0
12 BURTON AVE NW MASSILLON	127	1	0.0	65.9	66	65.9	10	----	65.9	0.0	8	-8.0
16 BURTON AVE NW MASSILLON	128	1	0.0	67.3	66	67.3	10	Snd Lvl	67.3	0.0	8	-8.0
7 BURTON AVE NW MASSILLON	129	1	0.0	63.2	66	63.2	10	----	63.2	0.0	8	-8.0
13 STATE AVE NW MASSILLON	130	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
19 STATE AVE NW MASSILLON	131	1	0.0	60.2	66	60.2	10	----	60.2	0.0	8	-8.0
23 STATE AVE NW MASSILLON	132	1	0.0	59.3	66	59.3	10	----	59.3	0.0	8	-8.0
25 STATE AVE NW MASSILLON	133	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
31/33 STATE AVE NW MASSILLON	134	2	0.0	57.0	66	57.0	10	----	57.0	0.0	8	-8.0
746 ERIE ST N MASSILLON OH	135	1	0.0	62.6	66	62.6	10	----	62.6	0.0	8	-8.0
4 BURTON AVE NW MASSILLON	136	1	0.0	60.8	66	60.8	10	----	60.8	0.0	8	-8.0
8 BURTON AVE NW MASSILLON	137	1	0.0	59.7	66	59.7	10	----	59.7	0.0	8	-8.0
12 BURTON AVE NW MASSILLON	138	1	0.0	58.9	66	58.9	10	----	58.9	0.0	8	-8.0
18 BURTON AVE NW MASSILLON	139	1	0.0	59.0	66	59.0	10	----	59.0	0.0	8	-8.0
22 BURTON AVE NW MASSILLON	140	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
17 BURTON AVE NW MASSILLON	141	1	0.0	66.8	66	66.8	10	Snd Lvl	66.8	0.0	8	-8.0
13 BURTON AVE NW MASSILLON	142	1	0.0	65.2	66	65.2	10	----	65.2	0.0	8	-8.0
727 ERIE ST N MASSILLON	143	1	0.0	63.7	66	63.7	10	----	63.7	0.0	8	-8.0
723 ERIE ST N MASSILLON	144	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
719 ERIE ST N MASSILLON	145	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
713 ERIE ST N MASSILLON	146	1	0.0	62.2	66	62.2	10	----	62.2	0.0	8	-8.0
709 ERIE ST N MASSILLON	147	1	0.0	61.6	66	61.6	10	----	61.6	0.0	8	-8.0
705 ERIE ST N MASSILLON	148	1	0.0	61.2	66	61.2	10	----	61.2	0.0	8	-8.0
701 ERIE ST N MASSILLON	149	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
20 GROOSE AVE NW	150	1	0.0	64.2	66	64.2	10	----	64.2	0.0	8	-8.0
26 GROOSE AVE NW	151	1	0.0	65.3	66	65.3	10	----	65.3	0.0	8	-8.0
30 GROOSE AVE NW	152	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	0.0	8	-8.0
5 BURTON AVE	153	1	0.0	60.3	66	60.3	10	----	60.3	0.0	8	-8.0

**RESULTS: SOUND LEVELS**

**STA- SR 21-11.38**

9 BURTON AVE	154	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
15 BURTON AVE	155	1	0.0	58.3	66	58.3	10	----	58.3	0.0	8	-8.0
19 BURTON AVE	156	1	0.0	59.1	66	59.1	10	----	59.1	0.0	8	-8.0
23 BURTON AVE	157	1	0.0	58.0	66	58.0	10	----	58.0	0.0	8	-8.0
716 ERIE ST	158	1	0.0	60.4	66	60.4	10	----	60.4	0.0	8	-8.0
712 ERIE ST	159	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
710 ERIE ST	160	1	0.0	60.1	66	60.1	10	----	60.1	0.0	8	-8.0
10 WILLARD AVE NE	161	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
27 GROOSE AVE	162	1	0.0	62.7	66	62.7	10	----	62.7	0.0	8	-8.0
33 GROOSE AVE	163	1	0.0	68.0	66	68.0	10	Snd Lvl	68.0	0.0	8	-8.0
656 1ST ST	164	1	0.0	70.1	66	70.1	10	Snd Lvl	70.1	0.0	8	-8.0
652 VINE ST	165	1	0.0	59.5	66	59.5	10	----	59.5	0.0	8	-8.0
16 WARWICK AVE	166	1	0.0	58.7	66	58.7	10	----	58.7	0.0	8	-8.0
58 WARWICK AVE	167	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
50 WARWICK AVE	168	1	0.0	64.0	66	64.0	10	----	64.0	0.0	8	-8.0
44 WARWICK AVE	169	1	0.0	62.8	66	62.8	10	----	62.8	0.0	8	-8.0
110 WARWICK AVE	170	1	0.0	74.4	66	74.4	10	Snd Lvl	74.4	0.0	8	-8.0
630 1ST ST	171	1	0.0	63.4	66	63.4	10	----	63.4	0.0	8	-8.0
626 1ST ST	172	1	0.0	62.5	66	62.5	10	----	62.5	0.0	8	-8.0
620 1ST ST	173	1	0.0	62.0	66	62.0	10	----	62.0	0.0	8	-8.0
43 WARWICK AVE	174	1	0.0	59.8	66	59.8	10	----	59.8	0.0	8	-8.0
612 1ST ST	175	1	0.0	61.3	66	61.3	10	----	61.3	0.0	8	-8.0
54 CHERRY RD	176	1	0.0	67.7	66	67.7	10	Snd Lvl	67.7	0.0	8	-8.0
48 CHERRY RD	177	1	0.0	67.8	66	67.8	10	Snd Lvl	67.8	0.0	8	-8.0
42 CHERRY RD	178	1	0.0	67.4	66	67.4	10	Snd Lvl	67.4	0.0	8	-8.0
110/114 CHERRY RD	179	2	0.0	63.1	66	63.1	10	----	63.1	0.0	8	-8.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		208	0.0	0.0	0.0							
All Impacted		52	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



**INPUT: RECEIVERS**

**STA- SR 21-11.38**

14 LAKE AVE NE MASSILLON OH	27	1	2,237,796.0	418,849.0	955.00	4.92	0.00	66	10.0	8.0	Y
1425 1ST NE MASSILLON OH	28	1	2,237,876.0	419,414.0	961.00	4.92	0.00	66	10.0	8.0	Y
1423 1ST NE MASSILLON OH	29	1	2,237,829.0	419,346.0	972.00	4.92	0.00	66	10.0	8.0	Y
1411 1ST NE MASSILLON OH	30	1	2,237,901.0	419,259.0	977.00	4.92	0.00	66	10.0	8.0	Y
1407 1ST NE MASSILLON OH	31	1	2,237,913.0	419,199.0	978.00	4.92	0.00	66	10.0	8.0	Y
1329 1ST ST NE MASSILLON OH	32	1	2,237,870.0	419,142.0	975.00	4.92	0.00	66	10.0	8.0	Y
1323 1ST ST NE MASSILLON OH	33	1	2,237,902.0	419,034.0	968.00	4.92	0.00	66	10.0	8.0	Y
23 LAKE AVE NE MASSILLON OH	34	1	2,237,776.0	418,748.0	950.00	4.92	0.00	66	10.0	8.0	
19 LAKE AVE NE MASSILLON OH	35	1	2,237,830.0	418,762.0	952.00	4.92	0.00	66	10.0	8.0	
1119 1ST ST NE MASSILLON OH	36	1	2,237,975.0	418,450.0	943.00	4.92	0.00	66	10.0	8.0	
1113 1ST ST NE MASSILLON OH	37	1	2,238,001.0	418,393.0	941.00	4.92	0.00	66	10.0	8.0	
1109 1ST NE MASSILLON OH	38	1	2,238,017.0	418,350.0	940.00	4.92	0.00	66	10.0	8.0	
1105 1ST ST NE MASSILLON OH	39	1	2,238,025.0	418,318.0	941.00	4.92	0.00	66	10.0	8.0	
1059 1ST ST NE MASSILLON OH	40	1	2,238,068.0	418,123.0	943.00	4.92	0.00	66	10.0	8.0	
1053 1ST ST NE MASSILLON OH	41	1	2,238,077.0	418,082.0	943.00	4.92	0.00	66	10.0	8.0	
1049 1ST ST NE MASSILLON OH	42	1	2,238,101.0	418,027.0	946.00	4.92	0.00	66	10.0	8.0	
1041 1ST ST NE MASSILLON OH	43	1	2,238,151.0	417,903.0	945.00	4.92	0.00	66	10.0	8.0	
1029 1ST ST NE MASSILLON OH	44	1	2,238,174.0	417,856.0	944.00	4.92	0.00	66	10.0	8.0	
1025 1ST ST NE MASSILLON OH	45	1	2,238,185.0	417,814.0	943.00	4.92	0.00	66	10.0	8.0	
1021 1ST ST NE MASSILLON OH	46	1	2,238,207.0	417,771.0	942.00	4.92	0.00	66	10.0	8.0	
1017 1ST ST NE MASSILLON OH	47	1	2,238,217.0	417,724.0	938.00	4.92	0.00	66	10.0	8.0	
1013 1ST ST NE MASSILLON OH	48	1	2,238,232.0	417,697.0	938.00	4.92	0.00	66	10.0	8.0	
1009 1ST ST NE MASSILLON OH	49	1	2,238,243.0	417,659.0	939.00	4.92	0.00	66	10.0	8.0	
953 1ST ST NE MASSILLON OH	50	1	2,238,264.0	417,503.0	939.00	4.92	0.00	66	10.0	8.0	
929 1ST ST NE MASSILLON OH	51	1	2,238,408.0	417,288.0	941.00	4.92	0.00	66	10.0	8.0	
923 1ST ST NE MASSILLON OH	52	1	2,238,420.0	417,247.0	941.00	4.92	0.00	66	10.0	8.0	
919 1ST ST NE MASSILLON OH	53	1	2,238,428.0	417,180.0	941.00	4.92	0.00	66	10.0	8.0	
907/909/911/913/915 1ST ST NE MASSI	54	5	2,238,460.0	417,126.0	941.00	4.92	0.00	66	10.0	8.0	
903 1ST ST NE MASSILLON OH	55	1	2,238,494.0	417,040.0	941.00	4.92	0.00	66	10.0	8.0	
893 1ST ST ME MASSILLON OH	56	1	2,238,525.0	416,949.0	944.00	4.92	0.00	66	10.0	8.0	
117 LAKE AVE NE MASSILLON OH	57	1	2,238,126.0	418,802.0	956.00	4.92	0.00	66	10.0	8.0	
1210 1ST ST NE MASSILLON OH	58	1	2,238,073.0	418,708.0	957.00	4.92	0.00	66	10.0	8.0	
1042 1ST ST NE MASSILLON OH	59	1	2,238,241.0	418,005.0	956.00	4.92	0.00	66	10.0	8.0	
1018 1ST ST NE MASSILLON OH	60	1	2,238,339.0	417,795.0	947.00	4.92	0.00	66	10.0	8.0	
1014 1ST ST NE MASSILLON OH	61	1	2,238,361.0	417,749.0	947.00	4.92	0.00	66	10.0	8.0	
1006 1ST ST NE MASSILLON OH	62	1	2,238,382.0	417,684.0	943.00	4.92	0.00	66	10.0	8.0	

**INPUT: RECEIVERS**

**STA- SR 21-11.38**

113/115/117/119 WILLOW AVE NE MAS	63	4	2,238,430.0	418,039.0	953.00	4.92	0.00	66	10.0	8.0
122 OHLMAN CT NE MASSILLON OH	64	1	2,238,610.0	417,570.3	947.00	4.92	0.00	66	10.0	8.0
948 1ST ST NE MASSILLON OH	65	1	2,238,467.0	417,510.0	943.00	4.92	0.00	66	10.0	8.0
944 1ST ST NE MASSILLON OH	66	1	2,238,472.0	417,464.0	942.00	4.92	0.00	66	10.0	8.0
938 1ST ST NE MASSILLON OH	67	1	2,238,486.0	417,415.0	940.00	4.92	0.00	66	10.0	8.0
934/936 1ST ST NE MASSILLON OH	68	2	2,238,504.0	417,383.0	941.00	4.92	0.00	66	10.0	8.0
926 1ST ST NE MASSILLON OH	69	1	2,238,548.0	417,308.0	942.00	4.92	0.00	66	10.0	8.0
922 1ST ST NE MASSILLON OH	70	1	2,238,561.0	417,258.0	942.00	4.92	0.00	66	10.0	8.0
916/918 1ST ST NE MASSILLON OH	71	2	2,238,575.0	417,212.0	942.00	4.92	0.00	66	10.0	8.0
912 1ST ST NE MASSILLON OH	72	1	2,238,589.0	417,167.0	942.00	4.92	0.00	66	10.0	8.0
898 1ST ST NE MASSILLON OH	73	1	2,238,640.0	417,044.0	943.00	4.92	0.00	66	10.0	8.0
109 COMMONWEALTH AVE NE	74	1	2,238,640.0	417,057.0	943.00	4.92	0.00	66	10.0	8.0
894 1ST ST NE MASSILLON OH	75	1	2,238,642.0	417,007.7	945.00	4.92	0.00	66	10.0	8.0
888 1ST ST NE MASSILLON OH	76	1	2,238,654.5	416,958.6	944.00	4.92	0.00	66	10.0	8.0
883 1ST ST NE MASSILLON OH	77	10	2,238,402.0	416,902.0	943.00	4.92	0.00	66	10.0	8.0
881 1ST ST NE MASSILLON OH	78	10	2,238,541.0	416,896.0	943.00	4.92	0.00	66	10.0	8.0
8 DAVID AVE NE MASSILLON OH	79	1	2,238,334.0	416,659.0	960.00	4.92	0.00	66	10.0	8.0
18 DAVID AVE NE MASSILLON	80	1	2,238,436.0	416,656.0	961.00	4.92	0.00	66	10.0	8.0
24 DAVID AVE NE MASSILLON	81	1	2,238,515.0	416,660.0	961.00	4.92	0.00	66	10.0	8.0
871 1ST ST NE MASSILLON	82	1	2,238,584.0	416,764.0	954.00	4.92	0.00	66	10.0	8.0
865 1ST ST NE MASSILLON	83	1	2,238,614.0	416,709.0	957.00	4.92	0.00	66	10.0	8.0
861/863 ST NE MASSILLON	84	2	2,238,612.0	416,659.0	959.00	4.92	0.00	66	10.0	8.0
882 1ST ST NE MASSILLON OH	85	1	2,238,672.0	416,895.9	952.00	4.92	0.00	66	10.0	8.0
878 1ST ST MASSILLON OH	86	1	2,238,686.8	416,853.9	954.00	4.92	0.00	66	10.0	8.0
874 1ST ST MASSILLON OH	87	1	2,238,701.5	416,805.8	955.00	4.92	0.00	66	10.0	8.0
870 1ST ST MASSILLON OH	88	1	2,238,722.2	416,755.4	956.00	4.92	0.00	66	10.0	8.0
5 DAVID AVE NE MASSILLON OH	90	1	2,238,313.0	416,616.0	955.00	4.92	0.00	66	10.0	8.0
15 DAVID AVE NE MASSILLON OH	91	1	2,238,416.0	416,614.0	958.00	4.92	0.00	66	10.0	8.0
25 DAVID AVE NE MASSILLON OH	92	1	2,238,508.0	416,616.0	959.00	4.92	0.00	66	10.0	8.0
853 1ST ST NE MASSILLON OH	93	1	2,238,727.0	416,594.0	956.00	4.92	0.00	66	10.0	8.0
6 OHIO AVE NE MASSILLON OH	94	1	2,238,228.0	416,331.0	946.00	4.92	0.00	66	10.0	8.0
2 OHIO AVE NE MASSILLON OH	95	1	2,238,283.0	416,324.0	949.00	4.92	0.00	66	10.0	8.0
8 OHIO AVE NE MASSILLON OH	96	1	2,238,332.0	416,325.0	951.00	4.92	0.00	66	10.0	8.0
12 OHIO AVE NE MASSILLON OH	97	1	2,238,382.0	416,326.0	951.00	4.92	0.00	66	10.0	8.0
16 OHIO AVE NE MASSILLON OH	98	1	2,238,430.0	416,324.0	950.00	4.92	0.00	66	10.0	8.0
22 OHIO AVE NE MASSILLON OH	99	1	2,238,482.0	416,318.0	950.00	4.92	0.00	66	10.0	8.0

**INPUT: RECEIVERS**

**STA- SR 21-11.38**

26 OHIO AVE NE MASSILLON OH	100	1	2,238,529.0	416,317.0	950.00	4.92	0.00	66	10.0	8.0
30 OHIO AVE NE MASSILLON OH	101	1	2,238,576.0	416,315.0	950.00	4.92	0.00	66	10.0	8.0
36 OHIO AVE NE MASSILLON OH	102	1	2,238,623.0	416,313.0	950.00	4.92	0.00	66	10.0	8.0
9 OHIO AVE NE MASSILLON OH	103	6	2,238,242.0	416,293.0	947.00	4.92	0.00	66	10.0	8.0
7 OHIO AVE NE MASSILLON OH	104	1	2,238,334.0	416,289.0	950.00	4.92	0.00	66	10.0	8.0
11 OHIO AVE NE MASSILLON OH	105	1	2,238,376.0	416,287.0	951.00	4.92	0.00	66	10.0	8.0
17 OHIO AVE NE MASSILLON OH	106	1	2,238,429.0	416,289.0	951.00	4.92	0.00	66	10.0	8.0
23 OHIO AVE NE MASSILLON OH	107	1	2,238,476.0	416,291.0	951.00	4.92	0.00	66	10.0	8.0
27 OHIO AVE NE MASSILLON OH	108	1	2,238,531.0	416,287.0	951.00	4.92	0.00	66	10.0	8.0
31 OHIO AVE NE MASSILLON OH	109	1	2,238,576.0	416,285.0	950.00	4.92	0.00	66	10.0	8.0
37 OHIO AVE NE MASSILLON OH	110	1	2,238,627.0	416,287.0	950.00	4.92	0.00	66	10.0	8.0
8 STATE AVE NW MASSILLON OH	111	1	2,238,179.0	416,118.0	946.00	4.92	0.00	66	10.0	8.0
4 STATE AVE NW MASSILLON OH	113	1	2,238,231.0	416,119.0	947.00	4.92	0.00	66	10.0	8.0
2 STATE AVE NW MASSILLON OH	114	1	2,238,278.0	416,119.0	947.00	4.92	0.00	66	10.0	8.0
6 STATE AVE NW MASSILLON OH	115	1	2,238,328.0	416,119.0	948.00	4.92	0.00	66	10.0	8.0
10 STATE AVE NW MASSILLON OH	116	1	2,238,376.0	416,118.0	949.00	4.92	0.00	66	10.0	8.0
16 STATE AVE NW MASSILLON OH	117	1	2,238,428.0	416,117.0	949.00	4.92	0.00	66	10.0	8.0
20 STATE AVE NW MASSILLON OH	118	1	2,238,473.0	416,114.0	949.00	4.92	0.00	66	10.0	8.0
26 STATE AVE NW MASSILLON OH	119	1	2,238,520.0	416,109.0	949.00	4.92	0.00	66	10.0	8.0
30 STATE AVE NW MASSILLON OH	120	1	2,238,573.0	416,109.0	949.00	4.92	0.00	66	10.0	8.0
13 STATE AVE NE MASSILLON OH	121	1	2,238,144.0	416,094.0	946.00	4.92	0.00	66	10.0	8.0
753 ERIE ST N MASSILLON OH	122	1	2,238,215.0	416,089.0	946.00	4.92	0.00	66	10.0	8.0
747 ERIE ST N MASSILLON OH	123	1	2,238,184.0	416,013.0	946.00	4.92	0.00	66	10.0	8.0
745 ERIE ST N MASSILLON OH	124	1	2,238,183.0	415,964.0	946.00	4.92	0.00	66	10.0	8.0
739 ERIE ST N MASSILLON OH	125	1	2,238,188.0	415,918.0	945.00	4.92	0.00	66	10.0	8.0
737 ERIE ST N MASSILLON OH	126	1	2,238,211.0	415,844.0	945.00	4.92	0.00	66	10.0	8.0
12 BURTON AVE NW MASSILLON	127	1	2,238,140.0	415,844.0	943.00	4.92	0.00	66	10.0	8.0
16 BURTON AVE NW MASSILLON	128	1	2,238,106.0	415,843.0	942.00	4.92	0.00	66	10.0	8.0
7 BURTON AVE NW MASSILLON	129	1	2,238,313.0	416,089.0	946.00	4.92	0.00	66	10.0	8.0
13 STATE AVE NW MASSILLON	130	1	2,238,394.0	416,085.0	948.00	4.92	0.00	66	10.0	8.0
19 STATE AVE NW MASSILLON	131	1	2,238,444.0	416,080.0	949.00	4.92	0.00	66	10.0	8.0
23 STATE AVE NW MASSILLON	132	1	2,238,485.0	416,079.0	949.00	4.92	0.00	66	10.0	8.0
25 STATE AVE NW MASSILLON	133	1	2,238,531.0	416,019.0	950.00	4.92	0.00	66	10.0	8.0
31/33 STATE AVE NW MASSILLON	134	2	2,238,588.0	416,070.0	948.00	4.92	0.00	66	10.0	8.0
746 ERIE ST N MASSILLON OH	135	1	2,238,285.2	415,982.5	945.00	4.92	0.00	66	10.0	8.0
4 BURTON AVE NW MASSILLON	136	1	2,238,304.8	415,848.6	946.00	4.92	0.00	66	10.0	8.0

**INPUT: RECEIVERS**

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8 BURTON AVE NW MASSILLON	137	1	2,238,350.0	415,838.0	946.00	4.92	0.00	66	10.0	8.0
12 BURTON AVE NW MASSILLON	138	1	2,238,390.0	415,839.0	946.00	4.92	0.00	66	10.0	8.0
18 BURTON AVE NW MASSILLON	139	1	2,238,443.0	415,839.0	945.00	4.92	0.00	66	10.0	8.0
22 BURTON AVE NW MASSILLON	140	1	2,238,488.0	415,838.0	944.00	4.92	0.00	66	10.0	8.0
17 BURTON AVE NW MASSILLON	141	1	2,238,101.0	415,815.0	941.00	4.92	0.00	66	10.0	8.0
13 BURTON AVE NW MASSILLON	142	1	2,238,145.0	415,812.0	943.00	4.92	0.00	66	10.0	8.0
727 ERIE ST N MASSILLON	143	1	2,238,183.0	415,783.0	944.00	4.92	0.00	66	10.0	8.0
723 ERIE ST N MASSILLON	144	1	2,238,177.0	415,734.0	946.00	4.92	0.00	66	10.0	8.0
719 ERIE ST N MASSILLON	145	1	2,238,182.0	415,695.0	947.00	4.92	0.00	66	10.0	8.0
713 ERIE ST N MASSILLON	146	1	2,238,184.0	415,647.0	948.00	4.92	0.00	66	10.0	8.0
709 ERIE ST N MASSILLON	147	1	2,238,187.0	415,607.0	949.00	4.92	0.00	66	10.0	8.0
705 ERIE ST N MASSILLON	148	1	2,238,187.0	415,561.0	950.00	4.92	0.00	66	10.0	8.0
701 ERIE ST N MASSILLON	149	1	2,238,180.0	415,524.0	950.00	4.92	0.00	66	10.0	8.0
20 GROOSE AVE NW	150	1	2,238,010.0	415,471.0	937.00	4.92	0.00	66	10.0	8.0
26 GROOSE AVE NW	151	1	2,237,970.0	415,459.0	936.00	4.92	0.00	66	10.0	8.0
30 GROOSE AVE NW	152	1	2,237,929.0	415,424.0	935.00	4.92	0.00	66	10.0	8.0
5 BURTON AVE	153	1	2,238,301.0	415,816.0	945.00	4.92	0.00	66	10.0	8.0
9 BURTON AVE	154	1	2,238,349.0	415,816.0	945.00	4.92	0.00	66	10.0	8.0
15 BURTON AVE	155	1	2,238,395.0	415,813.0	945.00	4.92	0.00	66	10.0	8.0
19 BURTON AVE	156	1	2,238,433.0	415,811.0	945.00	4.92	0.00	66	10.0	8.0
23 BURTON AVE	157	1	2,238,483.0	415,812.0	945.00	4.92	0.00	66	10.0	8.0
716 ERIE ST	158	1	2,238,275.0	415,688.0	948.00	4.92	0.00	66	10.0	8.0
712 ERIE ST	159	1	2,238,280.0	415,641.0	949.00	4.92	0.00	66	10.0	8.0
710 ERIE ST	160	1	2,238,288.0	415,576.0	952.00	4.92	0.00	66	10.0	8.0
10 WILLARD AVE NE	161	1	2,238,374.0	415,539.0	952.00	4.92	0.00	66	10.0	8.0
27 GROOSE AVE	162	1	2,238,023.5	415,345.2	933.00	4.92	0.00	66	10.0	8.0
33 GROOSE AVE	163	1	2,237,794.5	415,252.9	931.00	4.92	0.00	66	10.0	8.0
656 1ST ST	164	1	2,237,722.0	415,224.0	930.00	4.92	0.00	66	10.0	8.0
652 VINE ST	165	1	2,238,116.0	415,291.0	935.00	4.92	0.00	66	10.0	8.0
16 WARWICK AVE	166	1	2,238,116.0	415,168.0	936.00	4.92	0.00	66	10.0	8.0
58 WARWICK AVE	167	1	2,237,745.0	415,007.0	935.00	4.92	0.00	66	10.0	8.0
50 WARWICK AVE	168	1	2,237,816.0	415,045.0	933.00	4.92	0.00	66	10.0	8.0
44 WARWICK AVE	169	1	2,237,865.0	415,061.0	933.00	4.92	0.00	66	10.0	8.0
110 WARWICK AVE	170	1	2,237,597.0	414,957.0	936.00	4.92	0.00	66	10.0	8.0
630 1ST ST	171	1	2,237,758.0	414,877.0	935.00	4.92	0.00	66	10.0	8.0
626 1ST ST	172	1	2,237,778.0	414,829.0	935.00	4.92	0.00	66	10.0	8.0

**INPUT: RECEIVERS****STA- SR 21-11.38**

620 1ST ST	173	1	2,237,793.0	414,788.0	935.00	4.92	0.00	66	10.0	8.0	
43 WARWICK AVE	174	1	2,237,926.0	414,966.0	933.00	4.92	0.00	66	10.0	8.0	
612 1ST ST	175	1	2,237,814.0	414,726.0	934.00	4.92	0.00	66	10.0	8.0	
54 CHERRY RD	176	1	2,237,885.0	414,620.0	934.00	4.92	0.00	66	10.0	8.0	
48 CHERRY RD	177	1	2,237,930.0	414,637.0	935.00	4.92	0.00	66	10.0	8.0	
42 CHERRY RD	178	1	2,237,975.0	414,656.0	936.00	4.92	0.00	66	10.0	8.0	
110/114 CHERRY RD	179	2	2,237,715.0	414,646.0	935.00	4.92	0.00	66	10.0	8.0	



INPUT: ROADWAYS

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		point42	42	2,238,206.5	416,978.4	940.00				Average
		point41	41	2,238,201.8	417,125.1	938.00				Average
		point40	40	2,238,189.5	417,279.1	936.00				Average
		point39	39	2,238,168.0	417,416.2	935.00				Average
		point38	38	2,238,134.2	417,596.5	936.00				Average
		point37	37	2,238,105.5	417,707.2	938.00				Average
		point31	31	2,238,052.5	417,882.7	942.00				Average
		point30	30	2,238,033.2	417,945.2	944.00				Average
		point29	29	2,237,973.2	418,094.4	945.00				Average
		point28	28	2,237,889.0	418,289.2	946.00				Average
		point27	27	2,237,674.8	418,729.4	945.00				
SR 21 Southbound 1	12.0	point123	123	2,236,670.5	420,694.1	990.00				Average
		point125	125	2,236,757.5	420,521.3	984.00				Average
		point126	126	2,236,813.2	420,406.5	937.00				Average
		point127	127	2,236,860.2	420,309.6	959.00				Average
		point128	128	2,236,956.2	420,114.9	935.00				Average
		point129	129	2,237,078.0	419,862.2	960.00				Average
		point131	131	2,237,197.8	419,615.8	949.00				Average
		point132	132	2,237,420.5	419,166.3	944.00				Average
		point133	133	2,237,533.5	418,944.7	945.00				Average
		point134	134	2,237,618.2	418,765.4	945.00				
SR 21 Southbound 2	12.0	point170	170	2,236,658.5	420,694.1	990.00				Average
		point171	171	2,236,745.5	420,521.3	984.00				Average
		point172	172	2,236,801.2	420,406.5	937.00				Average
		point173	173	2,236,848.2	420,309.6	959.00				Average
		point174	174	2,236,944.2	420,114.9	935.00				Average
		point175	175	2,237,066.0	419,862.2	960.00				Average
		point176	176	2,237,185.8	419,615.8	949.00				Average
		point177	177	2,237,408.5	419,166.3	944.00				Average
		point178	178	2,237,521.5	418,944.7	945.00				Average
		point179	179	2,237,606.2	418,765.4	945.00				
Towpath Ave NW/ Kracker ST NW	12.0	point215	215	2,237,491.5	419,919.1	935.00				Average
		point216	216	2,237,693.8	419,912.7	939.00				Average
		point217	217	2,237,658.5	419,450.6	944.00				Average
		point218	218	2,237,658.5	419,100.8	947.00				Average
		point219	219	2,237,796.5	418,783.1	949.00				
Nish AVE NW	12.0	point220	220	2,238,027.5	419,437.8	958.00				Average
		point221	221	2,237,841.2	419,453.8	956.00				Average
		point222	222	2,237,664.8	419,450.6	943.00				

**INPUT: ROADWAYS**

**STA- SR 21-11.38**

1st ST NE	12.0	point227	227	2,238,017.8	419,251.6	960.00				Average
		point228	228	2,237,995.5	418,844.1	956.00				
1st St NE	12.0	point229	229	2,237,995.5	418,795.9	953.00				Average
		point230	230	2,238,101.2	418,349.9	940.00				Average
		point231	231	2,238,155.8	418,128.4	942.00				Average
		point232	232	2,238,245.8	417,891.0	944.00				Average
		point233	233	2,238,377.2	417,585.5	950.00				Average
		point234	234	2,238,711.0	416,715.8	954.00				
McCadden Ave NE	12.0	point235	235	2,238,377.2	418,689.4	954.00				Average
		point236	236	2,238,046.8	418,631.6	948.00				
Willow AVE NW	12.0	point237	237	2,238,768.8	418,082.9	979.00				Average
		point238	238	2,238,178.2	418,102.1	944.00				
Ohlman Ct NE	12.0	point239	239	2,239,025.5	417,537.3	973.00				Average
		point240	240	2,238,399.8	417,563.0	941.00				
Elm Ct NE	12.0	point242	242	2,238,820.2	417,338.4	959.00				Average
		point243	243	2,238,483.2	417,354.4	940.00				
Commonwealth Ave NE	12.0	point244	244	2,239,009.5	417,084.8	958.00				Average
		point245	245	2,238,614.8	417,091.3	943.00				Average
		point246	246	2,238,585.8	417,084.8	941.00				
Ruth NE	12.0	point247	247	2,238,875.0	416,721.3	958.00				Average
		point248	248	2,238,885.0	416,908.0	955.00				Average
		point249	249	2,238,883.0	416,923.6	954.00				Average
		point250	250	2,238,876.0	416,930.5	953.00				Average
		point251	251	2,238,866.2	416,934.4	953.00				Average
		point252	252	2,238,850.8	416,936.3	951.00				Average
		point253	253	2,238,688.5	416,935.3	946.00				Average
		point254	254	2,238,671.0	416,932.4	946.00				Average
		point255	255	2,238,641.5	416,923.6	944.00				
Iveywood Apartments	12.0	point256	256	2,238,327.0	416,917.8	941.00				Average
		point257	257	2,238,594.8	416,911.9	945.00				Average
		point258	258	2,238,626.0	416,919.7	945.00				
David Ave	12.0	point259	259	2,238,739.0	416,626.4	957.00				Average
		point260	260	2,238,260.2	416,637.2	955.00				
Ohio Ave NW	12.0	point261	261	2,238,787.8	416,297.1	949.00				Average
		point262	262	2,238,195.8	416,311.8	944.00				
State AVE	12.0	point263	263	2,238,803.5	416,088.8	946.00				Average
		point264	264	2,238,127.2	416,106.4	946.00				
BURTON AVE 2	12.0	point272	272	2,238,791.2	415,813.3	947.00				Average
		point273	273	2,238,270.2	415,833.1	944.00				

**INPUT: ROADWAYS**

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Willard AVE NE	12.0	point274	274	2,238,478.0	415,519.9	951.00				Average
		point275	275	2,238,270.2	415,526.5	949.00				
BURTON AVE 1	12.0	point277	277	2,238,072.5	415,829.8	941.00				Average
		point278	278	2,238,230.8	415,826.5	944.00				
Goose Ave NW	12.0	point279	279	2,237,769.2	415,269.4	930.00				Average
		point280	280	2,238,237.2	415,447.4	946.00				
Cherry RD NW 2	12.0	point281	281	2,238,395.5	414,801.2	944.00				Average
		point282	282	2,237,485.2	414,449.2	932.00				
1st st NW	12.0	point283	283	2,237,663.8	415,071.6	934.00				Average
		point284	284	2,237,845.0	414,606.7	934.00				
Fan CT	12.0	point285	285	2,238,217.5	414,923.2	934.00				Average
		point286	286	2,237,795.5	414,755.1	935.00				
Warwick Ave NW 2	12.0	point287	287	2,238,253.8	415,104.5	939.00				Average
		point288	288	2,237,736.2	414,913.3	935.00				
Warwick AVE NW 1	12.0	point290	290	2,237,587.8	414,850.7	935.00				Average
		point291	291	2,237,713.2	414,903.4	935.00				
Vine ST NW	12.0	point292	292	2,238,244.0	415,117.7	940.00				Average
		point293	293	2,238,217.5	415,210.0	939.00				Average
		point294	294	2,238,227.5	415,252.9	938.00				Average
		point295	295	2,238,224.2	415,282.6	937.00				Average
		point296	296	2,238,207.8	415,292.4	937.00				Average
		point297	297	2,238,194.5	415,292.4	937.00				Average
		point298	298	2,238,178.0	415,285.8	937.00				Average
		point299	299	2,238,178.0	415,259.5	937.00				Average
		point300	300	2,238,194.5	415,233.1	937.00				Average
		point301	301	2,238,204.2	415,226.5	938.00				
CHERRY RD NW 1	12.0	point302	302	2,237,348.0	414,395.8	0.00				Average
		point303	303	2,236,962.2	414,247.4	0.00				Average
		point304	304	2,236,570.0	414,135.3	0.00				
3rd st nw	12.0	point308	308	2,237,114.0	416,063.9	0.00				Average
		point309	309	2,237,133.8	415,180.4	0.00				Average
		point310	310	2,237,107.5	415,018.8	0.00				Average
		point311	311	2,237,018.5	414,718.8	0.00				Average
		point312	312	2,236,982.2	414,418.8	0.00				Average
		point313	313	2,236,965.8	414,356.2	0.00				Average
		point314	314	2,236,972.2	414,277.1	0.00				
Riverside Ave NW 2	12.0	point315	315	2,236,678.8	419,337.7	0.00				Average
		point316	316	2,236,721.8	419,670.7	0.00				Average
		point317	317	2,236,744.8	419,878.4	0.00				Average

INPUT: ROADWAYS

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		point318	318	2,236,774.5	420,125.6	0.00				Average
		point319	319	2,236,833.8	420,283.9	0.00				
Riverside Ave nw 1	12.0	point320	320	2,236,883.2	420,438.8	0.00				Average
		point321	321	2,236,949.2	420,709.2	0.00				Average
		point322	322	2,237,005.2	420,850.9	0.00				Average
		point323	323	2,237,048.0	420,982.8	0.00				Average
		point324	324	2,237,302.0	421,984.9	0.00				
Lake Ave NW 2	12.0	point223	223	2,238,329.2	418,889.0	956.00				Average
		point329	329	2,237,934.5	418,808.8	953.00				Average
		point224	224	2,237,689.5	418,758.8	945.00				
Lake Ave NW 1	12.0	point330	330	2,237,605.0	418,736.6	944.00				Average
		point225	225	2,237,498.0	418,725.3	936.00				Average
		point226	226	2,236,920.2	418,760.6	936.00				
ERIE ST	12.0	point266	266	2,238,270.2	416,090.2	945.00				Average
		point267	267	2,238,257.0	415,599.0	947.00				Average
		point268	268	2,238,260.5	415,444.1	946.00				Average
		point269	269	2,238,263.8	415,361.7	946.00				Average
		point270	270	2,238,263.8	415,351.8	945.00				Average
		point271	271	2,238,326.2	415,097.9	944.00				
SR 21 Northbound 1-SR 21 Northbound 1-2	12.0	point120	120	2,237,399.2	414,153.5	938.00				Average
		point119	119	2,237,406.2	414,257.4	938.00				Average
		point118	118	2,237,410.5	414,305.6	938.00				Average
		point117	117	2,237,415.8	414,359.6	938.00				Average
		point115	115	2,237,425.0	414,430.9	938.00				Average
		point121	121	2,237,436.2	414,509.9	938.00				Average
		point114	114	2,237,451.5	414,586.8	937.00				Average
		point113	113	2,237,474.8	414,682.6	936.00				Average
		point112	112	2,237,500.5	414,777.7	935.00				Average
		point111	111	2,237,535.2	414,890.2	939.00				Average
		point110	110	2,237,561.8	414,967.1	940.00				Average
		point109	109	2,237,612.2	415,097.0	940.00				Average
		point108	108	2,237,655.5	415,205.3	939.00				Average
		point107	107	2,237,696.5	415,289.4	938.00				Average
		point106	106	2,237,773.5	415,436.2	936.00				Average
		point105	105	2,237,843.2	415,575.7	937.00				Average
		point104	104	2,237,893.8	415,669.5	938.00				Average
		point103	103	2,237,966.0	415,819.0	938.00				Average
		point102	102	2,238,016.5	415,932.1	939.00				Average
		point101	101	2,238,062.0	416,062.0	942.00				Average

INPUT: ROADWAYS

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		point100	100	2,238,124.8	416,252.0	942.00				Average	
		point99	99	2,238,168.0	416,434.8	942.00				Average	
		point98	98	2,238,196.8	416,627.2	943.00				Average	
		point97	97	2,238,211.2	416,776.3	945.00				Average	
		point346	346	2,238,215.0	416,877.4	941.00				Average	
		point96	96	2,238,218.5	416,978.4	940.00				Average	
		point95	95	2,238,213.8	417,125.1	938.00				Average	
		point94	94	2,238,201.5	417,279.1	936.00				Average	
		point93	93	2,238,180.0	417,416.2	935.00				Average	
		point92	92	2,238,146.2	417,596.5	936.00				Average	
		point91	91	2,238,117.5	417,707.2	938.00				Average	
		point90	90	2,238,064.5	417,882.7	942.00				Average	
		point89	89	2,238,045.2	417,945.3	944.00				Average	
		point88	88	2,237,985.2	418,094.4	945.00				Average	
		point87	87	2,237,901.0	418,289.2	946.00				Average	
		point86	86	2,237,694.5	418,717.5	945.00					
SR 21 Northbound 1-SR 21 Northbound 1-2-2	12.0	point331	331	2,237,670.5	418,760.8	945.00				Average	
		point84	84	2,237,576.2	418,953.1	945.00				Average	
		point83	83	2,237,465.5	419,174.3	944.00				Average	
		point82	82	2,237,249.0	419,625.5	949.00				Average	
		point81	81	2,237,126.5	419,878.1	960.00				Average	
		point80	80	2,237,008.5	420,118.6	935.00				Average	
		point79	79	2,236,895.5	420,344.7	959.00				Average	
		point78	78	2,236,861.8	420,419.3	937.00				Average	
		point77	77	2,236,806.5	420,534.7	984.00				Average	
		point76	76	2,236,720.0	420,707.9	990.00					
SR 21 Southbound 1-2	12.0	point135	135	2,237,639.2	418,721.4	945.00				Average	
		point136	136	2,237,848.0	418,286.0	946.00				Average	
		point137	137	2,237,938.8	418,094.2	945.00				Average	
		point138	138	2,238,002.8	417,946.4	944.00				Average	
		point139	139	2,238,027.8	417,884.5	942.00				Average	
		point140	140	2,238,085.8	417,708.7	938.00				Average	
		point141	141	2,238,113.5	417,598.9	936.00				Average	
		point142	142	2,238,149.5	417,418.1	935.00				Average	
		point143	143	2,238,167.5	417,281.3	936.00				Average	
		point144	144	2,238,183.5	417,127.5	938.00				Average	
		point145	145	2,238,186.5	416,980.7	940.00				Average	
		point348	348	2,238,183.0	416,880.8	941.00				Average	
		point146	146	2,238,179.5	416,780.9	945.00				Average	

INPUT: ROADWAYS

STA- SR 21-11.38

		point147	147	2,238,166.5	416,635.1	943.00				Average	
		point148	148	2,238,138.5	416,447.8	942.00				Average	
		point149	149	2,238,094.8	416,258.1	942.00				Average	
		point150	150	2,238,037.8	416,074.6	942.00				Average	
		point151	151	2,237,989.8	415,948.8	939.00				Average	
		point152	152	2,237,939.8	415,831.9	938.00				Average	
		point153	153	2,237,868.0	415,686.3	938.00				Average	
		point154	154	2,237,819.0	415,592.4	937.00				Average	
		point155	155	2,237,746.0	415,455.6	936.00				Average	
		point156	156	2,237,669.2	415,304.8	938.00				Average	
		point157	157	2,237,627.2	415,220.9	939.00				Average	
		point158	158	2,237,576.8	415,108.8	940.00				Average	
		point159	159	2,237,522.0	414,974.0	940.00				Average	
		point160	160	2,237,493.0	414,894.1	939.00				Average	
		point161	161	2,237,456.0	414,785.2	935.00				Average	
		point162	162	2,237,431.0	414,689.4	936.00				Average	
		point163	163	2,237,408.0	414,592.5	937.00				Average	
		point164	164	2,237,394.0	414,517.6	938.00				Average	
		point165	165	2,237,382.0	414,428.7	938.00				Average	
		point166	166	2,237,375.0	414,364.8	938.00				Average	
		point167	167	2,237,370.0	414,314.1	938.00				Average	
		point168	168	2,237,364.0	414,260.2	938.00				Average	
			0	2,237,358.2	414,155.3	938.00					
SR 21 Southbound 2-2	12.0	point180	180	2,237,627.2	418,721.4	945.00				Average	
		point181	181	2,237,836.0	418,286.0	946.00				Average	
		point182	182	2,237,926.8	418,094.3	945.00				Average	
		point183	183	2,237,990.8	417,946.4	944.00				Average	
		point184	184	2,238,015.8	417,884.5	942.00				Average	
		point185	185	2,238,073.8	417,708.7	938.00				Average	
		point186	186	2,238,101.5	417,598.9	936.00				Average	
		point187	187	2,238,137.5	417,418.1	935.00				Average	
		point188	188	2,238,155.5	417,281.3	936.00				Average	
		point189	189	2,238,171.5	417,127.5	938.00				Average	
		point190	190	2,238,174.5	416,980.7	940.00				Average	
		point349	349	2,238,171.0	416,880.8	941.00				Average	
		point191	191	2,238,167.5	416,780.9	945.00				Average	
		point192	192	2,238,154.5	416,635.1	943.00				Average	
		point193	193	2,238,126.5	416,447.8	942.00				Average	
		point194	194	2,238,082.8	416,258.1	942.00				Average	

INPUT: ROADWAYS

STA- SR 21-11.38

		point195	195	2,238,025.8	416,074.6	942.00				Average
		point196	196	2,237,977.8	415,948.8	939.00				Average
		point197	197	2,237,927.8	415,831.9	938.00				Average
		point198	198	2,237,856.0	415,686.3	938.00				Average
		point199	199	2,237,807.0	415,592.4	937.00				Average
		point200	200	2,237,734.0	415,455.6	936.00				Average
		point201	201	2,237,657.2	415,304.8	938.00				Average
		point202	202	2,237,615.2	415,220.9	939.00				Average
		point203	203	2,237,564.8	415,108.8	940.00				Average
		point204	204	2,237,510.0	414,974.0	940.00				Average
		point205	205	2,237,481.0	414,894.1	939.00				Average
		point206	206	2,237,444.0	414,785.3	935.00				Average
		point207	207	2,237,419.0	414,689.4	936.00				Average
		point208	208	2,237,396.0	414,592.5	937.00				Average
		point209	209	2,237,382.0	414,517.6	938.00				Average
		point210	210	2,237,370.0	414,428.7	938.00				Average
		point211	211	2,237,363.0	414,364.8	938.00				Average
		point212	212	2,237,358.0	414,314.1	938.00				Average
		point213	213	2,237,352.0	414,260.2	938.00				Average
		point214	214	2,237,346.2	414,155.3	938.00				
Roadway77	12.0	point336	336	2,237,658.5	418,760.8	945.00				Average
		point337	337	2,237,564.2	418,953.1	945.00				Average
		point338	338	2,237,453.5	419,174.3	944.00				Average
		point339	339	2,237,237.0	419,625.5	949.00				Average
		point340	340	2,237,114.5	419,878.1	960.00				Average
		point341	341	2,236,996.5	420,118.6	935.00				Average
		point342	342	2,236,883.5	420,344.7	959.00				Average
		point343	343	2,236,849.8	420,419.3	937.00				Average
		point344	344	2,236,794.5	420,534.7	984.00				Average
		point345	345	2,236,708.0	420,707.9	990.00				

INPUT: TRAFFIC FOR LAeq1h Volumes

STA- SR 21-11.38

Lawhon & Associates		14 October 2021										
CA		TNM 2.5										
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:		STA- SR 21-11.38										
RUN:		Existing Run Model										
Roadway	Points											
Name	Name	No.	Segment		MTrucks		HTrucks		Buses		Motorcycles	
			Autos		V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
SR 21 Northbound 2	point72	72	365	55	53	55	46	55	0	0	0	0
	point71	71	365	55	53	55	46	55	0	0	0	0
	point70	70	365	55	53	55	46	55	0	0	0	0
	point69	69	365	55	53	55	46	55	0	0	0	0
	point68	68	365	55	53	55	46	55	0	0	0	0
	point122	122	365	55	53	55	46	55	0	0	0	0
	point67	67	365	55	53	55	46	55	0	0	0	0
	point66	66	365	55	53	55	46	55	0	0	0	0
	point65	65	365	55	53	55	46	55	0	0	0	0
	point64	64	365	55	53	55	46	55	0	0	0	0
	point57	57	365	55	53	55	46	55	0	0	0	0
	point56	56	365	55	53	55	46	55	0	0	0	0
	point55	55	365	55	53	55	46	55	0	0	0	0
	point54	54	365	55	53	55	46	55	0	0	0	0
	point53	53	365	55	53	55	46	55	0	0	0	0
	point52	52	365	55	53	55	46	55	0	0	0	0
	point51	51	365	55	53	55	46	55	0	0	0	0
	point49	49	365	55	53	55	46	55	0	0	0	0
	point48	48	365	55	53	55	46	55	0	0	0	0
	point47	47	365	55	53	55	46	55	0	0	0	0
	point46	46	365	55	53	55	46	55	0	0	0	0
	point45	45	365	55	53	55	46	55	0	0	0	0
	point44	44	365	55	53	55	46	55	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA- SR 21-11.38**

	point43	43	365	55	53	55	46	55	0	0	0	0
	point347	347	365	55	53	55	46	55	0	0	0	0
	point42	42	365	55	53	55	46	55	0	0	0	0
	point41	41	365	55	53	55	46	55	0	0	0	0
	point40	40	365	55	53	55	46	55	0	0	0	0
	point39	39	365	55	53	55	46	55	0	0	0	0
	point38	38	365	55	53	55	46	55	0	0	0	0
	point37	37	365	55	53	55	46	55	0	0	0	0
	point31	31	365	55	53	55	46	55	0	0	0	0
	point30	30	365	55	53	55	46	55	0	0	0	0
	point29	29	365	55	53	55	46	55	0	0	0	0
	point28	28	365	55	53	55	46	55	0	0	0	0
	point27	27										
SR 21 Southbound 1	point123	123	305	55	19	55	78	55	0	0	0	0
	point125	125	305	55	19	55	78	55	0	0	0	0
	point126	126	305	55	19	55	78	55	0	0	0	0
	point127	127	305	55	19	55	78	55	0	0	0	0
	point128	128	305	55	19	55	78	55	0	0	0	0
	point129	129	305	55	19	55	78	55	0	0	0	0
	point131	131	305	55	19	55	78	55	0	0	0	0
	point132	132	305	55	19	55	78	55	0	0	0	0
	point133	133	305	55	19	55	78	55	0	0	0	0
	point134	134										
SR 21 Southbound 2	point170	170	305	55	19	55	78	55	0	0	0	0
	point171	171	305	55	19	55	78	55	0	0	0	0
	point172	172	305	55	19	55	78	55	0	0	0	0
	point173	173	305	55	19	55	78	55	0	0	0	0
	point174	174	305	55	19	55	78	55	0	0	0	0
	point175	175	305	55	19	55	78	55	0	0	0	0
	point176	176	305	55	19	55	78	55	0	0	0	0
	point177	177	305	55	19	55	78	55	0	0	0	0
	point178	178	305	55	19	55	78	55	0	0	0	0
	point179	179										
Towpath Ave NW/ Kracker ST NW	point215	215	0	0	0	0	0	0	0	0	0	0
	point216	216	0	0	0	0	0	0	0	0	0	0
	point217	217	0	0	0	0	0	0	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA- SR 21-11.38**

	point218	218	0	0	0	0	0	0	0	0	0	0
	point219	219										
Nish AVE NW	point220	220	0	0	0	0	0	0	0	0	0	0
	point221	221	0	0	0	0	0	0	0	0	0	0
	point222	222										
1st ST NE	point227	227	0	0	0	0	0	0	0	0	0	0
	point228	228										
1st St NE	point229	229	0	0	0	0	0	0	0	0	0	0
	point230	230	0	0	0	0	0	0	0	0	0	0
	point231	231	0	0	0	0	0	0	0	0	0	0
	point232	232	0	0	0	0	0	0	0	0	0	0
	point233	233	0	0	0	0	0	0	0	0	0	0
	point234	234										
McCadden Ave NE	point235	235	0	0	0	0	0	0	0	0	0	0
	point236	236										
Willow AVE NW	point237	237	0	0	0	0	0	0	0	0	0	0
	point238	238										
Ohlman Ct NE	point239	239	0	0	0	0	0	0	0	0	0	0
	point240	240										
Elm Ct NE	point242	242	0	0	0	0	0	0	0	0	0	0
	point243	243										
Commonwealth Ave NE	point244	244	0	0	0	0	0	0	0	0	0	0
	point245	245	0	0	0	0	0	0	0	0	0	0
	point246	246										
Ruth NE	point247	247	0	0	0	0	0	0	0	0	0	0
	point248	248	0	0	0	0	0	0	0	0	0	0
	point249	249	0	0	0	0	0	0	0	0	0	0
	point250	250	0	0	0	0	0	0	0	0	0	0
	point251	251	0	0	0	0	0	0	0	0	0	0
	point252	252	0	0	0	0	0	0	0	0	0	0
	point253	253	0	0	0	0	0	0	0	0	0	0
	point254	254	0	0	0	0	0	0	0	0	0	0
	point255	255										
Iveywood Apartments	point256	256	0	0	0	0	0	0	0	0	0	0
	point257	257	0	0	0	0	0	0	0	0	0	0
	point258	258										

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA- SR 21-11.38**

David Ave	point259	259	0	0	0	0	0	0	0	0	0	0
	point260	260										
Ohio Ave NW	point261	261	0	0	0	0	0	0	0	0	0	0
	point262	262										
State AVE	point263	263	0	0	0	0	0	0	0	0	0	0
	point264	264										
BURTON AVE 2	point272	272	0	0	0	0	0	0	0	0	0	0
	point273	273										
Willard AVE NE	point274	274	0	0	0	0	0	0	0	0	0	0
	point275	275										
BURTON AVE 1	point277	277	0	0	0	0	0	0	0	0	0	0
	point278	278										
Goose Ave NW	point279	279	0	0	0	0	0	0	0	0	0	0
	point280	280										
Cherry RD NW 2	point281	281	495	25	25	25	30	25	0	0	0	0
	point282	282										
1st st NW	point283	283	0	0	0	0	0	0	0	0	0	0
	point284	284										
Fan CT	point285	285	0	0	0	0	0	0	0	0	0	0
	point286	286										
Warwick Ave NW 2	point287	287	0	0	0	0	0	0	0	0	0	0
	point288	288										
Warwick AVE NW 1	point290	290	0	0	0	0	0	0	0	0	0	0
	point291	291										
Vine ST NW	point292	292	0	0	0	0	0	0	0	0	0	0
	point293	293	0	0	0	0	0	0	0	0	0	0
	point294	294	0	0	0	0	0	0	0	0	0	0
	point295	295	0	0	0	0	0	0	0	0	0	0
	point296	296	0	0	0	0	0	0	0	0	0	0
	point297	297	0	0	0	0	0	0	0	0	0	0
	point298	298	0	0	0	0	0	0	0	0	0	0
	point299	299	0	0	0	0	0	0	0	0	0	0
	point300	300	0	0	0	0	0	0	0	0	0	0
	point301	301										
CHERRY RD NW 1	point302	302	426	25	24	25	24	25	0	0	0	0
	point303	303	426	25	24	25	24	25	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA- SR 21-11.38**

	point304	304										
3rd st nw	point308	308	0	0	0	0	0	0	0	0	0	0
	point309	309	0	0	0	0	0	0	0	0	0	0
	point310	310	0	0	0	0	0	0	0	0	0	0
	point311	311	0	0	0	0	0	0	0	0	0	0
	point312	312	0	0	0	0	0	0	0	0	0	0
	point313	313	0	0	0	0	0	0	0	0	0	0
	point314	314										
Riverside Ave NW 2	point315	315	0	0	0	0	0	0	0	0	0	0
	point316	316	0	0	0	0	0	0	0	0	0	0
	point317	317	0	0	0	0	0	0	0	0	0	0
	point318	318	0	0	0	0	0	0	0	0	0	0
	point319	319										
Riverside Ave nw 1	point320	320	0	0	0	0	0	0	0	0	0	0
	point321	321	0	0	0	0	0	0	0	0	0	0
	point322	322	0	0	0	0	0	0	0	0	0	0
	point323	323	0	0	0	0	0	0	0	0	0	0
	point324	324										
Lake Ave NW 2	point223	223	1132	25	63	25	63	25	0	0	0	0
	point329	329	1132	25	63	25	63	25	0	0	0	0
	point224	224										
Lake Ave NW 1	point330	330	442	25	25	25	25	25	0	0	0	0
	point225	225	442	25	25	25	25	25	0	0	0	0
	point226	226										
ERIE ST	point266	266	0	0	0	0	0	0	0	0	0	0
	point267	267	0	0	0	0	0	0	0	0	0	0
	point268	268	0	0	0	0	0	0	0	0	0	0
	point269	269	0	0	0	0	0	0	0	0	0	0
	point270	270	0	0	0	0	0	0	0	0	0	0
	point271	271										
SR 21 Northbound 1-SR 21 Northbound 1-2	point120	120	365	55	53	55	46	55	0	0	0	0
	point119	119	365	55	53	55	46	55	0	0	0	0
	point118	118	365	55	53	55	46	55	0	0	0	0
	point117	117	365	55	53	55	46	55	0	0	0	0
	point115	115	365	55	53	55	46	55	0	0	0	0
	point121	121	365	55	53	55	46	55	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA- SR 21-11.38**

	point114	114	365	55	53	55	46	55	0	0	0	0
	point113	113	365	55	53	55	46	55	0	0	0	0
	point112	112	365	55	53	55	46	55	0	0	0	0
	point111	111	365	55	53	55	46	55	0	0	0	0
	point110	110	365	55	53	55	46	55	0	0	0	0
	point109	109	365	55	53	55	46	55	0	0	0	0
	point108	108	365	55	53	55	46	55	0	0	0	0
	point107	107	365	55	53	55	46	55	0	0	0	0
	point106	106	365	55	53	55	46	55	0	0	0	0
	point105	105	365	55	53	55	46	55	0	0	0	0
	point104	104	365	55	53	55	46	55	0	0	0	0
	point103	103	365	55	53	55	46	55	0	0	0	0
	point102	102	365	55	53	55	46	55	0	0	0	0
	point101	101	365	55	53	55	46	55	0	0	0	0
	point100	100	365	55	53	55	46	55	0	0	0	0
	point99	99	365	55	53	55	46	55	0	0	0	0
	point98	98	365	55	53	55	46	55	0	0	0	0
	point97	97	365	55	53	55	46	55	0	0	0	0
	point346	346	365	55	53	55	46	55	0	0	0	0
	point96	96	365	55	53	55	46	55	0	0	0	0
	point95	95	365	55	53	55	46	55	0	0	0	0
	point94	94	365	55	53	55	46	55	0	0	0	0
	point93	93	365	55	53	55	46	55	0	0	0	0
	point92	92	365	55	53	55	46	55	0	0	0	0
	point91	91	365	55	53	55	46	55	0	0	0	0
	point90	90	365	55	53	55	46	55	0	0	0	0
	point89	89	365	55	53	55	46	55	0	0	0	0
	point88	88	365	55	53	55	46	55	0	0	0	0
	point87	87	365	55	53	55	46	55	0	0	0	0
	point86	86										
SR 21 Northbound 1-SR 21 Northbound 1-2	point331	331	365	55	53	55	46	55	0	0	0	0
	point84	84	365	55	53	55	46	55	0	0	0	0
	point83	83	365	55	53	55	46	55	0	0	0	0
	point82	82	365	55	53	55	46	55	0	0	0	0
	point81	81	365	55	53	55	46	55	0	0	0	0
	point80	80	365	55	53	55	46	55	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA- SR 21-11.38**

	point79	79	365	55	53	55	46	55	0	0	0	0
	point78	78	365	55	53	55	46	55	0	0	0	0
	point77	77	365	55	53	55	46	55	0	0	0	0
	point76	76										
SR 21 Southbound 1-2	point135	135	305	55	19	55	78	55	0	0	0	0
	point136	136	305	55	19	55	78	55	0	0	0	0
	point137	137	305	55	19	55	78	55	0	0	0	0
	point138	138	305	55	19	55	78	55	0	0	0	0
	point139	139	305	55	19	55	78	55	0	0	0	0
	point140	140	305	55	19	55	78	55	0	0	0	0
	point141	141	305	55	19	55	78	55	0	0	0	0
	point142	142	305	55	19	55	78	55	0	0	0	0
	point143	143	305	55	19	55	78	55	0	0	0	0
	point144	144	305	55	19	55	78	55	0	0	0	0
	point145	145	305	55	19	55	78	55	0	0	0	0
	point348	348	305	55	19	55	78	55	0	0	0	0
	point146	146	305	55	19	55	78	55	0	0	0	0
	point147	147	305	55	19	55	78	55	0	0	0	0
	point148	148	305	55	19	55	78	55	0	0	0	0
	point149	149	305	55	19	55	78	55	0	0	0	0
	point150	150	305	55	19	55	78	55	0	0	0	0
	point151	151	305	55	19	55	78	55	0	0	0	0
	point152	152	305	55	19	55	78	55	0	0	0	0
	point153	153	305	55	19	55	78	55	0	0	0	0
	point154	154	305	55	19	55	78	55	0	0	0	0
	point155	155	305	55	19	55	78	55	0	0	0	0
	point156	156	305	55	19	55	78	55	0	0	0	0
	point157	157	305	55	19	55	78	55	0	0	0	0
	point158	158	305	55	19	55	78	55	0	0	0	0
	point159	159	305	55	19	55	78	55	0	0	0	0
	point160	160	305	55	19	55	78	55	0	0	0	0
	point161	161	305	55	19	55	78	55	0	0	0	0
	point162	162	305	55	19	55	78	55	0	0	0	0
	point163	163	305	55	19	55	78	55	0	0	0	0
	point164	164	305	55	19	55	78	55	0	0	0	0
	point165	165	305	55	19	55	78	55	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

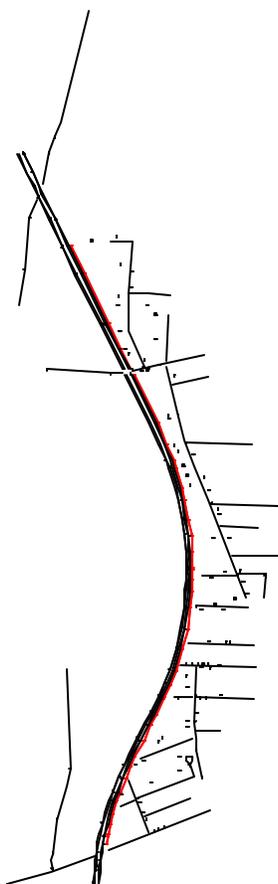
**STA- SR 21-11.38**

	point166	166	305	55	19	55	78	55	0	0	0	0
	point167	167	305	55	19	55	78	55	0	0	0	0
	point168	168	305	55	19	55	78	55	0	0	0	0
		0										
SR 21 Southbound 2-2	point180	180	305	55	19	55	78	55	0	0	0	0
	point181	181	305	55	19	55	78	55	0	0	0	0
	point182	182	305	55	19	55	78	55	0	0	0	0
	point183	183	305	55	19	55	78	55	0	0	0	0
	point184	184	305	55	19	55	78	55	0	0	0	0
	point185	185	305	55	19	55	78	55	0	0	0	0
	point186	186	305	55	19	55	78	55	0	0	0	0
	point187	187	305	55	19	55	78	55	0	0	0	0
	point188	188	305	55	19	55	78	55	0	0	0	0
	point189	189	305	55	19	55	78	55	0	0	0	0
	point190	190	305	55	19	55	78	55	0	0	0	0
	point349	349	305	55	19	55	78	55	0	0	0	0
	point191	191	305	55	19	55	78	55	0	0	0	0
	point192	192	305	55	19	55	78	55	0	0	0	0
	point193	193	305	55	19	55	78	55	0	0	0	0
	point194	194	305	55	19	55	78	55	0	0	0	0
	point195	195	305	55	19	55	78	55	0	0	0	0
	point196	196	305	55	19	55	78	55	0	0	0	0
	point197	197	305	55	19	55	78	55	0	0	0	0
	point198	198	305	55	19	55	78	55	0	0	0	0
	point199	199	305	55	19	55	78	55	0	0	0	0
	point200	200	305	55	19	55	78	55	0	0	0	0
	point201	201	305	55	19	55	78	55	0	0	0	0
	point202	202	305	55	19	55	78	55	0	0	0	0
	point203	203	305	55	19	55	78	55	0	0	0	0
	point204	204	305	55	19	55	78	55	0	0	0	0
	point205	205	305	55	19	55	78	55	0	0	0	0
	point206	206	305	55	19	55	78	55	0	0	0	0
	point207	207	305	55	19	55	78	55	0	0	0	0
	point208	208	305	55	19	55	78	55	0	0	0	0
	point209	209	305	55	19	55	78	55	0	0	0	0
	point210	210	305	55	19	55	78	55	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA- SR 21-11.38**

	point211	211	305	55	19	55	78	55	0	0	0	0
	point212	212	305	55	19	55	78	55	0	0	0	0
	point213	213	305	55	19	55	78	55	0	0	0	0
	point214	214										
Roadway77	point336	336	365	55	53	55	46	55	0	0	0	0
	point337	337	365	55	53	55	46	55	0	0	0	0
	point338	338	365	55	53	55	46	55	0	0	0	0
	point339	339	365	55	53	55	46	55	0	0	0	0
	point340	340	365	55	53	55	46	55	0	0	0	0
	point341	341	365	55	53	55	46	55	0	0	0	0
	point342	342	365	55	53	55	46	55	0	0	0	0
	point343	343	365	55	53	55	46	55	0	0	0	0
	point344	344	365	55	53	55	46	55	0	0	0	0
	point345	345										



Barrier Model Run		Sheet 1 of 1	15 Oct 2021
Plan View		Lawhon & Associates	
Run name: Barrier Model 922		Project/Contract No. STA-SR 21-11.38	
Scale: 		TNM Version 2.5, Feb 2004	
Analysis By: CA			
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	

3000 2234000 2235000 2236000 2237000 2238000 2239000 2240000 2241000 2242000 2243000 2244000 2245000



INPUT: ROADWAYS

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		point42	42	2,238,206.5	416,978.4	940.00				Average
		point41	41	2,238,201.8	417,125.1	938.00				Average
		point40	40	2,238,189.5	417,279.1	936.00				Average
		point39	39	2,238,168.0	417,416.2	935.00				Average
		point38	38	2,238,134.2	417,596.5	936.00				Average
		point37	37	2,238,105.5	417,707.2	938.00				Average
		point31	31	2,238,052.5	417,882.7	942.00				Average
		point30	30	2,238,033.2	417,945.2	944.00				Average
		point29	29	2,237,973.2	418,094.4	945.00				Average
		point28	28	2,237,889.0	418,289.2	946.00				Average
		point27	27	2,237,674.8	418,729.4	945.00				
SR 21 Southbound 1	12.0	point123	123	2,236,670.5	420,694.1	990.00				Average
		point125	125	2,236,757.5	420,521.3	984.00				Average
		point126	126	2,236,813.2	420,406.5	937.00				Average
		point127	127	2,236,860.2	420,309.6	959.00				Average
		point128	128	2,236,956.2	420,114.9	935.00				Average
		point129	129	2,237,078.0	419,862.2	960.00				Average
		point131	131	2,237,197.8	419,615.8	949.00				Average
		point132	132	2,237,420.5	419,166.3	944.00				Average
		point133	133	2,237,533.5	418,944.7	945.00				Average
		point134	134	2,237,618.2	418,765.4	945.00				
SR 21 Southbound 2	12.0	point170	170	2,236,658.5	420,694.1	990.00				Average
		point171	171	2,236,745.5	420,521.3	984.00				Average
		point172	172	2,236,801.2	420,406.5	937.00				Average
		point173	173	2,236,848.2	420,309.6	959.00				Average
		point174	174	2,236,944.2	420,114.9	935.00				Average
		point175	175	2,237,066.0	419,862.2	960.00				Average
		point176	176	2,237,185.8	419,615.8	949.00				Average
		point177	177	2,237,408.5	419,166.3	944.00				Average
		point178	178	2,237,521.5	418,944.7	945.00				Average
		point179	179	2,237,606.2	418,765.4	945.00				
Towpath Ave NW/ Kracker ST NW	12.0	point215	215	2,237,491.5	419,919.1	935.00				Average
		point216	216	2,237,693.8	419,912.7	939.00				Average
		point217	217	2,237,658.5	419,450.6	944.00				Average
		point218	218	2,237,658.5	419,100.8	947.00				Average
		point219	219	2,237,796.5	418,783.1	949.00				
Nish AVE NW	12.0	point220	220	2,238,027.5	419,437.8	958.00				Average
		point221	221	2,237,841.2	419,453.8	956.00				Average
		point222	222	2,237,664.8	419,450.6	943.00				

**INPUT: ROADWAYS**

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1st ST NE	12.0	point227	227	2,238,017.8	419,251.6	960.00				Average	
		point228	228	2,237,995.5	418,844.1	956.00					
1st St NE	12.0	point229	229	2,237,995.5	418,795.9	953.00				Average	
		point230	230	2,238,101.2	418,349.9	940.00				Average	
		point231	231	2,238,155.8	418,128.4	942.00				Average	
		point232	232	2,238,245.8	417,891.0	944.00				Average	
		point233	233	2,238,377.2	417,585.5	950.00				Average	
		point234	234	2,238,711.0	416,715.8	954.00					
McCadden Ave NE	12.0	point235	235	2,238,377.2	418,689.4	954.00				Average	
		point236	236	2,238,046.8	418,631.6	948.00					
Willow AVE NW	12.0	point237	237	2,238,768.8	418,082.9	979.00				Average	
		point238	238	2,238,178.2	418,102.1	944.00					
Ohlman Ct NE	12.0	point239	239	2,239,025.5	417,537.3	973.00				Average	
		point240	240	2,238,399.8	417,563.0	941.00					
Elm Ct NE	12.0	point242	242	2,238,820.2	417,338.4	959.00				Average	
		point243	243	2,238,483.2	417,354.4	940.00					
Commonwealth Ave NE	12.0	point244	244	2,239,009.5	417,084.8	958.00				Average	
		point245	245	2,238,614.8	417,091.3	943.00				Average	
		point246	246	2,238,585.8	417,084.8	941.00					
Ruth NE	12.0	point247	247	2,238,875.0	416,721.3	958.00				Average	
		point248	248	2,238,885.0	416,908.0	955.00				Average	
		point249	249	2,238,883.0	416,923.6	954.00				Average	
		point250	250	2,238,876.0	416,930.5	953.00				Average	
		point251	251	2,238,866.2	416,934.4	953.00				Average	
		point252	252	2,238,850.8	416,936.3	951.00				Average	
		point253	253	2,238,688.5	416,935.3	946.00				Average	
		point254	254	2,238,671.0	416,932.4	946.00				Average	
		point255	255	2,238,641.5	416,923.6	944.00					
Iveywood Apartments	12.0	point256	256	2,238,327.0	416,917.8	941.00				Average	
		point257	257	2,238,594.8	416,911.9	945.00				Average	
		point258	258	2,238,626.0	416,919.7	945.00					
David Ave	12.0	point259	259	2,238,739.0	416,626.4	957.00				Average	
		point260	260	2,238,260.2	416,637.2	955.00					
Ohio Ave NW	12.0	point261	261	2,238,787.8	416,297.1	949.00				Average	
		point262	262	2,238,195.8	416,311.8	944.00					
State AVE	12.0	point263	263	2,238,803.5	416,088.8	946.00				Average	
		point264	264	2,238,127.2	416,106.4	946.00					
BURTON AVE 2	12.0	point272	272	2,238,791.2	415,813.3	947.00				Average	
		point273	273	2,238,270.2	415,833.1	944.00					

**INPUT: ROADWAYS**

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Willard AVE NE	12.0	point274	274	2,238,478.0	415,519.9	951.00				Average
		point275	275	2,238,270.2	415,526.5	949.00				
BURTON AVE 1	12.0	point277	277	2,238,072.5	415,829.8	941.00				Average
		point278	278	2,238,230.8	415,826.5	944.00				
Goose Ave NW	12.0	point279	279	2,237,769.2	415,269.4	930.00				Average
		point280	280	2,238,237.2	415,447.4	946.00				
Cherry RD NW 2	12.0	point281	281	2,238,395.5	414,801.2	944.00				Average
		point282	282	2,237,485.2	414,449.2	932.00				
1st st NW	12.0	point283	283	2,237,663.8	415,071.6	934.00				Average
		point284	284	2,237,845.0	414,606.7	934.00				
Fan CT	12.0	point285	285	2,238,217.5	414,923.2	934.00				Average
		point286	286	2,237,795.5	414,755.1	935.00				
Warwick Ave NW 2	12.0	point287	287	2,238,253.8	415,104.5	939.00				Average
		point288	288	2,237,736.2	414,913.3	935.00				
Warwick AVE NW 1	12.0	point290	290	2,237,587.8	414,850.7	935.00				Average
		point291	291	2,237,713.2	414,903.4	935.00				
Vine ST NW	12.0	point292	292	2,238,244.0	415,117.7	940.00				Average
		point293	293	2,238,217.5	415,210.0	939.00				Average
		point294	294	2,238,227.5	415,252.9	938.00				Average
		point295	295	2,238,224.2	415,282.6	937.00				Average
		point296	296	2,238,207.8	415,292.4	937.00				Average
		point297	297	2,238,194.5	415,292.4	937.00				Average
		point298	298	2,238,178.0	415,285.8	937.00				Average
		point299	299	2,238,178.0	415,259.5	937.00				Average
		point300	300	2,238,194.5	415,233.1	937.00				Average
		point301	301	2,238,204.2	415,226.5	938.00				
CHERRY RD NW 1	12.0	point302	302	2,237,348.0	414,395.8	0.00				Average
		point303	303	2,236,962.2	414,247.4	0.00				Average
		point304	304	2,236,570.0	414,135.3	0.00				
3rd st nw	12.0	point308	308	2,237,114.0	416,063.9	0.00				Average
		point309	309	2,237,133.8	415,180.4	0.00				Average
		point310	310	2,237,107.5	415,018.8	0.00				Average
		point311	311	2,237,018.5	414,718.8	0.00				Average
		point312	312	2,236,982.2	414,418.8	0.00				Average
		point313	313	2,236,965.8	414,356.2	0.00				Average
		point314	314	2,236,972.2	414,277.1	0.00				
Riverside Ave NW 2	12.0	point315	315	2,236,678.8	419,337.7	0.00				Average
		point316	316	2,236,721.8	419,670.7	0.00				Average
		point317	317	2,236,744.8	419,878.4	0.00				Average

INPUT: ROADWAYS

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		point318	318	2,236,774.5	420,125.6	0.00				Average
		point319	319	2,236,833.8	420,283.9	0.00				
Riverside Ave nw 1	12.0	point320	320	2,236,883.2	420,438.8	0.00				Average
		point321	321	2,236,949.2	420,709.2	0.00				Average
		point322	322	2,237,005.2	420,850.9	0.00				Average
		point323	323	2,237,048.0	420,982.8	0.00				Average
		point324	324	2,237,302.0	421,984.9	0.00				
Lake Ave NW 2	12.0	point223	223	2,238,329.2	418,889.0	956.00				Average
		point329	329	2,237,934.5	418,808.8	953.00				Average
		point224	224	2,237,689.5	418,758.8	945.00				
Lake Ave NW 1	12.0	point330	330	2,237,605.0	418,736.6	944.00				Average
		point225	225	2,237,498.0	418,725.3	936.00				Average
		point226	226	2,236,920.2	418,760.6	936.00				
ERIE ST	12.0	point266	266	2,238,270.2	416,090.2	945.00				Average
		point267	267	2,238,257.0	415,599.0	947.00				Average
		point268	268	2,238,260.5	415,444.1	946.00				Average
		point269	269	2,238,263.8	415,361.7	946.00				Average
		point270	270	2,238,263.8	415,351.8	945.00				Average
		point271	271	2,238,326.2	415,097.9	944.00				
SR 21 Northbound 1-SR 21 Northbound 1-2	12.0	point120	120	2,237,399.2	414,153.5	938.00				Average
		point119	119	2,237,406.2	414,257.4	938.00				Average
		point118	118	2,237,410.5	414,305.6	938.00				Average
		point117	117	2,237,415.8	414,359.6	938.00				Average
		point115	115	2,237,425.0	414,430.9	938.00				Average
		point121	121	2,237,436.2	414,509.9	938.00				Average
		point114	114	2,237,451.5	414,586.8	937.00				Average
		point113	113	2,237,474.8	414,682.6	936.00				Average
		point112	112	2,237,500.5	414,777.7	935.00				Average
		point111	111	2,237,535.2	414,890.2	939.00				Average
		point110	110	2,237,561.8	414,967.1	940.00				Average
		point109	109	2,237,612.2	415,097.0	940.00				Average
		point108	108	2,237,655.5	415,205.3	939.00				Average
		point107	107	2,237,696.5	415,289.4	938.00				Average
		point106	106	2,237,773.5	415,436.2	936.00				Average
		point105	105	2,237,843.2	415,575.7	937.00				Average
		point104	104	2,237,893.8	415,669.5	938.00				Average
		point103	103	2,237,966.0	415,819.0	938.00				Average
		point102	102	2,238,016.5	415,932.1	939.00				Average
		point101	101	2,238,062.0	416,062.0	942.00				Average

INPUT: ROADWAYS

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		point100	100	2,238,124.8	416,252.0	942.00				Average	
		point99	99	2,238,168.0	416,434.8	942.00				Average	
		point98	98	2,238,196.8	416,627.2	943.00				Average	
		point97	97	2,238,211.2	416,776.3	945.00				Average	
		point346	346	2,238,215.0	416,877.4	941.00				Average	
		point96	96	2,238,218.5	416,978.4	940.00				Average	
		point95	95	2,238,213.8	417,125.1	938.00				Average	
		point94	94	2,238,201.5	417,279.1	936.00				Average	
		point93	93	2,238,180.0	417,416.2	935.00				Average	
		point92	92	2,238,146.2	417,596.5	936.00				Average	
		point91	91	2,238,117.5	417,707.2	938.00				Average	
		point90	90	2,238,064.5	417,882.7	942.00				Average	
		point89	89	2,238,045.2	417,945.3	944.00				Average	
		point88	88	2,237,985.2	418,094.4	945.00				Average	
		point87	87	2,237,901.0	418,289.2	946.00				Average	
		point86	86	2,237,694.5	418,717.5	945.00					
SR 21 Northbound 1-SR 21 Northbound 1-2-2	12.0	point331	331	2,237,670.5	418,760.8	945.00				Average	
		point84	84	2,237,576.2	418,953.1	945.00				Average	
		point83	83	2,237,465.5	419,174.3	944.00				Average	
		point82	82	2,237,249.0	419,625.5	949.00				Average	
		point81	81	2,237,126.5	419,878.1	960.00				Average	
		point80	80	2,237,008.5	420,118.6	935.00				Average	
		point79	79	2,236,895.5	420,344.7	959.00				Average	
		point78	78	2,236,861.8	420,419.3	937.00				Average	
		point77	77	2,236,806.5	420,534.7	984.00				Average	
		point76	76	2,236,720.0	420,707.9	990.00					
SR 21 Southbound 1-2	12.0	point135	135	2,237,639.2	418,721.4	945.00				Average	
		point136	136	2,237,848.0	418,286.0	946.00				Average	
		point137	137	2,237,938.8	418,094.2	945.00				Average	
		point138	138	2,238,002.8	417,946.4	944.00				Average	
		point139	139	2,238,027.8	417,884.5	942.00				Average	
		point140	140	2,238,085.8	417,708.7	938.00				Average	
		point141	141	2,238,113.5	417,598.9	936.00				Average	
		point142	142	2,238,149.5	417,418.1	935.00				Average	
		point143	143	2,238,167.5	417,281.3	936.00				Average	
		point144	144	2,238,183.5	417,127.5	938.00				Average	
		point145	145	2,238,186.5	416,980.7	940.00				Average	
		point348	348	2,238,183.0	416,880.8	941.00				Average	
		point146	146	2,238,179.5	416,780.9	945.00				Average	

INPUT: ROADWAYS

STA-SR 21-11.38

		point147	147	2,238,166.5	416,635.1	943.00				Average	
		point148	148	2,238,138.5	416,447.8	942.00				Average	
		point149	149	2,238,094.8	416,258.1	942.00				Average	
		point150	150	2,238,037.8	416,074.6	942.00				Average	
		point151	151	2,237,989.8	415,948.8	939.00				Average	
		point152	152	2,237,939.8	415,831.9	938.00				Average	
		point153	153	2,237,868.0	415,686.3	938.00				Average	
		point154	154	2,237,819.0	415,592.4	937.00				Average	
		point155	155	2,237,746.0	415,455.6	936.00				Average	
		point156	156	2,237,669.2	415,304.8	938.00				Average	
		point157	157	2,237,627.2	415,220.9	939.00				Average	
		point158	158	2,237,576.8	415,108.8	940.00				Average	
		point159	159	2,237,522.0	414,974.0	940.00				Average	
		point160	160	2,237,493.0	414,894.1	939.00				Average	
		point161	161	2,237,456.0	414,785.2	935.00				Average	
		point162	162	2,237,431.0	414,689.4	936.00				Average	
		point163	163	2,237,408.0	414,592.5	937.00				Average	
		point164	164	2,237,394.0	414,517.6	938.00				Average	
		point165	165	2,237,382.0	414,428.7	938.00				Average	
		point166	166	2,237,375.0	414,364.8	938.00				Average	
		point167	167	2,237,370.0	414,314.1	938.00				Average	
		point168	168	2,237,364.0	414,260.2	938.00				Average	
			0	2,237,358.2	414,155.3	938.00					
SR 21 Southbound 2-2	12.0	point180	180	2,237,627.2	418,721.4	945.00				Average	
		point181	181	2,237,836.0	418,286.0	946.00				Average	
		point182	182	2,237,926.8	418,094.3	945.00				Average	
		point183	183	2,237,990.8	417,946.4	944.00				Average	
		point184	184	2,238,015.8	417,884.5	942.00				Average	
		point185	185	2,238,073.8	417,708.7	938.00				Average	
		point186	186	2,238,101.5	417,598.9	936.00				Average	
		point187	187	2,238,137.5	417,418.1	935.00				Average	
		point188	188	2,238,155.5	417,281.3	936.00				Average	
		point189	189	2,238,171.5	417,127.5	938.00				Average	
		point190	190	2,238,174.5	416,980.7	940.00				Average	
		point349	349	2,238,171.0	416,880.8	941.00				Average	
		point191	191	2,238,167.5	416,780.9	945.00				Average	
		point192	192	2,238,154.5	416,635.1	943.00				Average	
		point193	193	2,238,126.5	416,447.8	942.00				Average	
		point194	194	2,238,082.8	416,258.1	942.00				Average	

INPUT: ROADWAYS

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		point195	195	2,238,025.8	416,074.6	942.00				Average
		point196	196	2,237,977.8	415,948.8	939.00				Average
		point197	197	2,237,927.8	415,831.9	938.00				Average
		point198	198	2,237,856.0	415,686.3	938.00				Average
		point199	199	2,237,807.0	415,592.4	937.00				Average
		point200	200	2,237,734.0	415,455.6	936.00				Average
		point201	201	2,237,657.2	415,304.8	938.00				Average
		point202	202	2,237,615.2	415,220.9	939.00				Average
		point203	203	2,237,564.8	415,108.8	940.00				Average
		point204	204	2,237,510.0	414,974.0	940.00				Average
		point205	205	2,237,481.0	414,894.1	939.00				Average
		point206	206	2,237,444.0	414,785.3	935.00				Average
		point207	207	2,237,419.0	414,689.4	936.00				Average
		point208	208	2,237,396.0	414,592.5	937.00				Average
		point209	209	2,237,382.0	414,517.6	938.00				Average
		point210	210	2,237,370.0	414,428.7	938.00				Average
		point211	211	2,237,363.0	414,364.8	938.00				Average
		point212	212	2,237,358.0	414,314.1	938.00				Average
		point213	213	2,237,352.0	414,260.2	938.00				Average
		point214	214	2,237,346.2	414,155.3	938.00				
Roadway77	12.0	point336	336	2,237,658.5	418,760.8	945.00				Average
		point337	337	2,237,564.2	418,953.1	945.00				Average
		point338	338	2,237,453.5	419,174.3	944.00				Average
		point339	339	2,237,237.0	419,625.5	949.00				Average
		point340	340	2,237,114.5	419,878.1	960.00				Average
		point341	341	2,236,996.5	420,118.6	935.00				Average
		point342	342	2,236,883.5	420,344.7	959.00				Average
		point343	343	2,236,849.8	420,419.3	937.00				Average
		point344	344	2,236,794.5	420,534.7	984.00				Average
		point345	345	2,236,708.0	420,707.9	990.00				

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA-SR 21-11.38**

Lawhon & Associates			15 October 2021									
CA			TNM 2.5									
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:			STA-SR 21-11.38									
RUN:			Barrier Model Run									
<b>Roadway</b>	<b>Points</b>											
<b>Name</b>	<b>Name</b>	<b>No.</b>	<b>Segment</b>		<b>MTrucks</b>		<b>HTrucks</b>		<b>Buses</b>		<b>Motorcycles</b>	
			<b>Autos</b>		<b>V</b>	<b>S</b>	<b>V</b>	<b>S</b>	<b>V</b>	<b>S</b>	<b>V</b>	<b>S</b>
			<b>V</b>	<b>S</b>	<b>veh/hr</b>	<b>mph</b>	<b>veh/hr</b>	<b>mph</b>	<b>veh/hr</b>	<b>mph</b>	<b>veh/hr</b>	<b>mph</b>
SR 21 Northbound 2	point72	72	348	50	25	50	25	50	0	0	0	0
	point71	71	348	50	25	50	25	50	0	0	0	0
	point70	70	348	50	25	50	25	50	0	0	0	0
	point69	69	348	50	25	50	25	50	0	0	0	0
	point68	68	348	50	25	50	25	50	0	0	0	0
	point122	122	348	50	25	50	25	50	0	0	0	0
	point67	67	348	50	25	50	25	50	0	0	0	0
	point66	66	348	50	25	50	25	50	0	0	0	0
	point65	65	348	50	25	50	25	50	0	0	0	0
	point64	64	348	50	25	50	25	50	0	0	0	0
	point57	57	348	50	25	50	25	50	0	0	0	0
	point56	56	348	50	25	50	25	50	0	0	0	0
	point55	55	348	50	25	50	25	50	0	0	0	0
	point54	54	348	50	25	50	25	50	0	0	0	0
	point53	53	348	50	25	50	25	50	0	0	0	0
	point52	52	348	50	25	50	25	50	0	0	0	0
	point51	51	348	50	25	50	25	50	0	0	0	0
	point49	49	348	50	25	50	25	50	0	0	0	0
	point48	48	348	50	25	50	25	50	0	0	0	0
	point47	47	348	50	25	50	25	50	0	0	0	0
	point46	46	348	50	25	50	25	50	0	0	0	0
	point45	45	348	50	25	50	25	50	0	0	0	0
	point44	44	348	50	25	50	25	50	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA-SR 21-11.38**

	point43	43	348	50	25	50	25	50	0	0	0	0
	point347	347	348	50	25	50	25	50	0	0	0	0
	point42	42	348	50	25	50	25	50	0	0	0	0
	point41	41	348	50	25	50	25	50	0	0	0	0
	point40	40	348	50	25	50	25	50	0	0	0	0
	point39	39	348	50	25	50	25	50	0	0	0	0
	point38	38	348	50	25	50	25	50	0	0	0	0
	point37	37	348	50	25	50	25	50	0	0	0	0
	point31	31	348	50	25	50	25	50	0	0	0	0
	point30	30	348	50	25	50	25	50	0	0	0	0
	point29	29	348	50	25	50	25	50	0	0	0	0
	point28	28	348	50	25	50	25	50	0	0	0	0
	point27	27										
SR 21 Southbound 1	point123	123	430	50	31	50	30	50	0	0	0	0
	point125	125	430	50	31	50	30	50	0	0	0	0
	point126	126	430	50	31	50	30	50	0	0	0	0
	point127	127	430	50	31	50	30	50	0	0	0	0
	point128	128	430	50	31	50	30	50	0	0	0	0
	point129	129	430	50	31	50	30	50	0	0	0	0
	point131	131	430	50	31	50	30	50	0	0	0	0
	point132	132	430	50	31	50	30	50	0	0	0	0
	point133	133	430	50	31	50	30	50	0	0	0	0
	point134	134										
SR 21 Southbound 2	point170	170	430	50	31	50	30	50	0	0	0	0
	point171	171	430	50	31	50	30	50	0	0	0	0
	point172	172	430	50	31	50	30	50	0	0	0	0
	point173	173	430	50	31	50	30	50	0	0	0	0
	point174	174	430	50	31	50	30	50	0	0	0	0
	point175	175	430	50	31	50	30	50	0	0	0	0
	point176	176	430	50	31	50	30	50	0	0	0	0
	point177	177	430	50	31	50	30	50	0	0	0	0
	point178	178	430	50	31	50	30	50	0	0	0	0
	point179	179										
Towpath Ave NW/ Kracker ST NW	point215	215	0	0	0	0	0	0	0	0	0	0
	point216	216	0	0	0	0	0	0	0	0	0	0
	point217	217	0	0	0	0	0	0	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA-SR 21-11.38**

	point218	218	0	0	0	0	0	0	0	0	0	0
	point219	219										
Nish AVE NW	point220	220	0	0	0	0	0	0	0	0	0	0
	point221	221	0	0	0	0	0	0	0	0	0	0
	point222	222										
1st ST NE	point227	227	0	0	0	0	0	0	0	0	0	0
	point228	228										
1st St NE	point229	229	0	0	0	0	0	0	0	0	0	0
	point230	230	0	0	0	0	0	0	0	0	0	0
	point231	231	0	0	0	0	0	0	0	0	0	0
	point232	232	0	0	0	0	0	0	0	0	0	0
	point233	233	0	0	0	0	0	0	0	0	0	0
	point234	234										
McCadden Ave NE	point235	235	0	0	0	0	0	0	0	0	0	0
	point236	236										
Willow AVE NW	point237	237	0	0	0	0	0	0	0	0	0	0
	point238	238										
Ohlman Ct NE	point239	239	0	0	0	0	0	0	0	0	0	0
	point240	240										
Elm Ct NE	point242	242	0	0	0	0	0	0	0	0	0	0
	point243	243										
Commonwealth Ave NE	point244	244	0	0	0	0	0	0	0	0	0	0
	point245	245	0	0	0	0	0	0	0	0	0	0
	point246	246										
Ruth NE	point247	247	0	0	0	0	0	0	0	0	0	0
	point248	248	0	0	0	0	0	0	0	0	0	0
	point249	249	0	0	0	0	0	0	0	0	0	0
	point250	250	0	0	0	0	0	0	0	0	0	0
	point251	251	0	0	0	0	0	0	0	0	0	0
	point252	252	0	0	0	0	0	0	0	0	0	0
	point253	253	0	0	0	0	0	0	0	0	0	0
	point254	254	0	0	0	0	0	0	0	0	0	0
	point255	255										
Iveywood Apartments	point256	256	0	0	0	0	0	0	0	0	0	0
	point257	257	0	0	0	0	0	0	0	0	0	0
	point258	258										

**INPUT: TRAFFIC FOR LAeq1h Volumes**

**STA-SR 21-11.38**

David Ave	point259	259	0	0	0	0	0	0	0	0	0	0
	point260	260										
Ohio Ave NW	point261	261	0	0	0	0	0	0	0	0	0	0
	point262	262										
State AVE	point263	263	0	0	0	0	0	0	0	0	0	0
	point264	264										
BURTON AVE 2	point272	272	0	0	0	0	0	0	0	0	0	0
	point273	273										
Willard AVE NE	point274	274	0	0	0	0	0	0	0	0	0	0
	point275	275										
BURTON AVE 1	point277	277	0	0	0	0	0	0	0	0	0	0
	point278	278										
Goose Ave NW	point279	279	0	0	0	0	0	0	0	0	0	0
	point280	280										
Cherry RD NW 2	point281	281	0	0	0	0	0	0	0	0	0	0
	point282	282										
1st st NW	point283	283	0	0	0	0	0	0	0	0	0	0
	point284	284										
Fan CT	point285	285	0	0	0	0	0	0	0	0	0	0
	point286	286										
Warwick Ave NW 2	point287	287	0	0	0	0	0	0	0	0	0	0
	point288	288										
Warwick AVE NW 1	point290	290	0	0	0	0	0	0	0	0	0	0
	point291	291										
Vine ST NW	point292	292	0	0	0	0	0	0	0	0	0	0
	point293	293	0	0	0	0	0	0	0	0	0	0
	point294	294	0	0	0	0	0	0	0	0	0	0
	point295	295	0	0	0	0	0	0	0	0	0	0
	point296	296	0	0	0	0	0	0	0	0	0	0
	point297	297	0	0	0	0	0	0	0	0	0	0
	point298	298	0	0	0	0	0	0	0	0	0	0
	point299	299	0	0	0	0	0	0	0	0	0	0
	point300	300	0	0	0	0	0	0	0	0	0	0
	point301	301										
CHERRY RD NW 1	point302	302	0	0	0	0	0	0	0	0	0	0
	point303	303	0	0	0	0	0	0	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

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	point304	304										
3rd st nw	point308	308	0	0	0	0	0	0	0	0	0	0
	point309	309	0	0	0	0	0	0	0	0	0	0
	point310	310	0	0	0	0	0	0	0	0	0	0
	point311	311	0	0	0	0	0	0	0	0	0	0
	point312	312	0	0	0	0	0	0	0	0	0	0
	point313	313	0	0	0	0	0	0	0	0	0	0
	point314	314										
Riverside Ave NW 2	point315	315	0	0	0	0	0	0	0	0	0	0
	point316	316	0	0	0	0	0	0	0	0	0	0
	point317	317	0	0	0	0	0	0	0	0	0	0
	point318	318	0	0	0	0	0	0	0	0	0	0
	point319	319										
Riverside Ave nw 1	point320	320	0	0	0	0	0	0	0	0	0	0
	point321	321	0	0	0	0	0	0	0	0	0	0
	point322	322	0	0	0	0	0	0	0	0	0	0
	point323	323	0	0	0	0	0	0	0	0	0	0
	point324	324										
Lake Ave NW 2	point223	223	0	0	0	0	0	0	0	0	0	0
	point329	329	0	0	0	0	0	0	0	0	0	0
	point224	224										
Lake Ave NW 1	point330	330	0	0	0	0	0	0	0	0	0	0
	point225	225	0	0	0	0	0	0	0	0	0	0
	point226	226										
ERIE ST	point266	266	0	0	0	0	0	0	0	0	0	0
	point267	267	0	0	0	0	0	0	0	0	0	0
	point268	268	0	0	0	0	0	0	0	0	0	0
	point269	269	0	0	0	0	0	0	0	0	0	0
	point270	270	0	0	0	0	0	0	0	0	0	0
	point271	271										
SR 21 Northbound 1-SR 21 Northbound 1-2	point120	120	348	50	25	50	25	50	0	0	0	0
	point119	119	348	50	25	50	25	50	0	0	0	0
	point118	118	348	50	25	50	25	50	0	0	0	0
	point117	117	348	50	25	50	25	50	0	0	0	0
	point115	115	348	50	25	50	25	50	0	0	0	0
	point121	121	348	50	25	50	25	50	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

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	point114	114	348	50	25	50	25	50	0	0	0	0
	point113	113	348	50	25	50	25	50	0	0	0	0
	point112	112	348	50	25	50	25	50	0	0	0	0
	point111	111	348	50	25	50	25	50	0	0	0	0
	point110	110	348	50	25	50	25	50	0	0	0	0
	point109	109	348	50	25	50	25	50	0	0	0	0
	point108	108	348	50	25	50	25	50	0	0	0	0
	point107	107	348	50	25	50	25	50	0	0	0	0
	point106	106	348	50	25	50	25	50	0	0	0	0
	point105	105	348	50	25	50	25	50	0	0	0	0
	point104	104	348	50	25	50	25	50	0	0	0	0
	point103	103	348	50	25	50	25	50	0	0	0	0
	point102	102	348	50	25	50	25	50	0	0	0	0
	point101	101	348	50	25	50	25	50	0	0	0	0
	point100	100	348	50	25	50	25	50	0	0	0	0
	point99	99	348	50	25	50	25	50	0	0	0	0
	point98	98	348	50	25	50	25	50	0	0	0	0
	point97	97	348	50	25	50	25	50	0	0	0	0
	point346	346	348	50	25	50	25	50	0	0	0	0
	point96	96	348	50	25	50	25	50	0	0	0	0
	point95	95	348	50	25	50	25	50	0	0	0	0
	point94	94	348	50	25	50	25	50	0	0	0	0
	point93	93	348	50	25	50	25	50	0	0	0	0
	point92	92	348	50	25	50	25	50	0	0	0	0
	point91	91	348	50	25	50	25	50	0	0	0	0
	point90	90	348	50	25	50	25	50	0	0	0	0
	point89	89	348	50	25	50	25	50	0	0	0	0
	point88	88	348	50	25	50	25	50	0	0	0	0
	point87	87	348	50	25	50	25	50	0	0	0	0
	point86	86										
SR 21 Northbound 1-SR 21 Northbound 1-2	point331	331	348	50	25	50	25	50	0	0	0	0
	point84	84	348	50	25	50	25	50	0	0	0	0
	point83	83	348	50	25	50	25	50	0	0	0	0
	point82	82	348	50	25	50	25	50	0	0	0	0
	point81	81	348	50	25	50	25	50	0	0	0	0
	point80	80	348	50	25	50	25	50	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

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	point79	79	348	50	25	50	25	50	0	0	0	0
	point78	78	348	50	25	50	25	50	0	0	0	0
	point77	77	348	50	25	50	25	50	0	0	0	0
	point76	76										
SR 21 Southbound 1-2	point135	135	430	50	31	50	30	50	0	0	0	0
	point136	136	430	50	31	50	30	50	0	0	0	0
	point137	137	430	50	31	50	30	50	0	0	0	0
	point138	138	430	50	31	50	30	50	0	0	0	0
	point139	139	430	50	31	50	30	50	0	0	0	0
	point140	140	430	50	31	50	30	50	0	0	0	0
	point141	141	430	50	31	50	30	50	0	0	0	0
	point142	142	430	50	31	50	30	50	0	0	0	0
	point143	143	430	50	31	50	30	50	0	0	0	0
	point144	144	430	50	31	50	30	50	0	0	0	0
	point145	145	430	50	31	50	30	50	0	0	0	0
	point348	348	430	50	31	50	30	50	0	0	0	0
	point146	146	430	50	31	50	30	50	0	0	0	0
	point147	147	430	50	31	50	30	50	0	0	0	0
	point148	148	430	50	31	50	30	50	0	0	0	0
	point149	149	430	50	31	50	30	50	0	0	0	0
	point150	150	430	50	31	50	30	50	0	0	0	0
	point151	151	430	50	31	50	30	50	0	0	0	0
	point152	152	430	50	31	50	30	50	0	0	0	0
	point153	153	430	50	31	50	30	50	0	0	0	0
	point154	154	430	50	31	50	30	50	0	0	0	0
	point155	155	430	50	31	50	30	50	0	0	0	0
	point156	156	430	50	31	50	30	50	0	0	0	0
	point157	157	430	50	31	50	30	50	0	0	0	0
	point158	158	430	50	31	50	30	50	0	0	0	0
	point159	159	430	50	31	50	30	50	0	0	0	0
	point160	160	430	50	31	50	30	50	0	0	0	0
	point161	161	430	50	31	50	30	50	0	0	0	0
	point162	162	430	50	31	50	30	50	0	0	0	0
	point163	163	430	50	31	50	30	50	0	0	0	0
	point164	164	430	50	31	50	30	50	0	0	0	0
	point165	165	430	50	31	50	30	50	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

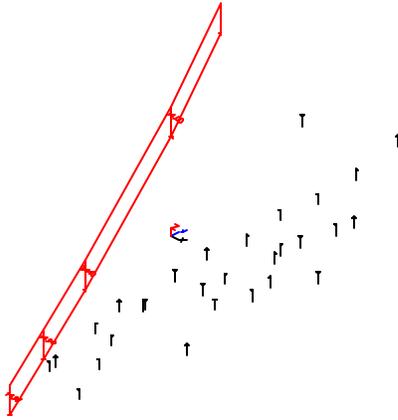
**STA-SR 21-11.38**

	point166	166	430	50	31	50	30	50	0	0	0	0
	point167	167	430	50	31	50	30	50	0	0	0	0
	point168	168	430	50	31	50	30	50	0	0	0	0
		0										
SR 21 Southbound 2-2	point180	180	430	50	31	50	30	50	0	0	0	0
	point181	181	430	50	31	50	30	50	0	0	0	0
	point182	182	430	50	31	50	30	50	0	0	0	0
	point183	183	430	50	31	50	30	50	0	0	0	0
	point184	184	430	50	31	50	30	50	0	0	0	0
	point185	185	430	50	31	50	30	50	0	0	0	0
	point186	186	430	50	31	50	30	50	0	0	0	0
	point187	187	430	50	31	50	30	50	0	0	0	0
	point188	188	430	50	31	50	30	50	0	0	0	0
	point189	189	430	50	31	50	30	50	0	0	0	0
	point190	190	430	50	31	50	30	50	0	0	0	0
	point349	349	430	50	31	50	30	50	0	0	0	0
	point191	191	430	50	31	50	30	50	0	0	0	0
	point192	192	430	50	31	50	30	50	0	0	0	0
	point193	193	430	50	31	50	30	50	0	0	0	0
	point194	194	430	50	31	50	30	50	0	0	0	0
	point195	195	430	50	31	50	30	50	0	0	0	0
	point196	196	430	50	31	50	30	50	0	0	0	0
	point197	197	430	50	31	50	30	50	0	0	0	0
	point198	198	430	50	31	50	30	50	0	0	0	0
	point199	199	430	50	31	50	30	50	0	0	0	0
	point200	200	430	50	31	50	30	50	0	0	0	0
	point201	201	430	50	31	50	30	50	0	0	0	0
	point202	202	430	50	31	50	30	50	0	0	0	0
	point203	203	430	50	31	50	30	50	0	0	0	0
	point204	204	430	50	31	50	30	50	0	0	0	0
	point205	205	430	50	31	50	30	50	0	0	0	0
	point206	206	430	50	31	50	30	0	0	0	0	0
	point207	207	430	50	31	50	30	50	0	0	0	0
	point208	208	430	50	31	50	30	50	0	0	0	0
	point209	209	430	50	31	50	30	50	0	0	0	0
	point210	210	430	50	31	50	30	50	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**

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	point211	211	430	50	31	50	30	50	0	0	0	0
	point212	212	430	50	31	50	30	50	0	0	0	0
	point213	213	430	50	31	50	30	50	0	0	0	0
	point214	214										
Roadway77	point336	336	0	0	0	0	0	0	0	0	0	0
	point337	337	0	0	0	0	0	0	0	0	0	0
	point338	338	0	0	0	0	0	0	0	0	0	0
	point339	339	0	0	0	0	0	0	0	0	0	0
	point340	340	0	0	0	0	0	0	0	0	0	0
	point341	341	0	0	0	0	0	0	0	0	0	0
	point342	342	0	0	0	0	0	0	0	0	0	0
	point343	343	0	0	0	0	0	0	0	0	0	0
	point344	344	0	0	0	0	0	0	0	0	0	0
	point345	345										



Barrier Model Run		Sheet 1 of 1	18 Oct 2021
Barrier View-NSA 1 EOS		Lawhon & Associates	
Run name: Barrier Model 922		Project/Contract No. STA-SR 21-11.38	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
		Analysis By: CA	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	—————>	Contour Zone:	polygon
Building Row:	— — — —	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	— — —>

**RESULTS: SOUND LEVELS**

**STA-SR 21-11.38**

Lawhon & Associates									18 October 2021				
CA									TNM 2.5				
									Calculated with TNM 2.5				
<b>RESULTS: SOUND LEVELS</b>													
<b>PROJECT/CONTRACT:</b>		<b>STA-SR 21-11.38</b>											
<b>RUN:</b>		<b>Barrier Model Run</b>											
<b>BARRIER DESIGN:</b>		<b>NSA 1 EOS</b>											
<b>ATMOSPHERICS:</b>		<b>68 deg F, 50% RH</b>											
		<b>Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.</b>											

Receiver												
Name	No.	#DUs	Existing	No Barrier	With Barrier							
			LAeq1h	LAeq1h	Increase over existing	Type	Calculated	Noise Reduction	Calculated	Goal	Calculated	
				Calculated	Crit'n	Calculated	Crit'n	Impact	LAeq1h	Calculated	Goal	Calculated
							Sub'l Inc					minus
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	Goal
1st ST NE MASSILLON OH 44646	5	1	54.9	54.9	66	0.0	10	----	52.2	2.7	8	-5.3
1519 1ST ST NW MASSILLON OH 44646	6	1	58.5	58.0	66	-0.5	10	----	55.6	2.4	8	-5.6
1475 KRACKER ST NW MASSILLON OH	7	1	55.1	55.2	66	0.1	10	----	51.9	3.3	8	-4.7
1453 KRACKER ST NW MASSILLON OH	8	1	56.1	56.1	66	0.0	10	----	51.9	4.2	8	-3.8
1445 KRACKER ST NW MASSILLON OH	9	1	57.5	57.5	66	0.0	10	----	52.4	5.1	8	-2.9
1433 KRACKER ST NW MASSILLON OH	10	1	57.7	57.7	66	0.0	10	----	52.6	5.1	8	-2.9
1454 KRACKER ST NW MASSILLON OH	11	1	54.6	54.6	66	0.0	10	----	50.1	4.5	8	-3.5
1450 KRACKER ST NW MASSILLON OH	12	1	54.7	54.7	66	0.0	10	----	50.5	4.2	8	-3.8
1440 KRACKER ST NW MASSILLON OH	13	1	56.0	55.8	66	-0.2	10	----	51.7	4.1	8	-3.9
1436 KRACKER ST NW MASSILLON OH	14	1	56.4	56.3	66	-0.1	10	----	52.2	4.1	8	-3.9
1363 KRACKER ST NW MASSILLON OH	15	1	59.1	59.0	66	-0.1	10	----	53.5	5.5	8	-2.5
1361 KRACKER ST NW MASSILLON OH	16	1	61.0	61.0	66	0.0	10	----	53.9	7.1	8	-0.9
1349 KRACKER ST NW MASSILLON OH	17	1	62.3	62.3	66	0.0	10	----	54.4	7.9	8	-0.1
1343 KRACKER ST NW MASSILLON OH	18	1	64.5	64.5	66	0.0	10	----	55.0	9.5	8	1.5
1337 KRACKER ST NW MASSILLON OH	19	1	65.8	65.8	66	0.0	10	----	55.6	10.2	8	2.2
1321 KRACKER ST NW MASSILLON OH	20	1	68.6	68.7	66	0.1	10	Snd Lvl	58.7	10.0	8	2.0
1317 KRACKER ST NW MASSILLON OH	21	1	68.2	68.9	66	0.7	10	Snd Lvl	61.1	7.8	8	-0.2
1358 KRACKER ST NW MASSILLON OH	22	1	57.6	57.6	66	0.0	10	----	53.3	4.3	8	-3.7
1356 KRACKER ST NW MASSILLON OH	23	1	58.2	58.2	66	0.0	10	----	53.6	4.6	8	-3.4
1328 KRACKER ST NW MASSILLON OH	24	1	62.3	62.4	66	0.1	10	----	58.7	3.7	8	-4.3
1326 KRACKER ST NW MASSILLON OH	25	1	62.6	62.8	66	0.2	10	----	57.8	5.0	8	-3.0
1316 KRACKER ST NW MASSILLON OH	26	1	62.7	62.8	66	0.1	10	----	59.5	3.3	8	-4.7
14 LAKE AVE NE MASSILLON OH	27	1	63.0	63.2	66	0.2	10	----	61.4	1.8	8	-6.2
1425 1ST NE MASSILLON OH	28	1	55.2	55.2	66	0.0	10	----	53.1	2.1	8	-5.9

**RESULTS: SOUND LEVELS**

**STA-SR 21-11.38**

1423 1ST NE MASSILLON OH	29	1	57.4	57.5	66	0.1	10	----	55.2	2.3	8	-5.7
1411 1ST NE MASSILLON OH	30	1	57.1	57.1	66	0.0	10	----	55.6	1.5	8	-6.5
1407 1ST NE MASSILLON OH	31	1	57.4	57.4	66	0.0	10	----	56.0	1.4	8	-6.6
1329 1ST ST NE MASSILLON OH	32	1	58.5	58.6	66	0.1	10	----	57.0	1.6	8	-6.4
1323 1ST ST NE MASSILLON OH	33	1	58.3	58.4	66	0.1	10	----	57.1	1.3	8	-6.7
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							
All Selected		29	1.3	4.5	10.2							
All Impacted		2	7.8	8.9	10.0							
All that meet NR Goal		3	9.5	9.9	10.2							

**RESULTS: BARRIER DESCRIPTIONS**

**STA-SR 21-11.38**

Lawhon & Associates				18 October 2021					
CA				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>STA-SR 21-11.38</b>								
<b>RUN:</b>	<b>Barrier Model Run</b>								
<b>BARRIER DESIGN:</b>	<b>NSA 1 EOS</b>								

<b>Barriers</b>										
<b>Name</b>	<b>Type</b>	<b>Heights along Barrier</b>			<b>Length</b>	<b>If Wall</b>	<b>If Berm</b>	<b>Top</b>	<b>Run:Rise</b>	<b>Cost</b>
		<b>Min</b>	<b>Avg</b>	<b>Max</b>						
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier1	W	14.00	14.00	14.00	1228	17194				429841
									<b>Total Cost:</b>	429841

**RESULTS: BARRIER DESIGN**

**STA-SR 21-11.38**

Lawhon & Associates													18 October 2021
CA													TNM 2.5
													Calculated with TNM 2.5

**RESULTS: BARRIER DESIGN**

<b>PROJECT/CONTRACT:</b>	<b>STA-SR 21-11.38</b>												
<b>RUN:</b>	<b>Barrier Model Run</b>												
<b>BARRIER DESIGN:</b>	<b>NSA 1 EOS</b>												

<b>ATMOSPHERICS:</b>	<b>68 deg F, 50% RH</b>												
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**Selected Receivers**

Name	No.	Noise Reduction				Barrier Reviewed	Important Segments			Partial LAeq1h
		Calc LAeq1h	Calc	Goal	Calc-Goal		Name	No.	Height	
		dBA	dB	dB	dB					
1st ST NE MASSILLION OH 4464	5	52.2	2.7	8	-5.3	Barrier1	point96	96	14.0	42.2
						Barrier1	point97	97	14.0	42.1
						Barrier2	point90	90	0.0	40.4
						Barrier1	point95	95	14.0	36.1
						Barrier2	point89	89	0.0	34.8
						Barrier1	point94	94	14.0	31.8
1519 1ST ST NW MASSILLON O	6	55.6	2.4	8	-5.6	Barrier2	point88	88	0.0	29.4
						Barrier1	point97	97	14.0	45.6
						Barrier1	point96	96	14.0	42.5
						Barrier2	point90	90	0.0	38.7
						Barrier1	point95	95	14.0	35.0
1475 KRACKER ST NW MASSILL	7	51.9	3.3	8	-4.7	Barrier1	point94	94	14.0	32.5
						Barrier1	point96	96	14.0	43.8
						Barrier1	point97	97	14.0	42.8
						Barrier2	point90	90	0.0	40.9
						Barrier1	point95	95	14.0	37.2
						Barrier2	point89	89	0.0	36.8
1453 KRACKER ST NW MASSILL	8	51.9	4.2	8	-3.8	Barrier1	point94	94	14.0	32.9
						Barrier2	point88	88	0.0	31.8
						Barrier1	point96	96	14.0	45.6
						Barrier1	point97	97	14.0	43.1

**RESULTS: BARRIER DESIGN**

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						Barrier2	point90	90	0.0	41.5
						Barrier1	point95	95	14.0	38.7
						Barrier2	point89	89	0.0	36.3
						Barrier1	point94	94	14.0	34.1
						Barrier2	point88	88	0.0	28.8
1445 KRACKER ST NW MASSILL	9	52.4	5.1	8	-2.9	Barrier1	point96	96	14.0	47.3
						Barrier2	point90	90	0.0	43.8
						Barrier1	point97	97	14.0	43.3
						Barrier1	point95	95	14.0	40.3
						Barrier2	point89	89	0.0	37.7
						Barrier1	point94	94	14.0	35.2
						Barrier2	point88	88	0.0	19.5
1433 KRACKER ST NW MASSILL	10	52.6	5.1	8	-2.9	Barrier1	point96	96	14.0	48.5
						Barrier2	point90	90	0.0	44.6
						Barrier1	point97	97	14.0	42.5
						Barrier1	point95	95	14.0	42.2
						Barrier2	point89	89	0.0	37.5
						Barrier1	point94	94	14.0	36.8
1454 KRACKER ST NW MASSILL	11	50.1	4.5	8	-3.5	Barrier1	point96	96	14.0	43.8
						Barrier1	point97	97	14.0	40.7
						Barrier2	point90	90	0.0	39.6
						Barrier1	point95	95	14.0	38.5
						Barrier2	point89	89	0.0	34.4
						Barrier1	point94	94	14.0	34.0
						Barrier2	point88	88	0.0	31.0
						Barrier2	point87	87	0.0	19.7
1450 KRACKER ST NW MASSILL	12	50.5	4.2	8	-3.8	Barrier1	point96	96	14.0	44.3
						Barrier2	point90	90	0.0	41.2
						Barrier1	point97	97	14.0	40.9
						Barrier1	point95	95	14.0	39.2
						Barrier2	point89	89	0.0	35.9
						Barrier1	point94	94	14.0	34.5
						Barrier2	point88	88	0.0	31.7
						Barrier2	point87	87	0.0	17.6
1440 KRACKER ST NW MASSILL	13	51.7	4.1	8	-3.9	Barrier1	point96	96	14.0	46.4
						Barrier2	point90	90	0.0	42.7

**RESULTS: BARRIER DESIGN**

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						Barrier1	point97	97	14.0	41.6
						Barrier1	point95	95	14.0	41.0
						Barrier2	point89	89	0.0	39.1
						Barrier1	point94	94	14.0	35.9
						Barrier2	point88	88	0.0	34.6
1436 KRACKER ST NW MASSILL	14	52.2	4.1	8	-3.9	Barrier1	point96	96	14.0	47.2
						Barrier2	point90	90	0.0	43.6
						Barrier1	point95	95	14.0	42.3
						Barrier1	point97	97	14.0	41.8
						Barrier2	point89	89	0.0	39.4
						Barrier1	point94	94	14.0	36.8
						Barrier2	point88	88	0.0	34.8
1363 KRACKER ST NW MASSILL	15	53.5	5.5	8	-2.5	Barrier1	point96	96	14.0	50.1
						Barrier2	point90	90	0.0	45.0
						Barrier1	point95	95	14.0	44.3
						Barrier1	point97	97	14.0	41.9
						Barrier1	point94	94	14.0	38.2
						Barrier2	point89	89	0.0	34.8
1361 KRACKER ST NW MASSILL	16	53.9	7.1	8	-0.9	Barrier1	point96	96	14.0	50.6
						Barrier1	point95	95	14.0	45.8
						Barrier2	point90	90	0.0	45.5
						Barrier1	point97	97	14.0	40.4
						Barrier1	point94	94	14.0	39.3
						Barrier2	point89	89	0.0	29.1
1349 KRACKER ST NW MASSILL	17	54.4	7.9	8	-0.1	Barrier1	point96	96	14.0	50.0
						Barrier1	point95	95	14.0	48.6
						Barrier2	point90	90	0.0	46.1
						Barrier1	point94	94	14.0	41.1
						Barrier1	point97	97	14.0	38.0
						Barrier2	point89	89	0.0	25.4
1343 KRACKER ST NW MASSILL	18	55.0	9.5	8	1.5	Barrier1	point96	96	14.0	50.7
						Barrier1	point95	95	14.0	50.5
						Barrier2	point90	90	0.0	44.4
						Barrier1	point94	94	14.0	42.3
						Barrier1	point97	97	14.0	37.1
1337 KRACKER ST NW MASSILL	19	55.6	10.2	8	2.2	Barrier1	point95	95	14.0	52.8

**RESULTS: BARRIER DESIGN**

**STA-SR 21-11.38**

						Barrier1	point96	96	14.0	47.8
						Barrier2	point90	90	0.0	45.5
						Barrier1	point94	94	14.0	44.2
						Barrier1	point97	97	14.0	36.2
1321 KRACKER ST NW MASSILL	20	58.7	10.0	8	2.0	Barrier1	point94	94	14.0	54.4
						Barrier1	point95	95	14.0	51.9
						Barrier2	point90	90	0.0	50.5
						Barrier1	point96	96	14.0	43.8
						Barrier1	point97	97	14.0	29.2
1317 KRACKER ST NW MASSILL	21	61.1	7.8	8	-0.2	Barrier1	point94	94	14.0	56.9
						Barrier2	point90	90	0.0	54.8
						Barrier1	point95	95	14.0	50.2
						Barrier1	point96	96	14.0	44.4
						Barrier1	point97	97	14.0	29.2
1358 KRACKER ST NW MASSILL	22	53.3	4.3	8	-3.7	Barrier1	point96	96	14.0	48.4
						Barrier1	point95	95	14.0	45.3
						Barrier2	point90	90	0.0	44.8
						Barrier2	point89	89	0.0	42.7
						Barrier1	point97	97	14.0	41.9
						Barrier1	point94	94	14.0	39.6
						Barrier2	point88	88	0.0	36.5
1356 KRACKER ST NW MASSILL	23	53.6	4.6	8	-3.4	Barrier1	point96	96	14.0	48.7
						Barrier1	point95	95	14.0	46.2
						Barrier2	point90	90	0.0	45.6
						Barrier2	point89	89	0.0	42.9
						Barrier1	point97	97	14.0	41.3
						Barrier1	point94	94	14.0	40.2
						Barrier2	point88	88	0.0	33.1
1328 KRACKER ST NW MASSILL	24	58.7	3.7	8	-4.3	Barrier1	point95	95	14.0	54.3
						Barrier2	point90	90	0.0	51.6
						Barrier1	point96	96	14.0	51.6
						Barrier1	point94	94	14.0	49.2
						Barrier2	point89	89	0.0	42.6
						Barrier1	point97	97	14.0	41.0
1326 KRACKER ST NW MASSILL	25	57.8	5.0	8	-3.0	Barrier2	point90	90	0.0	52.7
						Barrier1	point95	95	14.0	51.8

**RESULTS: BARRIER DESIGN**

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						Barrier1	point94	94	14.0	49.5
						Barrier1	point96	96	14.0	48.1
						Barrier2	point89	89	0.0	42.0
						Barrier1	point97	97	14.0	37.5
1316 KRACKER ST NW MASSILLON OH	26	59.5	3.3	8	-4.7	Barrier2	point90	90	0.0	55.3
						Barrier1	point94	94	14.0	52.6
						Barrier1	point95	95	14.0	50.1
						Barrier1	point96	96	14.0	47.6
						Barrier2	point89	89	0.0	45.3
						Barrier1	point97	97	14.0	36.7
14 LAKE AVE NE MASSILLON OH	27	61.4	1.8	8	-6.2	Barrier2	point90	90	0.0	58.9
						Barrier1	point94	94	14.0	52.2
						Barrier2	point89	89	0.0	47.6
						Barrier1	point95	95	14.0	47.6
						Barrier1	point96	96	14.0	45.8
						Barrier2	point88	88	0.0	38.0
						Barrier1	point97	97	14.0	35.7
1425 1ST NE MASSILLON OH	28	53.1	2.1	8	-5.9	Barrier1	point96	96	14.0	47.8
						Barrier1	point95	95	14.0	45.2
						Barrier2	point90	90	0.0	44.0
						Barrier1	point97	97	14.0	42.2
						Barrier1	point94	94	14.0	40.7
						Barrier2	point89	89	0.0	37.3
						Barrier2	point88	88	0.0	36.7
						Barrier2	point86	86	0.0	34.7
						Barrier2	point87	87	0.0	34.7
1423 1ST NE MASSILLON OH	29	55.2	2.3	8	-5.7	Barrier1	point96	96	14.0	49.8
						Barrier1	point95	95	14.0	48.2
						Barrier2	point90	90	0.0	46.2
						Barrier1	point97	97	14.0	43.6
						Barrier1	point94	94	14.0	43.4
						Barrier2	point88	88	0.0	40.7
						Barrier2	point89	89	0.0	40.1
						Barrier2	point86	86	0.0	34.8
						Barrier2	point87	87	0.0	33.7
1411 1ST NE MASSILLON OH	30	55.6	1.5	8	-6.5	Barrier1	point96	96	14.0	49.1

**RESULTS: BARRIER DESIGN**

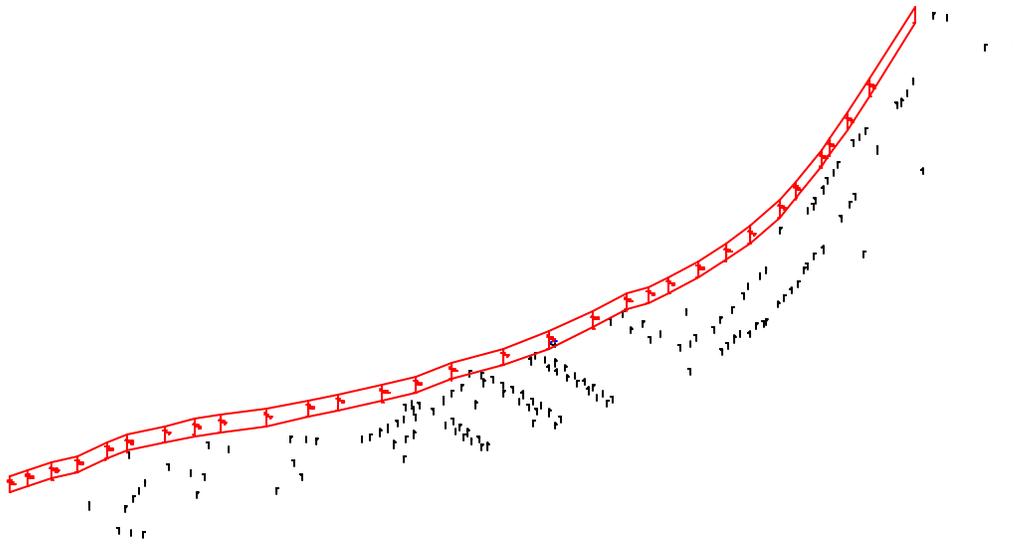
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						Barrier1	point95	95	14.0	48.2
						Barrier2	point90	90	0.0	47.8
						Barrier1	point94	94	14.0	45.2
						Barrier1	point97	97	14.0	42.6
						Barrier2	point88	88	0.0	41.4
						Barrier2	point89	89	0.0	41.2
						Barrier2	point86	86	0.0	40.8
						Barrier2	point87	87	0.0	39.4
1407 1ST NE MASSILLON OH	31	56.0	1.4	8	-6.6	Barrier2	point90	90	0.0	49.1
						Barrier1	point96	96	14.0	48.9
						Barrier1	point95	95	14.0	48.6
						Barrier1	point94	94	14.0	46.1
						Barrier1	point97	97	14.0	42.5
						Barrier2	point88	88	0.0	42.3
						Barrier2	point89	89	0.0	42.2
						Barrier2	point86	86	0.0	41.8
						Barrier2	point87	87	0.0	40.0
1329 1ST ST NE MASSILLON OH	32	57.0	1.6	8	-6.4	Barrier2	point90	90	0.0	50.6
						Barrier1	point95	95	14.0	49.8
						Barrier1	point96	96	14.0	49.4
						Barrier1	point94	94	14.0	47.8
						Barrier2	point88	88	0.0	44.6
						Barrier2	point89	89	0.0	43.5
						Barrier1	point97	97	14.0	42.5
						Barrier2	point86	86	0.0	39.6
						Barrier2	point87	87	0.0	36.7
1323 1ST ST NE MASSILLON OH	33	57.1	1.3	8	-6.7	Barrier2	point90	90	0.0	52.3
						Barrier1	point95	95	14.0	48.7
						Barrier1	point96	96	14.0	48.0
						Barrier1	point94	94	14.0	48.0
						Barrier2	point88	88	0.0	44.4
						Barrier2	point89	89	0.0	43.7
						Barrier1	point97	97	14.0	40.7
						Barrier2	point86	86	0.0	40.6
						Barrier2	point87	87	0.0	37.9

**RESULTS: BARRIER DESIGN**

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Total Cost, All Barriers (including additional cost(s))	\$429841					
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Barrier Model Run		Sheet 1 of 1	15 Oct 2021
Barrier View-NSA 2 EOS		Lawhon & Associates	
Run name: Barrier Model 922		Project/Contract No. STA-SR 21-11.38	
Scale: <DNA - due to perspective>		TNM Version 2.5, Feb 2004	
		Analysis By: CA	
Roadway:	—————>	Ground Zone:	polygon
Receiver:	□	Tree Zone:	dashed polygon
Barrier:	┆—————>	Contour Zone:	polygon
Building Row:	—— ———	Parallel Barrier:	=====
Terrain Line:	—————	Skew Section:	—— —>

**RESULTS: SOUND LEVELS**

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<b>Lawhon &amp; Associates</b>		<b>15 October 2021</b>										
<b>CA</b>		<b>TNM 2.5</b>										
		<b>Calculated with TNM 2.5</b>										
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>		<b>STA-SR 21-11.38</b>										
<b>RUN:</b>		<b>Barrier Model Run</b>										
<b>BARRIER DESIGN:</b>		<b>NSA 2 EOS</b>										
<b>ATMOSPHERICS:</b>		<b>68 deg F, 50% RH</b>										
<b>Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.</b>												

<b>Receiver</b>												
<b>Name</b>	<b>No.</b>	<b>#DUs</b>	<b>Existing</b>	<b>No Barrier</b>	<b>With Barrier</b>							
			<b>LAeq1h</b>	<b>LAeq1h</b>	<b>Increase over existing</b>		<b>Type</b>	<b>Calculated</b>	<b>Noise Reduction</b>			
				<b>Calculated</b>	<b>Crit'n</b>	<b>Calculated</b>	<b>Crit'n</b>	<b>Impact</b>	<b>LAeq1h</b>	<b>Calculated</b>	<b>Goal</b>	<b>Calculated</b>
												<b>minus</b>
			<b>dB</b>	<b>dB</b>	<b>dB</b>	<b>dB</b>	<b>dB</b>		<b>dB</b>	<b>dB</b>	<b>dB</b>	<b>dB</b>
117 LAKE AVE NE MASSILLON OH	57	1	55.6	55.6	66	0.0	10	----	52.6	3.0	8	-5.0
19 LAKE AVE NE MASSILLON OH	35	1	62.8	63.0	66	0.2	10	----	59.4	3.6	8	-4.4
23 LAKE AVE NE MASSILLON OH	34	1	65.9	66.1	66	0.2	10	Snd Lvl	62.5	3.6	8	-4.4
1119 1ST ST NE MASSILLON OH	36	1	62.8	62.8	66	0.0	10	----	55.1	7.7	8	-0.3
1113 1ST ST NE MASSILLON OH	37	1	62.9	62.9	66	0.0	10	----	54.6	8.3	8	0.3
1109 1ST NE MASSILLON OH	38	1	63.5	63.5	66	0.0	10	----	54.6	8.9	8	0.9
1105 1ST ST NE MASSILLON OH	39	1	63.4	63.3	66	-0.1	10	----	54.8	8.5	8	0.5
1059 1ST ST NE MASSILLON OH	40	1	66.2	66.2	66	0.0	10	Snd Lvl	56.4	9.8	8	1.8
1053 1ST ST NE MASSILLON OH	41	1	66.9	66.9	66	0.0	10	Snd Lvl	56.7	10.2	8	2.2
1049 1ST ST NE MASSILLON OH	42	1	66.8	67.1	66	0.3	10	Snd Lvl	57.5	9.6	8	1.6
1041 1ST ST NE MASSILLON OH	43	1	66.5	66.9	66	0.4	10	Snd Lvl	57.9	9.0	8	1.0
1029 1ST ST NE MASSILLON OH	44	1	65.9	66.3	66	0.4	10	Snd Lvl	57.6	8.7	8	0.7
1025 1ST ST NE MASSILLON OH	45	1	66.1	66.4	66	0.3	10	Snd Lvl	57.7	8.7	8	0.7
1021 1ST ST NE MASSILLON OH	46	1	65.6	65.8	66	0.2	10	----	57.3	8.5	8	0.5
1017 1ST ST NE MASSILLON OH	47	1	65.7	65.8	66	0.1	10	----	56.6	9.2	8	1.2
1013 1ST ST NE MASSILLON OH	48	1	65.2	65.4	66	0.2	10	----	56.5	8.9	8	0.9
1009 1ST ST NE MASSILLON OH	49	1	65.2	65.4	66	0.2	10	----	56.8	8.6	8	0.6
953 1ST ST NE MASSILLON OH	50	1	65.9	66.2	66	0.3	10	Snd Lvl	57.5	8.7	8	0.7
929 1ST ST NE MASSILLON OH	51	1	61.1	61.3	66	0.2	10	----	54.5	6.8	8	-1.2
923 1ST ST NE MASSILLON OH	52	1	60.8	61.1	66	0.3	10	----	54.2	6.9	8	-1.1
919 1ST ST NE MASSILLON OH	53	1	61.1	61.2	66	0.1	10	----	54.1	7.1	8	-0.9
907/909/911/913/915 1ST ST NE MASSILL	54	5	60.0	60.2	66	0.2	10	----	53.3	6.9	8	-1.1
903 1ST ST NE MASSILLON OH	55	1	58.9	59.0	66	0.1	10	----	52.2	6.8	8	-1.2
893 1ST ST ME MASSILLON OH	56	1	58.2	58.2	66	0.0	10	----	51.7	6.5	8	-1.5

**RESULTS: SOUND LEVELS**

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1210 1ST ST NE MASSILLON OH	58	1	58.1	58.1	66	0.0	10	----	54.2	3.9	8	-4.1
1042 1ST ST NE MASSILLON OH	59	1	63.2	63.2	66	0.0	10	----	57.6	5.6	8	-2.4
1018 1ST ST NE MASSILLON OH	60	1	59.7	59.9	66	0.2	10	----	54.2	5.7	8	-2.3
1014 1ST ST NE MASSILLON OH	61	1	59.0	59.2	66	0.2	10	----	54.0	5.2	8	-2.8
1006 1ST ST NE MASSILLON OH	62	1	57.0	56.1	66	-0.9	10	----	51.6	4.5	8	-3.5
113/115/117/119 WILLOW AVE NE MASS	63	4	56.4	56.5	66	0.1	10	----	51.8	4.7	8	-3.3
122 OHLMAN CT NE MASSILLON OH	64	1	55.5	54.8	66	-0.7	10	----	49.6	5.2	8	-2.8
948 1ST ST NE MASSILLON OH	65	1	54.1	53.0	66	-1.1	10	----	48.5	4.5	8	-3.5
944 1ST ST NE MASSILLON OH	66	1	52.9	52.0	66	-0.9	10	----	47.0	5.0	8	-3.0
938 1ST ST NE MASSILLON OH	67	1	50.4	49.6	66	-0.8	10	----	44.9	4.7	8	-3.3
934/936 1ST ST NE MASSILLON OH	68	2	51.3	50.5	66	-0.8	10	----	46.3	4.2	8	-3.8
926 1ST ST NE MASSILLON OH	69	1	51.9	51.3	66	-0.6	10	----	47.1	4.2	8	-3.8
922 1ST ST NE MASSILLON OH	70	1	51.1	50.4	66	-0.7	10	----	47.2	3.2	8	-4.8
916/918 1ST ST NE MASSILLON OH	71	2	50.3	49.7	66	-0.6	10	----	46.0	3.7	8	-4.3
912 1ST ST NE MASSILLON OH	72	1	49.9	49.3	66	-0.6	10	----	45.0	4.3	8	-3.7
898 1ST ST NE MASSILLON OH	73	1	50.4	49.9	66	-0.5	10	----	45.9	4.0	8	-4.0
109 COMMONWEALTH AVE NE	74	1	50.7	50.2	66	-0.5	10	----	46.2	4.0	8	-4.0
894 1ST ST NE MASSILLON OH	75	1	51.1	50.6	66	-0.5	10	----	46.4	4.2	8	-3.8
888 1ST ST NE MASSILLON OH	76	1	49.7	49.0	66	-0.7	10	----	44.1	4.9	8	-3.1
883 1ST ST NE MASSILLON OH	77	10	62.0	62.2	66	0.2	10	----	54.3	7.9	8	-0.1
881 1ST ST NE MASSILLON OH	78	10	57.0	56.9	66	-0.1	10	----	51.0	5.9	8	-2.1
8 DAVID AVE NE MASSILLON OH	79	1	65.2	65.4	66	0.2	10	----	61.4	4.0	8	-4.0
18 DAVID AVE NE MASSILLON	80	1	61.2	61.4	66	0.2	10	----	58.0	3.4	8	-4.6
24 DAVID AVE NE MASSILLON	81	1	59.1	59.4	66	0.3	10	----	56.1	3.3	8	-4.7
871 1ST ST NE MASSILLON	82	1	57.3	57.2	66	-0.1	10	----	52.6	4.6	8	-3.4
865 1ST ST NE MASSILLON	83	1	56.3	56.4	66	0.1	10	----	52.5	3.9	8	-4.1
861/863 ST NE MASSILLON	84	2	56.5	56.7	66	0.2	10	----	53.3	3.4	8	-4.6
882 1ST ST NE MASSILLON OH	85	1	54.7	54.7	66	0.0	10	----	50.4	4.3	8	-3.7
878 1ST ST MASSILLON OH	86	1	54.9	54.8	66	-0.1	10	----	50.4	4.4	8	-3.6
874 1ST ST MASSILLON OH	87	1	54.8	54.6	66	-0.2	10	----	50.2	4.4	8	-3.6
870 1ST ST MASSILLON OH	88	1	54.9	54.6	66	-0.3	10	----	49.9	4.7	8	-3.3
5 DAVID AVE NE MASSILLON OH	90	1	64.9	65.3	66	0.4	10	----	60.7	4.6	8	-3.4
15 DAVID AVE NE MASSILLON OH	91	1	61.3	61.6	66	0.3	10	----	57.7	3.9	8	-4.1
25 DAVID AVE NE MASSILLON OH	92	1	58.9	59.1	66	0.2	10	----	55.5	3.6	8	-4.4
853 1ST ST NE MASSILLON OH	93	1	53.4	53.4	66	0.0	10	----	49.3	4.1	8	-3.9
6 OHIO AVE NE MASSILLON OH	94	1	67.1	67.5	66	0.4	10	Snd Lvl	58.1	9.4	8	1.4
2 OHIO AVE NE MASSILLON OH	95	1	64.1	64.2	66	0.1	10	----	56.7	7.5	8	-0.5
8 OHIO AVE NE MASSILLON OH	96	1	62.1	62.2	66	0.1	10	----	55.5	6.7	8	-1.3
12 OHIO AVE NE MASSILLON OH	97	1	60.2	60.3	66	0.1	10	----	54.0	6.3	8	-1.7
16 OHIO AVE NE MASSILLON OH	98	1	58.7	58.7	66	0.0	10	----	52.6	6.1	8	-1.9
22 OHIO AVE NE MASSILLON OH	99	1	57.2	57.3	66	0.1	10	----	51.5	5.8	8	-2.2

**RESULTS: SOUND LEVELS**

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26 OHIO AVE NE MASSILLON OH	100	1	56.0	56.0	66	0.0	10	----	50.5	5.5	8	-2.5
30 OHIO AVE NE MASSILLON OH	101	1	54.9	54.8	66	-0.1	10	----	49.7	5.1	8	-2.9
36 OHIO AVE NE MASSILLON OH	102	1	53.8	53.8	66	0.0	10	----	48.9	4.9	8	-3.1
9 OHIO AVE NE MASSILLON OH	103	6	65.7	65.9	66	0.2	10	----	57.4	8.5	8	0.5
7 OHIO AVE NE MASSILLON OH	104	1	61.6	61.8	66	0.2	10	----	54.9	6.9	8	-1.1
11 OHIO AVE NE MASSILLON OH	105	1	60.3	60.5	66	0.2	10	----	54.0	6.5	8	-1.5
17 OHIO AVE NE MASSILLON OH	106	1	58.7	58.8	66	0.1	10	----	52.6	6.2	8	-1.8
23 OHIO AVE NE MASSILLON OH	107	1	57.4	57.4	66	0.0	10	----	51.5	5.9	8	-2.1
27 OHIO AVE NE MASSILLON OH	108	1	56.1	56.1	66	0.0	10	----	50.4	5.7	8	-2.3
31 OHIO AVE NE MASSILLON OH	109	1	55.1	55.0	66	-0.1	10	----	50.0	5.0	8	-3.0
37 OHIO AVE NE MASSILLON OH	110	1	54.0	54.0	66	0.0	10	----	49.2	4.8	8	-3.2
8 STATE AVE NW MASSILLON OH	111	1	66.4	66.7	66	0.3	10	Snd Lvl	57.9	8.8	8	0.8
4 STATE AVE NW MASSILLON OH	113	1	63.7	63.8	66	0.1	10	----	56.0	7.8	8	-0.2
2 STATE AVE NW MASSILLON OH	114	1	61.8	62.0	66	0.2	10	----	54.7	7.3	8	-0.7
6 STATE AVE NW MASSILLON OH	115	1	60.3	60.4	66	0.1	10	----	53.6	6.8	8	-1.2
10 STATE AVE NW MASSILLON OH	116	1	58.9	59.1	66	0.2	10	----	52.7	6.4	8	-1.6
16 STATE AVE NW MASSILLON OH	117	1	57.6	57.7	66	0.1	10	----	51.6	6.1	8	-1.9
20 STATE AVE NW MASSILLON OH	118	1	56.5	56.5	66	0.0	10	----	50.8	5.7	8	-2.3
26 STATE AVE NW MASSILLON OH	119	1	55.5	55.5	66	0.0	10	----	50.2	5.3	8	-2.7
30 STATE AVE NW MASSILLON OH	120	1	54.4	54.4	66	0.0	10	----	49.5	4.9	8	-3.1
13 STATE AVE NE MASSILLON OH	121	1	68.7	69.1	66	0.4	10	Snd Lvl	58.8	10.3	8	2.3
753 ERIE ST N MASSILLON OH	122	1	63.8	64.0	66	0.2	10	----	55.8	8.2	8	0.2
747 ERIE ST N MASSILLON OH	123	1	64.1	64.3	66	0.2	10	----	56.2	8.1	8	0.1
745 ERIE ST N MASSILLON OH	124	1	63.4	63.6	66	0.2	10	----	55.9	7.7	8	-0.3
739 ERIE ST N MASSILLON OH	125	1	62.6	62.6	66	0.0	10	----	55.2	7.4	8	-0.6
737 ERIE ST N MASSILLON OH	126	1	60.7	60.8	66	0.1	10	----	53.9	6.9	8	-1.1
12 BURTON AVE NW MASSILLON	127	1	63.1	63.2	66	0.1	10	----	55.4	7.8	8	-0.2
16 BURTON AVE NW MASSILLON	128	1	64.5	64.7	66	0.2	10	----	56.2	8.5	8	0.5
7 BURTON AVE NW MASSILLON	129	1	60.2	60.2	66	0.0	10	----	53.1	7.1	8	-0.9
13 STATE AVE NW MASSILLON	130	1	58.2	58.3	66	0.1	10	----	51.8	6.5	8	-1.5
19 STATE AVE NW MASSILLON	131	1	57.1	57.1	66	0.0	10	----	51.2	5.9	8	-2.1
23 STATE AVE NW MASSILLON	132	1	56.1	56.2	66	0.1	10	----	50.6	5.6	8	-2.4
25 STATE AVE NW MASSILLON	133	1	54.7	54.7	66	0.0	10	----	49.7	5.0	8	-3.0
31/33 STATE AVE NW MASSILLON	134	2	53.7	53.6	66	-0.1	10	----	49.1	4.5	8	-3.5
746 ERIE ST N MASSILLON OH	135	1	59.6	59.7	66	0.1	10	----	52.8	6.9	8	-1.1
4 BURTON AVE NW MASSILLON	136	1	57.8	57.8	66	0.0	10	----	51.9	5.9	8	-2.1
8 BURTON AVE NW MASSILLON	137	1	56.7	56.5	66	-0.2	10	----	50.9	5.6	8	-2.4
12 BURTON AVE NW MASSILLON	138	1	55.8	55.6	66	-0.2	10	----	50.5	5.1	8	-2.9
18 BURTON AVE NW MASSILLON	139	1	56.2	55.3	66	-0.9	10	----	49.3	6.0	8	-2.0
22 BURTON AVE NW MASSILLON	140	1	55.5	54.4	66	-1.1	10	----	48.6	5.8	8	-2.2
17 BURTON AVE NW MASSILLON	141	1	64.1	64.2	66	0.1	10	----	55.7	8.5	8	0.5

**RESULTS: SOUND LEVELS**

**STA-SR 21-11.38**

13 BURTON AVE NW MASSILLON	142	1	62.5	62.5	66	0.0	10	----	54.8	7.7	8	-0.3
727 ERIE ST N MASSILLON	143	1	60.8	60.9	66	0.1	10	----	53.8	7.1	8	-0.9
723 ERIE ST N MASSILLON	144	1	60.5	60.6	66	0.1	10	----	54.0	6.6	8	-1.4
719 ERIE ST N MASSILLON	145	1	59.9	60.0	66	0.1	10	----	53.8	6.2	8	-1.8
713 ERIE ST N MASSILLON	146	1	59.2	59.5	66	0.3	10	----	53.7	5.8	8	-2.2
709 ERIE ST N MASSILLON	147	1	58.7	58.9	66	0.2	10	----	53.5	5.4	8	-2.6
705 ERIE ST N MASSILLON	148	1	58.1	58.4	66	0.3	10	----	53.3	5.1	8	-2.9
701 ERIE ST N MASSILLON	149	1	57.9	58.1	66	0.2	10	----	53.1	5.0	8	-3.0
20 GROOSE AVE NW	150	1	61.3	61.4	66	0.1	10	----	53.7	7.7	8	-0.3
26 GROOSE AVE NW	151	1	62.4	62.4	66	0.0	10	----	54.3	8.1	8	0.1
30 GROOSE AVE NW	152	1	63.0	63.1	66	0.1	10	----	54.7	8.4	8	0.4
5 BURTON AVE	153	1	57.3	57.2	66	-0.1	10	----	51.5	5.7	8	-2.3
9 BURTON AVE	154	1	56.0	55.9	66	-0.1	10	----	50.7	5.2	8	-2.8
15 BURTON AVE	155	1	55.2	54.9	66	-0.3	10	----	49.9	5.0	8	-3.0
19 BURTON AVE	156	1	56.3	55.2	66	-1.1	10	----	49.4	5.8	8	-2.2
23 BURTON AVE	157	1	55.2	54.3	66	-0.9	10	----	48.7	5.6	8	-2.4
716 ERIE ST	158	1	57.5	57.6	66	0.1	10	----	51.9	5.7	8	-2.3
712 ERIE ST	159	1	57.1	57.2	66	0.1	10	----	51.7	5.5	8	-2.5
710 ERIE ST	160	1	57.1	57.2	66	0.1	10	----	52.1	5.1	8	-2.9
10 WILLARD AVE NE	161	1	54.7	54.8	66	0.1	10	----	50.1	4.7	8	-3.3
27 GROOSE AVE	162	1	59.9	59.0	66	-0.9	10	----	51.3	7.7	8	-0.3
33 GROOSE AVE	163	1	65.0	65.2	66	0.2	10	----	54.9	10.3	8	2.3
656 1ST ST	164	1	66.8	66.3	66	-0.5	10	Snd Lvl	56.0	10.3	8	2.3
652 VINE ST	165	1	56.6	56.3	66	-0.3	10	----	49.7	6.6	8	-1.4
16 WARWICK AVE	166	1	55.6	55.4	66	-0.2	10	----	49.4	6.0	8	-2.0
58 WARWICK AVE	167	1	62.7	62.8	66	0.1	10	----	54.2	8.6	8	0.6
50 WARWICK AVE	168	1	61.1	61.1	66	0.0	10	----	52.9	8.2	8	0.2
44 WARWICK AVE	169	1	59.8	59.8	66	0.0	10	----	52.6	7.2	8	-0.8
110 WARWICK AVE	170	1	71.7	71.7	66	0.0	10	Snd Lvl	57.4	14.3	8	6.3
630 1ST ST	171	1	60.4	60.5	66	0.1	10	----	53.7	6.8	8	-1.2
626 1ST ST	172	1	59.5	59.5	66	0.0	10	----	53.0	6.5	8	-1.5
620 1ST ST	173	1	58.8	58.8	66	0.0	10	----	52.8	6.0	8	-2.0
43 WARWICK AVE	174	1	56.6	56.5	66	-0.1	10	----	50.7	5.8	8	-2.2
612 1ST ST	175	1	57.6	57.6	66	0.0	10	----	52.3	5.3	8	-2.7
54 CHERRY RD	176	1	55.3	55.3	66	0.0	10	----	51.0	4.3	8	-3.7
48 CHERRY RD	177	1	54.9	54.9	66	0.0	10	----	50.4	4.5	8	-3.5
42 CHERRY RD	178	1	54.5	54.5	66	0.0	10	----	49.8	4.7	8	-3.3
110/114 CHERRY RD	179	2	59.3	59.4	66	0.1	10	----	54.4	5.0	8	-3.0
<b>Dwelling Units</b>		<b># DUs</b>	<b>Noise Reduction</b>									
			<b>Min</b>	<b>Avg</b>	<b>Max</b>							
			<b>dB</b>	<b>dB</b>	<b>dB</b>							

**RESULTS: SOUND LEVELS****STA-SR 21-11.38**

All Selected		179	3.0	6.2	14.3							
All Impacted		13	3.6	9.3	14.3							
All that meet NR Goal		34	8.1	9.1	14.3							

**RESULTS: BARRIER DESCRIPTIONS**

**STA-SR 21-11.38**

Lawhon & Associates				15 October 2021					
CA				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>STA-SR 21-11.38</b>								
<b>RUN:</b>	<b>Barrier Model Run</b>								
<b>BARRIER DESIGN:</b>	<b>NSA 2 EOS</b>								

<b>Barriers</b>										
<b>Name</b>	<b>Type</b>	<b>Heights along Barrier</b>			<b>Length</b>	<b>If Wall Area</b>	<b>If Berm Volume</b>	<b>Top Width</b>	<b>Run:Rise</b>	<b>Cost</b>
		<b>Min</b>	<b>Avg</b>	<b>Max</b>						
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier2	W	14.00	14.00	14.00	4450	62294				1557343
									<b>Total Cost:</b>	1557343

**RESULTS: BARRIER DESCRIPTIONS**

**STA-SR 21-11.38**

Lawhon & Associates				18 October 2021					
CA				TNM 2.5					

**RESULTS: BARRIER DESCRIPTIONS**

<b>PROJECT/CONTRACT:</b>	<b>STA-SR 21-11.38</b>								
<b>RUN:</b>	<b>Barrier Model Run</b>								
<b>BARRIER DESIGN:</b>	<b>NSA 2 EOS</b>								

<b>Barriers</b>										
<b>Name</b>	<b>Type</b>	<b>Heights along Barrier</b>			<b>Length</b>	<b>If Wall Area</b>	<b>If Berm Volume</b>	<b>Top Width</b>	<b>Run:Rise</b>	<b>Cost</b>
		<b>Min</b>	<b>Avg</b>	<b>Max</b>						
		ft	ft	ft	ft	sq ft	cu yd	ft	ft:ft	\$
Barrier2	W	14.00	14.00	14.00	4450	62294				1557343
									Total Cost:	1557343