

# **Traffic Noise Analysis Draft Technical Report**

## **Summit Boulevard Connection from LA433 (Old Spanish Trail) to US 190B (Fremaux Avenue)**

**Slidell, Louisiana**

**RPC Project No. SL-6.12  
LDOTD Project No. H.971845.1**

**Submitted to:  
New Orleans Regional Planning Commission**

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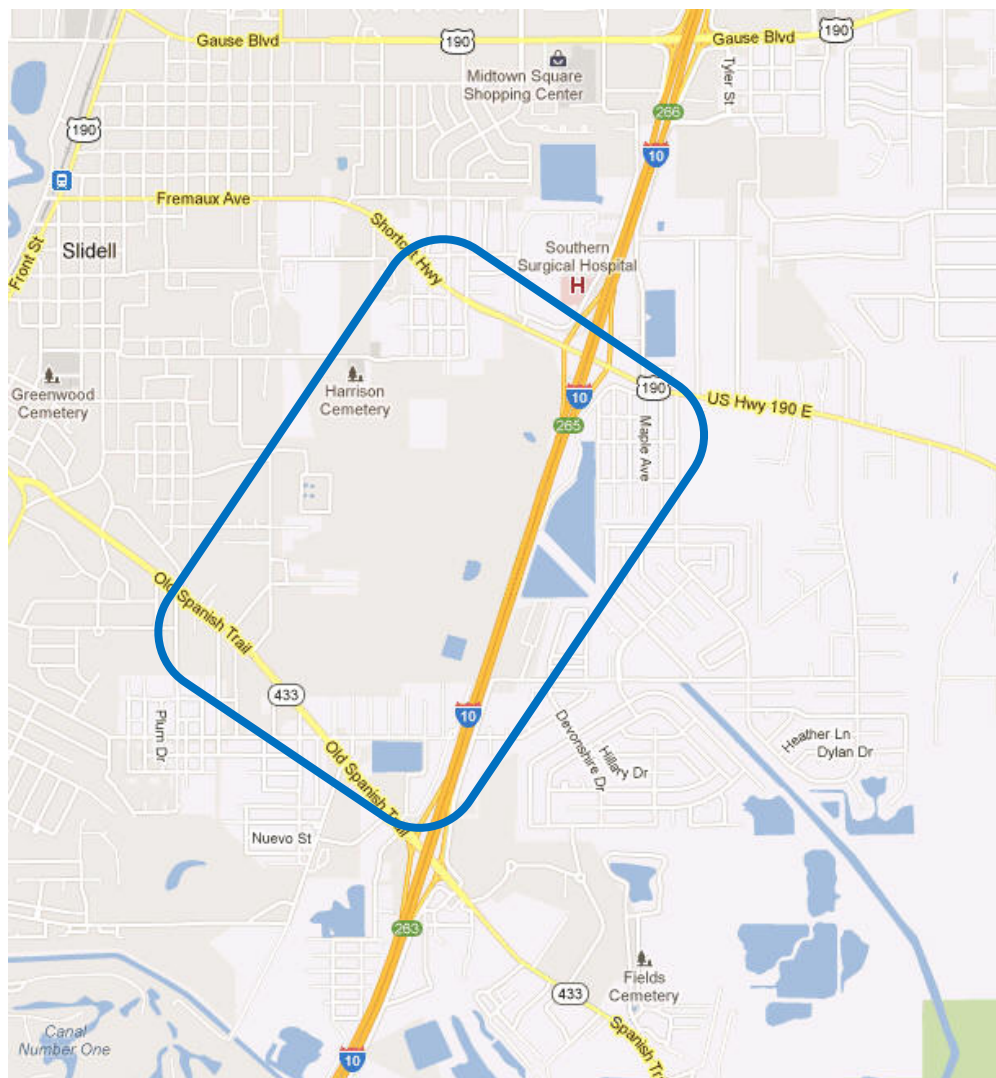
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## 1.0 INTRODUCTION

This report documents the results of a traffic noise analysis for the connection of Summit Boulevard from LA 433 (Old Spanish Trail) to US 190B (Fremaux Avenue) in the city of Slidell in St. Tammany Parish, Louisiana. Figure 1 shows the project area which is bordered by LA 433 (Old Spanish Trail) on the South, scattered residential development on the west, US 190B (Fremaux Avenue) on the north and I-10 on the east. A four lane, divided roadway will be constructed to connect the two existing ends of Summit Boulevard. Figure 2 shows the planned Summit Boulevard connection.



Base map: <http://maps.google.com>

*Figure 1. Project Area*

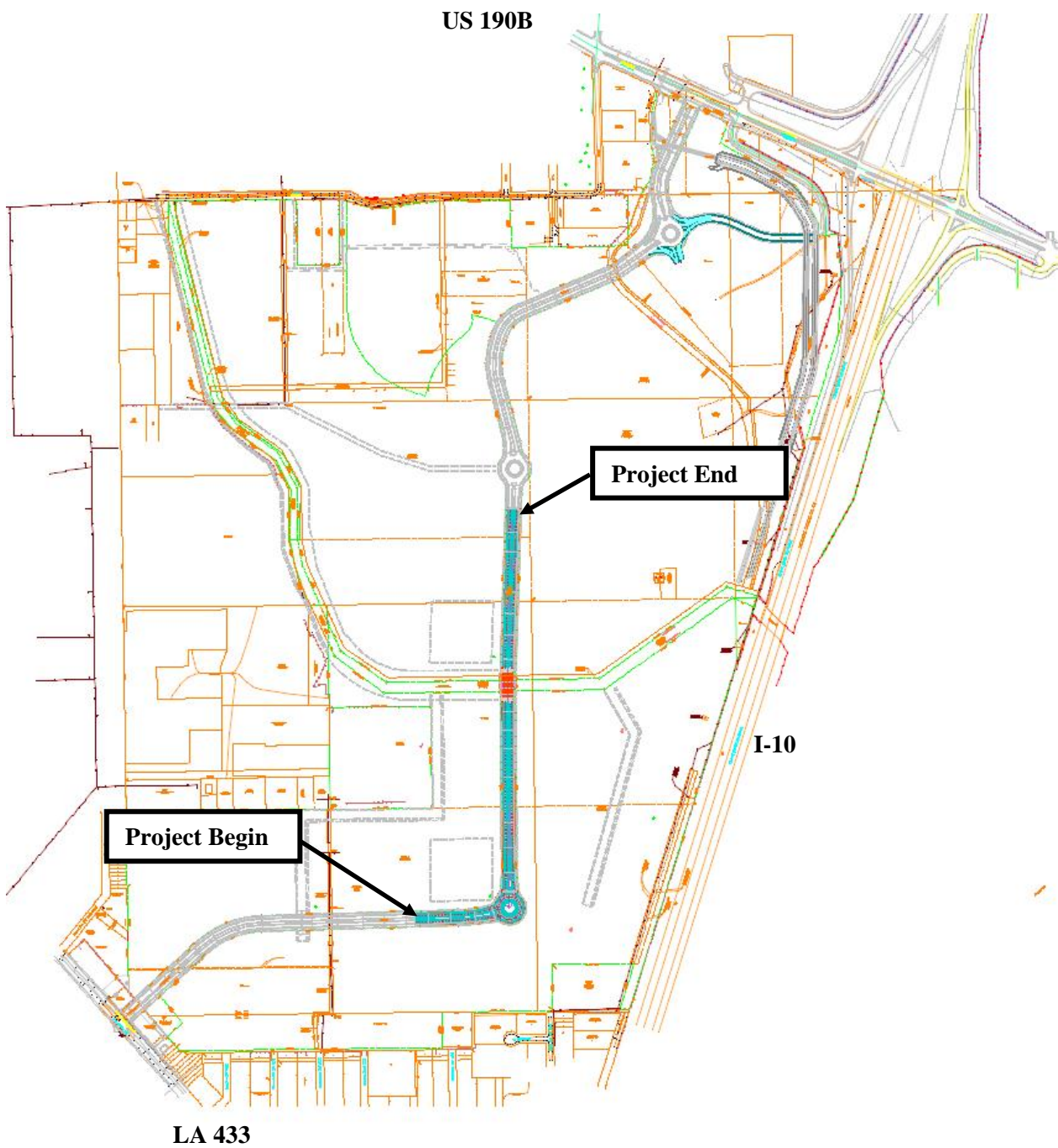


Figure 2. Summit Boulevard Plans

## 2.0 TRAFFIC NOISE ANALYSIS

This study has been prepared in accordance with the FHWA noise standards, *Procedures for Abatement of Highway Traffic and Construction Noise*, 23 CFR 772 [1], and the Louisiana Department of Transportation and Development (DOTD) *Highway Traffic Noise Policy*, revised in 2011 [2]. The noise analysis included the following tasks:

1. Identification of noise-sensitive areas and associated receptors (discrete or representative locations in an NSA for the land uses listed in 23 CFR 772) within 500 feet of the project;
2. Determination of existing sound levels at selected receptors to characterize the existing noise environment in the project area;
3. Prediction of future sound levels with and without the project at the receptors;
4. Determination of impacted receptors;
5. Evaluation of noise abatement for impacted areas;
6. Discussion of construction noise; and
7. Coordination with local officials.

Each of these analysis steps is discussed below, following a discussion of basic terminology and DOTD's criteria for determining noise impacts.

### 2.1 Traffic Noise Terminology

Traffic noise levels are expressed in terms of the hourly, A-weighted equivalent sound level in decibels (dBA). A sound level represents the level of the rapid air pressure fluctuations caused by sources such as traffic that are heard as noise. A decibel is a unit that relates the sound pressure of a noise to the faintest sound the young human ear can hear. The A-weighting refers to the amplification or attenuation of the different frequencies of the sound (subjectively, the pitch) to correspond to the way the human ear "hears" these frequencies.

Generally, when the sound level exceeds the mid-60 dBA range, outdoor conversation in normal tones at a distance of three feet becomes difficult. A 9-10 dBA increase in sound level is typically judged by the listener to be twice as loud as the original sound while a 9-10 dBA reduction is judged to be half as loud. Doubling the number of sources (i.e., vehicles) will increase the hourly equivalent sound level by approximately 3 dBA, which is usually the smallest change in hourly equivalent A-weighted traffic noise levels that people can detect without specifically listening for the change.

Because most environmental noise fluctuates from moment to moment, it is standard practice to condense data into a single level called the equivalent sound level ( $L_{eq}$ ). The  $L_{eq}$  is a steady sound level that would contain the same amount of sound energy as the actual time-varying sound evaluated over the same time period. The  $L_{eq}$  averages the louder and quieter moments, but gives much more weight to the louder moments in the averaging. For traffic noise assessment purposes,  $L_{eq}$  is typically evaluated over the worst one-hour period and is written as  $L_{eq}(h)$ .

The term insertion loss (IL) is generally used to describe the reduction in  $L_{eq}(h)$  at a location after a noise barrier is constructed. For example, if the  $L_{eq}(h)$  at a residence before a barrier is constructed is 75 dB(A) and the  $L_{eq}(h)$  after a barrier constructed is 65 dB(A), then the insertion loss would be 10 dB(A).

## 2.2 Criteria for Determining Impacts

Noise impacts are determined by comparing future “design year” project worst-hour  $L_{eq}(h)$  values at areas of frequent human use to: (1) a set of Noise Abatement Criteria (NAC) for different land use categories, and (2) existing  $L_{eq}(h)$  values. The FHWA noise standards (23 CFR 772) and DOTD’s noise policy state that when traffic noise impacts have been identified, then noise abatement should be considered.

Table 1 shows the land uses that are classified as Activity Categories A - G and the corresponding NAC.

*Table 1. Noise Abatement Criteria in 23 CFR 772*

<i>Activity Category</i>	<i>Activity <math>L_{eq}(h)</math></i>	<i>Evaluation Location</i>	<i>Activity Description</i>
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B <sup>1</sup>	67	Exterior	Residential
C <sup>1</sup>	67	Exterior	Active sport areas, amphitheatres, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E <sup>1</sup>	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	---	---	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	---	---	Undeveloped lands that are not permitted.

<sup>1</sup>Includes undeveloped lands that are permitted for this activity category.

Specifically, a receptor is impacted in either of two ways:

1. The predicted, worst hour, design year  $L_{eq}(h)$  approaches or exceeds the NAC, even if there is not a substantial increase over the existing levels. “Approach” is defined by DOTD as 1 dBA less



than the appropriate NAC. As an example, the NAC for Activity Category B and C land uses is 67 dBA. An impact would occur if the design year  $L_{eq}(h)$  is predicted to be 66 dBA or higher at a point of frequent exterior human use for a land use in either category.

2. The predicted, worst hour, design year  $L_{eq}(h)$  exceeds the existing  $L_{eq}(h)$  by 10 dBA or more, even if the NAC is not approached or exceeded.

### 2.3 Identification of Noise Sensitive Receptors

A review of available electronic mapping as well as field reconnaissance identified residences on the south side of the project in the mixed use neighborhood on the north side of LA 433 (Old Spanish Trail) north of Coast Boulevard, to the west along Rama Drive and on the north end of the project on the south side of US 190B (Fremaux Avenue). The NAC for Activity Category B will apply to these noise-sensitive land uses. Noise impacts will be identified and noise abatement will be evaluated if future sound levels are 66 dBA or higher, or if an increase of 10 dBA or more is predicted over existing sound levels.

The baseball fields at the east end of Rama Drive are land uses that fit in Activity Category C. Noise impacts will be identified if future, exterior sound levels are 66 dBA or higher, or if an increase of 10 dBA or more is predicted over existing sound levels.

Several commercial land uses were noted during the field reconnaissance, however, since none of these land uses had exterior uses they were not included as part of this study.

There are several tracts of undeveloped Activity Category G lands along the project. These undeveloped lands are not noise-sensitive and have not been included in the noise analysis. However, noise impacts could occur in the future if noise-sensitive land uses are constructed near Summit Boulevard. A discussion of future sound levels and the need for noise-compatible land use planning is provided later in this report.

Under most situations, a single building structure is considered a single receptor. Structures that contain multiple residential units are considered to have one receptor per residential unit.

### 2.4 Measurement of Existing Sound Levels

Noise measurements were conducted at several DOTD approved noise-sensitive land uses in the project area on March 27-28, 2012. Table 2 summarizes the measured equivalent sound levels at each of the measurement locations. Figures 3-5 show the measurement locations. The individual location's noise measurement results are provided in Appendix A.

Short-term noise measurements at these locations were conducted by making a series of consecutive measurements in one-minute intervals for at least 15 minutes at each site during both a peak and an off-peak traffic period. Background noises (i.e., local traffic, dog barking, sirens, etc.) during these measurements were noted, and the corresponding one-minute measurement intervals were eliminated from the calculation of the measured sound level for the overall measurement period.

As indicated in Table 2, the existing sound levels at the measurement locations were between 52 dBA and



60 dBA. The lower sound levels were recorded at the more distant measurement locations from I-10 and the sound levels in 59-60 dBA range were recorded at the locations closest to I-10.

**Table 2. Measured Existing Equivalent Sound Levels at Measurement Locations**

<i>Address/Location</i>	<i>Distance to I-10 (ft)</i>	<i>Distance to LA433 or US 190B (ft)</i>	<i>Measurement Time</i>	<i>Measured <math>L_{eq}</math>(dBA)</i>
2033 Nellie Drive	1800	750	17:16-17:36 (Peak)	53
			14:14-14:44 (Off-Peak)	51
W-14 Canal Area	1500	3000	16:45-17:05 (Peak)	59
			9:11-9:31 (Off-Peak)	55
South Roundabout	1300	2100	7:30-7:50 (Peak)	60
			15:47-16:07 (Off-Peak)	57
South Canal Area	2200	1350	7:04-7:24 (Peak)	58
			16:00-16:20 (Off-Peak)	52
56724 Selbourn Street	2100	550	17:47-18:07 (Peak)	52
			9:42-10:02 (Off-Peak)	55

## 2.5 Determination of Existing and Future One-Hour Equivalent Sound Levels

The existing noise levels for noise sensitive land uses were established with the noise measurements discussed previously. The FHWA TNM 2.5 computer program was then used to calculate worst-hour equivalent sound levels for the receptors for the future build case. These receptors included the measurement locations as well as numerous other locations.

Traffic data was provided by New Orleans Regional Planning Commission (NRPC) on the project for use in the noise modeling. Morning and afternoon design hour traffic projections, including truck percentages, were provided for both directions of Summit Boulevard and I-10 for the Build Alternative.

Each direction of travel was modeled as a separate TNM “roadway,” with the traffic divided evenly across all lanes in the same direction. The planned posted speeds of 30 mph were used for Summit Boulevard.

Receptors were modeled by TNM “receiver” points at areas of frequent human use of a property. For single-family residences, that area could be the front or back yard. For apartments and condominiums, that area could be a patio or balcony or a common use area. For the parks and ball fields receptors were

modeled at the common use areas. A TNM receiver could represent more than one receptor, such as several adjacent single-family residences or condominium balconies, or the common use area for an apartment building.

Large buildings were modeled as noise barriers to properly account for the shielding of the traffic noise that they provide to the receptor. Single-family houses were modeled as either individual noise barriers or as rows of buildings to account for the shielding that they would provide. Significant terrain features were also modeled. The default ground surface of lawn grass was used, with any large areas of paved ground specifically modeled as pavement.

Appendix B provides the input data for the TNM models including a list of the modeled receiver points.

The predicted sound levels are shown in Table 3 below and the resulting impacts are discussed in the following section. In Table 3 most receptor names are reflective of the address or name (in the case of non-residential receptors) of the land use. Receivers along the proposed roadway in undeveloped lands are named for the general locations (i.e. "South Roundabout").

Noise measurement locations are indicated in Table 3 and in Figures 3-5 by an "M" designation after the TNM receiver name.

### 2.5.1 Existing Year 2012

In accordance with DOTD policy the Existing Year sound levels for projects on new alignment are established by taking noise measurements at representative noise-sensitive land uses in the project area. The noise measurements discussed in Section 2.4 above formed the basis for estimating the Existing Year sound levels for all receptors in this analysis.

As shown in Table 3, measured and estimated worst noise hour  $L_{eq}(h)$  for the Existing Year ranged from 53 dBA up to 63 dBA at the closest residence (1937 Nellie Drive) to US 190B.

No residences are impacted in the Existing Year 2012 case.

*Table 3 Sound Levels and Impact Determinations*

Receiver Name	Number of Represented Residences	Figure #	Existing $L_{eq}(h)$ (dBA) <sup>1</sup>	Build $L_{eq}(h)$ (dBA) <sup>1</sup>	Increase Over Existing (dBA)	No Build $L_{eq}(h)$ (dBA) <sup>1</sup>
56721 Selbourn	1	5	55	56	1	55
56724 Selbourn (M)	1	5	55	55	0	54
56725 Bosworth	1	5	55	55	0	54
56722 Hudson	1	5	57	60	3	59
56704 Behrman	1	5	60	61	1	61
Ballfield South	Park	4	50	53	3	50
Ballfield North	Park	4	50	52	2	49
1937 Nellie	1	3	63	<b>66</b>	3	<b>66</b>

Table 3 Sound Levels and Impact Determinations

Receiver Name	Number of Represented Residences	Figure #	Existing $L_{eq}(h)$ (dBA) <sup>1</sup>	Build $L_{eq}(h)$ (dBA) <sup>1</sup>	Increase Over Existing (dBA)	No Build $L_{eq}(h)$ (dBA) <sup>1</sup>
1945 Nellie	1	3	61	61	0	61
1961 Nellie	1	3	58	58	0	57
2009 Nellie	1	3	54	57	3	55
2013 Nellie	1	3	54	57	3	55
2022 Nellie	1	3	53	57	4	54
2033 Nellie (M)	1	3	53	57	4	54
2032 Beth	1	3	53	56	3	53
South Roundabout (M)	Undeveloped	5	60	67	7	57
South Canal (M)	Undeveloped	5	58	69	11	52
W-14 Canal (M)	Undeveloped	4	59	66	7	54

<sup>1</sup> Noise impacted receptors are in *bold italics*

### 2.5.2 Build Year 2032

Build Alternative noise levels were determined by modeling the Build Summit Boulevard geometry and traffic within TNM and then calculating the  $L_{eq}(h)$  for each TNM receiver. Future speeds of 30 mph and were modeled for both directions of Summit Boulevard.

Predicted  $L_{eq}(h)$  for the Build Year 2032 case ranged from 52 dBA up to 69 dBA at the receivers closest to the project along Summit Boulevard or near US 190B. Increases over existing noise levels generally range from 0 to 11 dBA.

Note that several of the receiver locations are for undeveloped lands where there are currently no noise-sensitive land uses and no building permits issued. None of the residences on the south end of the project are impacted in the Build case and only the closest residence to US 190B (1937 Nellie Drive) is impacted on the north end of the project.

A total of one residence is impacted by traffic noise for the Build Year 2032 case. This impact is caused by an exceedance of the 66 dBA NAC for Category B land uses. No impacts are created by a 10 dBA increase over the Existing noise levels.

### 2.5.3 No Build Year 2032

The TNM model that was used for the Build case was modified and the Summit Boulevard connection was removed. TNM calculations were then run to predict worst noise hour equivalent sound levels for the No Build Year 2032 conditions at the noise-sensitive land uses in the project area, including the measurement locations.

As shown in Table 3, predicted worst noise hour  $L_{eq}(h)$  for the No Build Year 2032 case ranged from 52

dBA up to 66 dBA at the closest residences to US 190B (1937 Nellie Drive).

A total of one residence is impacted in the No Build Year 2032 case. This impact is caused by an exceedance of the 66 dBA NAC for Category B (residential) land uses. No impacts are created by a 10 dBA increase over the Existing noise levels.

## 2.6 Summary of Impacts

An impact assessment was completed for the Existing, Build and No-Build scenarios. As noted previously, a receptor is impacted in two ways:

1. The predicted, worst hour, design year  $L_{eq}(h)$  approaches or exceeds the NAC. DOTD defines “approach” as 1 dB(A) less than the NAC. These levels apply at areas of frequent human use.
2. The predicted, worst hour, design year  $L_{eq}(h)$  exceeds the existing  $L_{eq}(h)$  by 10 dBA or more.

As shown in Table 4, there will be a total of one impacted residential property (Activity Category B), for the Build case. That single impact will be in terms of approaching or exceeding the NAC with no impacts caused by an increase of 10 dBA over the existing noise level.

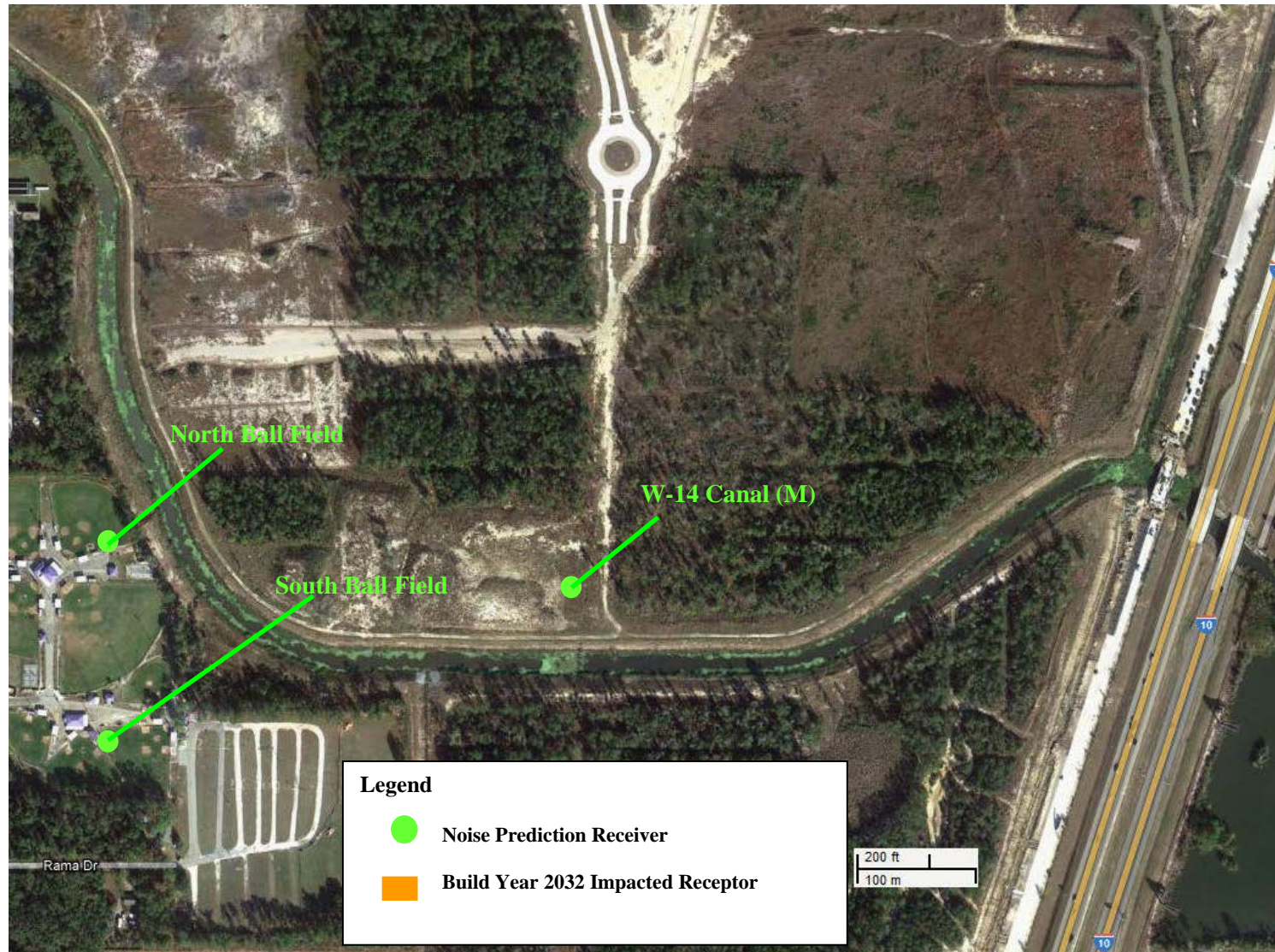
*Table 4. Summary of Noise Impacts*

Prediction Case	Impacts
Existing Year 2012	0 residences
Build Year 2032	1 residence
No Build Year 2032	1 residence



Figure 3. Noise Prediction Receiver Locations and Year 2032 Predicted Impacts





*Figure 4. Noise Prediction Receiver Locations and Year 2032 Predicted Impacts*



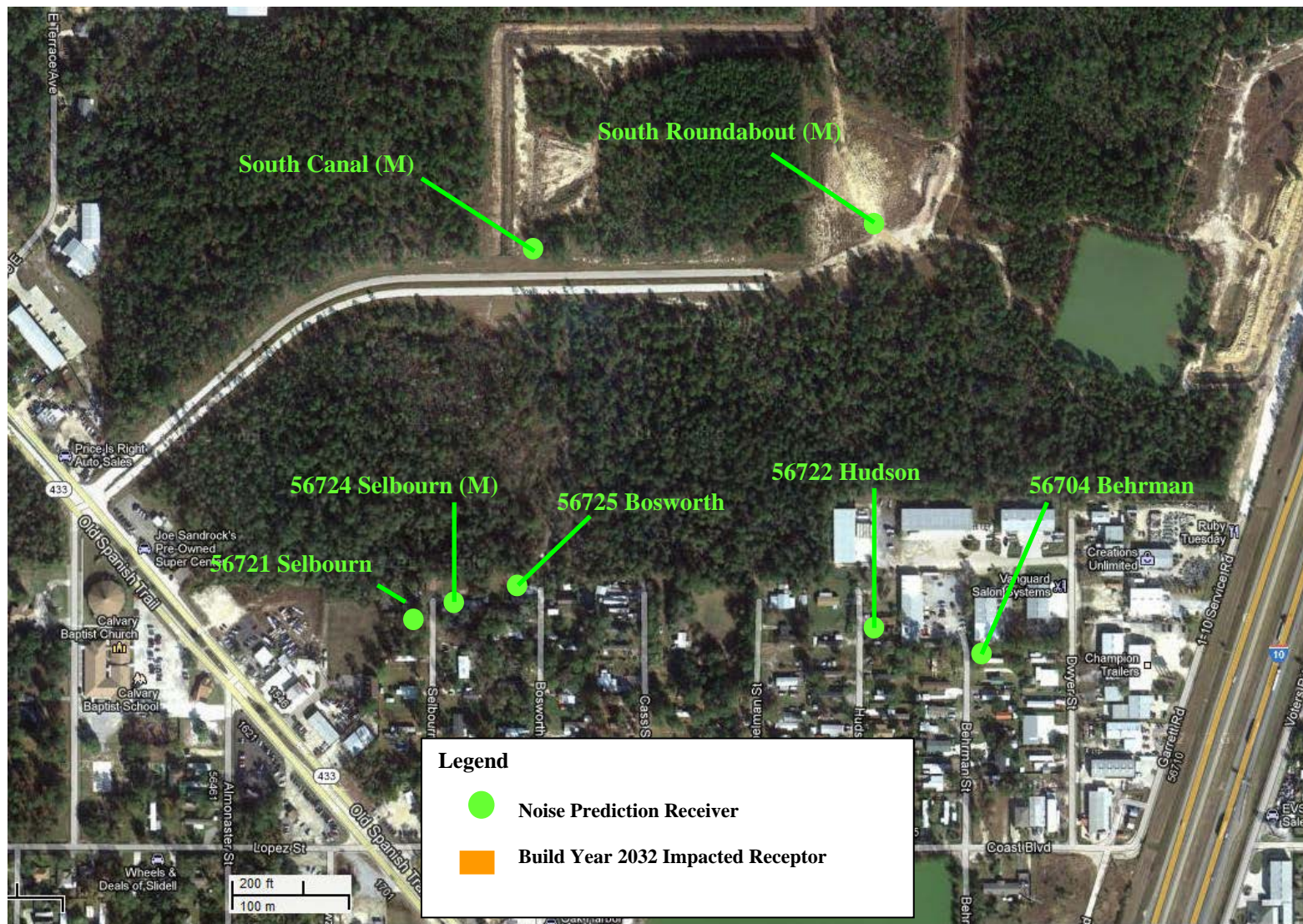


Figure 5. Noise Prediction Receiver Locations and Year 2032 Predicted Impacts



## 2.7 Noise Abatement Evaluation

In accordance with criteria in the DOTD noise policy, noise abatement needs to be studied first for “feasibility” and, if feasible, for “reasonableness.” Noise barriers must be both feasible and reasonable for them to be deemed likely for construction.

Feasibility includes acoustical and engineering considerations. Acoustical feasibility means that a noise barrier will provide at least a 5 dBA reduction in the one-hour equivalent sound level for at least 75% of the first-row, impacted receptors. If a barrier cannot meet this criterion, abatement is considered to not be acoustically feasible. Additionally, the noise barrier should be feasible from an engineering perspective. Engineering feasibility takes into account topography, drainage, safety, barrier height, utilities, and access and maintenance needs (which may include right-of-way considerations). If a barrier poses engineering problems, it may be judged as not feasible even if it meets the acoustical feasibility criterion, and it will not be recommended for construction.

If feasible, then the barriers are assessed for reasonableness in accordance with the criteria in DOTD’s noise policy. All proposed noise abatement must meet the following three criteria to be considered reasonable by DOTD. If any of the criteria is not met, noise abatement measures will not be constructed.

1. *Noise Reduction Design Goal:* At a minimum, at least one receptor must receive an 8 dBA reduction for the noise abatement system to be reasonable.
2. *Cost-Effectiveness:* If the estimated cost of constructing a noise barrier (including installation and additional necessary construction such as foundations or guardrails) divided by the number of benefited receptors (those who would receive a reduction of at least 5 dBA) is \$35,000 or less per benefited receptor, a barrier is considered to be cost-effective.
3. *Consideration and Obtaining Views of Residents and Property Owners:* The viewpoints of the affected property owners and residents are important. For those barriers found to be reasonable by the Cost-Effectiveness and Design Goal criteria above, viewpoints of the benefited receptors and affected property owners will be sought.

According to the FHWA noise standards and DOTD policy, abatement needs to be evaluated when impacts are predicted to occur. Noise barriers must be shown to be both feasible and reasonable, as described earlier, for them to be deemed likely for construction.

In general, noise abatement measures may include noise barriers, alteration of horizontal and vertical alignment, and traffic management measures (such as reducing speed limits or prohibition of heavy trucks). The latter two forms of abatement have already been considered during the planning phases for this project. Also, the major sources of noise for noise sensitive land uses in this area are I-10, US 190B (Fremaux Highway), and LA433 (Old Spanish Trail). Altering the alignment or posted speeds on Summit Boulevard would have minimal effect on the existing residences in the area.

Noise barriers were determined to be the only available potential abatement measure to reduce noise levels for impacted receptors for this project. As stated earlier, barriers must pass acoustical feasibility and reasonableness tests. Acoustical feasibility means that any noise barrier will provide at least a 5 dBA reduction in traffic noise levels for 75% of the first-row impacted receptors.

For this project the only impacted receptor is a single residence immediately adjacent to US 190B. The expense of protecting a single residence with a noise barrier will not pass the cost-effectiveness test of the reasonableness determination. Therefore, there are no noise barriers that are considered feasible or reasonable for this project.

## **2.8      *Construction Noise***

The construction of the project would result in temporary noise increases for the residences and noise-sensitive land uses along Summit Boulevard. Any other noise-sensitive land uses that are located farther from the project area would likely experience little, if any, increase in noise levels because of the background noise of the I-10 traffic, traffic on other roads, and other community noise sources. The construction noise would be generated primarily from heavy equipment used in hauling materials and accomplishing the widening of the roadway.

The construction contractor has the responsibility for protection of the general public in all aspects of construction throughout the life of the project. All construction equipment will be required to comply with OSHA Regulations as they apply to the employees' safety, and in accordance with the DOTD Standard Specifications. All construction equipment used in the construction phase of the project should be properly muffled and all motor panels should be shut during operation. In order to minimize the potential for impacts of construction noise on the local residents, the contractor should only operate, whenever possible, between the hours of 7:00 AM and 5:00 PM.

## **2.9      *Coordination with Local Officials***

DOTD encourages local communities and developers to practice noise compatibility planning in order to avoid future noise impacts. Two guidance documents on noise compatible land use planning are available from FHWA. [3, 4]

Table 4 presents future predicted equivalent sound levels based on an assumed at-grade situation for areas along Summit Boulevard where vacant and possibly developable lands exist. Noise predictions were made at distances of 20, 40, 60 and 80 feet from the edge of pavement of closest travel lane of Summit Boulevard for the design year 2032 PM peak hour. The results showed exterior residential activities would be considered to be impacted in terms of a level of 66 or more dBA out to a distance of roughly 60 feet from the edge of pavement of the nearest travel lane of Summit Boulevard. These values do not represent predicted levels at every location at a particular distance back from the roadway. Sound levels will vary with changes in terrain and other site conditions. This information is being included to make local officials and planners aware of anticipated highway noise levels so that future development will be compatible with these levels.

*Table 4: Design Year (2032) Predicted One-Hour Equivalent Sound Levels for Undeveloped Areas*

<i>Distance*</i>	<i><math>L_{eq}(1h)</math>, dBA</i>
20 feet	70
40 feet	68
60 feet	66
80 feet	65

\* Perpendicular distance to the centerline of the nearest travel lane of Summit Boulevard.

### 3.0 REFERENCES

- [1] *Procedures for Abatement of Highway Traffic and Construction Noise*, 23 CFR 772, Federal Highway Administration.
- [2] *Highway Traffic Noise Policy*, Louisiana Department of Transportation and Development, July 2011.
- [3] *The Audible Landscape: A Manual for Highway Noise and Land Use*, FHWA, November, 1974.  
<http://www.fhwa.dot.gov/environment/audible/index.htm>
- [4] *Entering the Quiet Zone: Noise Compatibility Land Use Planning*, FHWA, May, 2002.  
<http://www.fhwa.dot.gov/environment/noise/quietzon>

## ***Appendix A - Noise Measurement Results***

<b><i>Measurement Location</i></b>	<b><i>Appendix Page</i></b>
2033 Nellie Drive	A-1
W-14 Canal Area	A-3
South Roundabout	A-5
South Canal Area	A-7
56724 Selbourn Street	A-9





**2033 Nellie Drive**

**Summit Boulevard Connection, St. Tammany Parish (Slidell, Louisiana)**  
**Noise Measurements**

Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	80°F
<b>Site:</b>	2033 Nellie Drive	<b>Wind:</b>	Calm
<b>Description:</b>	Residential	<b>Weather notes:</b>	30% clouds, Sunny
<b>Filename:</b>	AU2_2784		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	17:16:00	56.4	64.7	0	N	0	local pkup
2	17:17:00	55.5	59.9	0	N	0	local auto
3	17:18:00	53.5	55.9	223872	Y	1	
4	17:19:00	57.1	64.3	0	N	0	local auto w loud stereo
5	17:20:00	53.9	56.7	245471	Y	1	
6	17:21:00	53.5	57.5	223872	Y	1	
7	17:22:00	52.7	53.8	186209	Y	1	
8	17:23:00	54.1	57.2	257040	Y	1	
9	17:24:00	53.2	55.1	208930	Y	1	
10	17:25:00	55.1	58.2	0	N	0	
11	17:26:00	53.1	54.3	204174	Y	1	
12	17:27:00	56.1	62.8	0	N	0	
13	17:28:00	53.0	54.0	199526	Y	1	
14	17:29:00	53.3	57.3	213796	Y	1	
15	17:30:00	55.3	59.6	0	N	0	
16	17:31:00	53.6	55.6	229087	Y	1	
17	17:32:00	53.7	55.6	234423	Y	1	
18	17:33:00	53.0	54.5	199526	Y	1	
19	17:34:00	53.5	55.6	223872	Y	1	
20	17:35:00	53.2	54.4	208930	Y	1	
Energy Sum				3058727		14	
Leq				53.4			

Off-Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	85°F
<b>Site:</b>	2033 Nellie Drive	<b>Wind:</b>	< 2 mph from South
<b>Description:</b>	Residential	<b>Weather notes:</b>	Sunny
<b>Filename:</b>	AU2_2780		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	14:14:00	49.7	52.6	93325	Y	1	I-10 = 48-50 typically
2	14:15:00	49.8	51.6	95499	Y	1	
3	14:16:00	51.8	55.0	0	N	0	
4	14:17:00	52.5	56.5	0	N	0	
5	14:18:00	52.5	56.5	177828	Y	1	
6	14:19:00	52.4	56.6	173780	Y	1	
7	14:20:00	54.3	61.5	269153	Y	1	
8	14:21:00	55.7	60.1	0	N	0	
9	14:22:00	51.2	54.6	131826	Y	1	
10	14:23:00	51.1	56.9	0	N	0	
11	14:24:00	48.9	50.9	77625	Y	1	
12	14:25:00	50.3	51.7	107152	Y	1	
13	14:26:00	50.8	51.7	120226	Y	1	
14	14:27:00	56.1	63.9	0	N	0	
15	14:28:00	53.7	62.1	0	N	0	
16	14:29:00	51.7	54.0	147911	Y	1	
17	14:30:00	50.4	51.6	109648	Y	1	
18	14:31:00	52.6	55.8	181970	Y	1	
19	14:32:00	54.4	60.4	0	N	0	
20	14:33:00	53.0	57.7	0	N	0	
21	14:34:00	52.6	56.8	181970	Y	1	
22	14:35:00	57.2	65.2	0	N	0	
23	14:36:00	54.1	60.6	0	N	0	
24	14:37:00	53.5	60.5	0	N	0	
25	14:38:00	50.5	52.8	112202	Y	1	
26	14:39:00	48.9	52.7	77625	Y	1	
27	14:40:00	61.7	70.3	0	N	0	
28	14:41:00	52.3	55.6	169824	Y	1	
29	14:42:00	56.0	60.4	0	N	0	
30	14:43:00	53.2	58.9	0	N	0	
Energy Sum				2227565		16	
Leq				51.4			





**W-14 Canal**

**Summit Boulevard Connection, St. Tammany Parish (Slidell, Louisiana)**  
**Noise Measurements**

Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	83°F
<b>Site:</b>	W14 Canal Area	<b>Wind:</b>	4-6 mph / ESE
<b>Description:</b>	Undeveloped	<b>Weather notes:</b>	Sunny
<b>Filename:</b>	AU2_2783		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	16:45:00	58.7	61.5	741310	Y	1	All I-10 noise
2	16:46:00	58.9	60.4	776247	Y	1	
3	16:47:00	58.2	60.8	660693	Y	1	
4	16:48:00	58.1	59.3	645654	Y	1	
5	16:49:00	58.9	60.8	776247	Y	1	
6	16:50:00	58.5	59.8	707946	Y	1	
7	16:51:00	59.4	63.6	870964	Y	1	Loud pkup on I-10
8	16:52:00	58.4	59.6	691831	Y	1	
9	16:53:00	58.0	59.4	630957	Y	1	
10	16:54:00	58.3	60.8	676083	Y	1	I-10=57-58 consistently
11	16:55:00	57.6	59.0	575440	Y	1	
12	16:56:00	59.0	60.4	794328	Y	1	
13	16:57:00	59.5	61.6	891251	Y	1	
14	16:58:00	60.3	63.0	1071519	Y	1	
15	16:59:00	58.4	62.6	691831	Y	1	Loud HT EB = 62
16	17:00:00	56.1	57.5	407380	Y	1	
17	17:01:00	58.6	60.7	724436	Y	1	
18	17:02:00	57.7	59.3	588844	Y	1	
19	17:03:00	57.8	59.2	602560	Y	1	
20	17:04:00	58.7	60.0	741310	Y	1	
Energy Sum				14266832		20	
Leq				58.5			

Off-Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	75°F
<b>Site:</b>	W14 Canal Area	<b>Wind:</b>	3-5 mph / ENE
<b>Description:</b>	Undeveloped	<b>Weather notes:</b>	Sunny
<b>Filename:</b>	AU2_2882		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	09:11:00	53.7	55.6	234423	Y	1	All I-10 noise
2	09:12:00	55.1	56.1	323594	Y	1	HTs=53-56 dBA
3	09:13:00	55.2	56.6	331131	Y	1	All I-10 noise
4	09:14:00	55.7	56.9	371535	Y	1	
5	09:15:00	55.0	55.9	316228	Y	1	
6	09:16:00	54.0	54.8	251189	Y	1	
7	09:17:00	53.4	54.4	218776	Y	1	
8	09:18:00	53.4	55.1	218776	Y	1	
9	09:19:00	53.8	57.7	239883	Y	1	
10	09:20:00	54.3	55.9	269153	Y	1	
11	09:21:00	52.9	54.2	194984	Y	1	
12	09:22:00	54.7	56.3	295121	Y	1	
13	09:23:00	55.8	56.9	380189	Y	1	
14	09:24:00	54.8	56.6	301995	Y	1	
15	09:25:00	55.7	57.2	371535	Y	1	
16	09:26:00	55.3	57.8	338844	Y	1	
17	09:27:00	56.6	58.3	457088	Y	1	EB HT=57-58
18	09:28:00	55.3	57.0	338844	Y	1	
19	09:29:00	56.1	58.4	407380	Y	1	
20	09:30:00	58.9	61.1	0	N	0	Loud HT
Energy Sum				5860670		19	
Leq				54.9			





**South Roundabout**

**Summit Boulevard Connection, St. Tammany Parish (Slidell, Louisiana)**  
**Noise Measurements**

Peak			
<b>Date:</b>	03/28/12	<b>Temperature:</b>	68°F
<b>Site:</b>	South Roundabout	<b>Wind:</b>	calm
<b>Description:</b>	west side of south roundabout	<b>Weather notes:</b>	60% clouds
<b>Filename:</b>	AU2_2881		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	07:30:00	60.4	61.8	1096478	Y	1	All I-10 traffic noise, 60-61 dBA Louder HT WB = 61
2	07:31:00	59.5	60.6	891251	Y	1	
3	07:32:00	59.6	62.5	912011	Y	1	All I-10 noise
4	07:33:00	59.8	61.1	954993	Y	1	
5	07:34:00	59.2	60.4	831764	Y	1	
6	07:35:00	60.1	61.2	1023293	Y	1	
7	07:36:00	59.9	61.3	977237	Y	1	
8	07:37:00	60.5	61.7	1122018	Y	1	
9	07:38:00	59.8	61.4	954993	Y	1	
10	07:39:00	58.5	60.7	707946	Y	1	
11	07:40:00	59.9	60.6	977237	Y	1	
12	07:41:00	59.8	60.7	954993	Y	1	
13	07:42:00	60.0	61.3	1000000	Y	1	
14	07:43:00	59.3	60.7	851138	Y	1	
15	07:44:00	59.7	61.2	933254	Y	1	
16	07:45:00	59.5	60.6	891251	Y	1	
17	07:46:00	60.7	63.4	1174898	Y	1	
18	07:47:00	60.5	61.5	1122018	Y	1	
19	07:48:00	59.9	61.0	977237	Y	1	
20	07:49:00	59.3	60.7	851138	Y	1	
Energy Sum				19205148		20	
Leq				59.8			

Off-Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	850°F
<b>Site:</b>	South Roundabout	<b>Wind:</b>	3-5 mph / ENE
<b>Description:</b>	west side of south roundabout	<b>Weather notes:</b>	Sunny
<b>Filename:</b>	AU2_2781		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	15:27:00	56.4	59.8	436516	Y	1	all I-10 noise, typically 56-57 dBA traffic lull=53-54 dBA
2	15:28:00	56.7	59.1	467735	Y	1	
3	15:29:00	57.2	61.0	524807	Y	1	Loud moto on I-10 = 57-58 dBA
4	15:30:00	57.1	59.6	512861	Y	1	
5	15:31:00	57.1	58.3	512861	Y	1	
6	15:32:00	56.8	58.5	478630	Y	1	All I-10 noise
7	15:33:00	57.6	58.5	575440	Y	1	
8	15:34:00	58.1	61.0	645654	Y	1	
9	15:35:00	59.4	60.6	870964	Y	1	
10	15:36:00	56.9	58.7	489779	Y	1	
11	15:37:00	55.7	59.0	371535	Y	1	
12	15:38:00	56.5	58.2	446684	Y	1	
13	15:39:00	57.3	60.0	537032	Y	1	
14	15:40:00	56.2	58.2	416869	Y	1	
15	15:41:00	56.1	59.1	407380	Y	1	
16	15:42:00	57.4	59.5	549541	Y	1	
17	15:43:00	56.5	59.4	446684	Y	1	
18	15:44:00	56.8	59.1	478630	Y	1	
19	15:45:00	56.4	57.8	436516	Y	1	
20	15:46:00	56.0	58.7	398107	Y	1	
Energy Sum				10004226		20	
Leq				57.0			





**South Canal**

**Summit Boulevard Connection, St. Tammany Parish (Slidell, Louisiana)**  
**Noise Measurements**

Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	66°F
<b>Site:</b>	South Drainage Canal	<b>Wind:</b>	calm
<b>Description:</b>	Undeveloped	<b>Weather notes:</b>	50% clouds
<b>Filename:</b>	AU2_2880		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	07:04:00	58.0	59.4	630957	Y	1	All I-10
2	07:05:00	57.4	59.1	549541	Y	1	I-10=56-58 dBA
3	07:06:00	57.0	58.6	501187	Y	1	
4	07:07:00	60.0	61.3	1000000	Y	1	HT+moto=59-60
5	07:08:00	57.4	59.1	549541	Y	1	
6	07:09:00	59.6	62.2	912011	Y	1	
7	07:10:00	59.2	60.8	831764	Y	1	
8	07:11:00	58.5	60.3	707946	Y	1	
9	07:12:00	57.7	60.2	588844	Y	1	
10	07:13:00	58.4	60.8	691831	Y	1	
11	07:14:00	57.3	60.2	537032	Y	1	
12	07:15:00	57.8	59.7	602560	Y	1	All I-10 noise
13	07:16:00	57.5	59.4	562341	Y	1	I-10 = 57-58 consistently
14	07:17:00	58.2	59.3	660693	Y	1	
15	07:18:00	57.9	59.5	616595	Y	1	
16	07:19:00	57.8	58.9	602560	Y	1	
17	07:20:00	57.6	58.3	575440	Y	1	
18	07:21:00	58.6	59.8	724436	Y	1	
19	07:22:00	59.0	60.5	794328	Y	1	
20	07:23:00	59.3	61.4	851138	Y	1	
Energy Sum				13490744		20	
Leq				58.3			

Off-Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	85°F
<b>Site:</b>	South Canal area	<b>Wind:</b>	3-5 mph / ENE
<b>Description:</b>	Undeveloped	<b>Weather notes:</b>	Sunny
<b>Filename:</b>	AU2_2782		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	16:00:00	52.5	54.3	177828	Y	1	I-10 = 52-53
2	16:01:00	52.1	53.8	162181	Y	1	
3	16:02:00	51.4	54.2	138038	Y	1	
4	16:03:00	51.8	53.4	151356	Y	1	
5	16:04:00	52.0	53.8	158489	Y	1	Loud HT = 54
6	16:05:00	51.1	52.8	128825	Y	1	
7	16:06:00	52.0	53.4	158489	Y	1	
8	16:07:00	52.1	53.4	162181	Y	1	
9	16:08:00	53.0	54.4	199526	Y	1	
10	16:09:00	51.7	53.3	147911	Y	1	
11	16:10:00	53.6	56.2	0	N	0	Sirens on I-10
12	16:11:00	53.0	56.6	199526	Y	1	
13	16:12:00	55.5	59.6	0	N	0	Sirens on I-10
14	16:13:00	56.8	64.5	0	N	0	Sirens on I-10
15	16:14:00	53.8	59.6	0	N	0	Sirens on I-10
16	16:15:00	54.1	60.7	0	N	0	Sirens on I-10
17	16:16:00	53.0	55.1	199526	Y	1	
18	16:17:00	52.8	55.1	190546	Y	1	
19	16:18:00	51.9	55.3	154882	Y	1	
20	16:19:00	51.8	53.4	151356	Y	1	All I-10
Energy Sum				2480661		15	
Leq				52.2			





**56724 Selbourn Street**



**Summit Boulevard Connection, St. Tammany Parish (Slidell, Louisiana)**  
**Noise Measurements**

Peak			
<b>Date:</b>	03/27/12	<b>Temperature:</b>	76°F
<b>Site:</b>	56724 Selbourn St	<b>Wind:</b>	<2 mph / ESE
<b>Description:</b>	Residential	<b>Weather notes:</b>	60% clouds
<b>Filename:</b>	AU2_2785		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	17:47:00	51.7	59.2	147911	Y	1	I10consistent, Old Sp Trail audible
2	17:48:00	51.0	52.2	125893	Y	1	
3	17:49:00	51.3	52.6	134896	Y	1	
4	17:50:00	51.6	54.6	0	N	0	moto on next block
5	17:51:00	50.4	52.3	109648	Y	1	
6	17:52:00	50.9	51.8	123027	Y	1	
7	17:53:00	52.1	58.3	0	N	0	resident talking near mic
8	17:54:00	53.3	57.9	0	N	0	resident talking near mic
9	17:55:00	53.8	60.7	0	N	0	resident talking near mic
10	17:56:00	51.1	55.1	128825	Y	1	
11	17:57:00	52.5	58.4	177828	Y	1	
12	17:58:00	51.5	54.1	141254	Y	1	
13	17:59:00	51.3	54.2	134896	Y	1	
14	18:00:00	54.3	60.5	0	N	0	loud bird near mic
15	18:01:00	51.3	52.8	134896	Y	1	
16	18:02:00	51.7	53.5	147911	Y	1	
17	18:03:00	51.4	52.7	138038	Y	1	
18	18:04:00	53.8	57.5	239883	Y	1	
19	18:05:00	51.5	53.7	141254	Y	1	
20	18:06:00	50.7	52.8	117490	Y	1	
Energy Sum				2143650		15	
Leq				51.6			

Off-Peak			
<b>Date:</b>	03/28/12	<b>Temperature:</b>	72°F
<b>Site:</b>	56724 Selbourn St	<b>Wind:</b>	< 2 mph/ ESE
<b>Description:</b>	Residential	<b>Weather notes:</b>	overcast
<b>Filename:</b>	AU2_2883		

<u>Period #</u>	<u>Time Start</u>	<u>Leq</u>	<u>Lmax</u>	<u>Energy</u>	<u>Keep?</u>	<u>Count</u>	<u>Note</u>
1	09:42:00	53.7	55.6	234423	Y	1	I-10+Old Sp Trail=48-50
2	09:43:00	55.1	56.1	323594	Y	1	
3	09:44:00	55.2	56.6	331131	Y	1	
4	09:45:00	55.7	56.9	371535	Y	1	
5	09:46:00	55.0	55.9	316228	Y	1	
6	09:47:00	54.0	54.8	251189	Y	1	
7	09:48:00	53.4	54.4	218776	Y	1	
8	09:49:00	53.4	55.1	218776	Y	1	
9	09:50:00	53.8	57.7	239883	Y	1	
10	09:51:00	54.3	55.9	269153	Y	1	
11	09:52:00	52.9	54.2	194984	Y	1	
12	09:53:00	54.7	56.3	295121	Y	1	
13	09:54:00	55.8	56.9	380189	Y	1	
14	09:55:00	54.8	56.6	301995	Y	1	
15	09:56:00	55.7	57.2	0	N	0	birds near mic
16	09:57:00	55.3	57.8	338844	Y	1	
17	09:58:00	56.6	58.3	0	N	0	birds near mic
18	09:59:00	55.3	57.0	0	N	0	birds near mic
19	10:00:00	56.1	58.4	0	N	0	birds near mic
20	10:01:00	58.9	61.1	0	N	0	birds near mic
Energy Sum				4285823		15	
Leq				54.6			

## ***Appendix B - TNM 2.5 Plan Views, Input Data and Prediction Results***

<b><i>TNM Case</i></b>	<b><i>Appendix Page</i></b>
Build Case	B-1
No Build Case	B-16

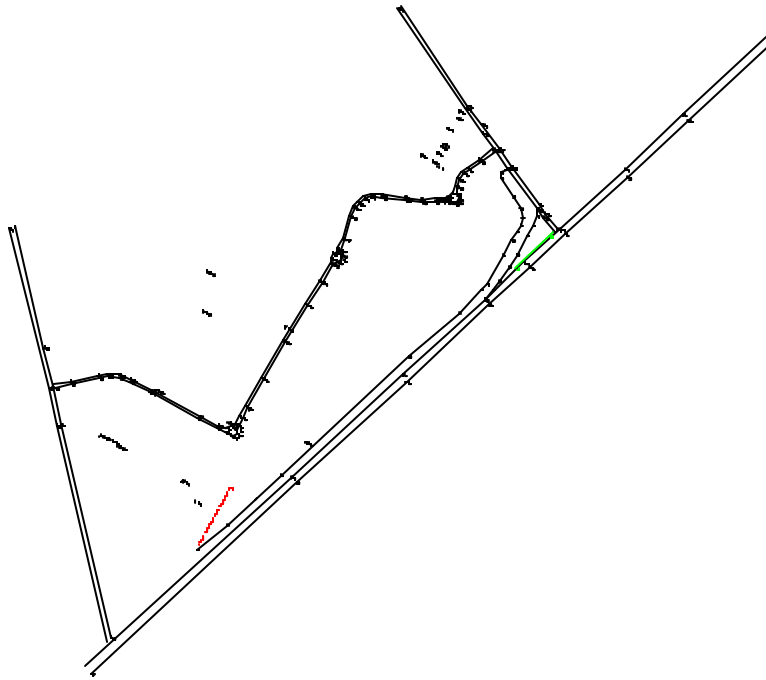
**RESULTS: SOUND LEVELS**
**NORPC**






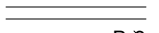


<b>Bowlby &amp; Associates, Inc.</b>												
<b>CP</b>												
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>												
<b>RUN:</b>												
<b>BARRIER DESIGN:</b>												
<b>ATMOSPHERICS:</b>												
<b>Receiver</b>												
<b>Name</b>												
<b>No.</b>												
<b>#DUs</b>												
<b>Existing</b>												
<b>L<sub>Aeq1h</sub></b>												
<b>No Barrier</b>												
<b>L<sub>Aeq1h</sub></b>												
<b>Calculated</b>												
<b>Crit'n</b>												
<b>Increase over existing</b>												
<b>Calculated</b>												
<b>Crit'n</b>												
<b>Sub'l Inc</b>												
<b>Type</b>												
<b>Impact</b>												
<b>With Barrier</b>												
<b>Calculated</b>												
<b>L<sub>Aeq1h</sub></b>												
<b>Noise Reduction</b>												
<b>Calculated</b>												
<b>Goal</b>												
<b>Calculated</b>												
<b>minus</b>												
<b>Goal</b>												
<b>dB</b>												
56721 Selbourn	1	1	0.0	55.5	66	55.5	10	----	55.5	0.0	8	-8.0
56724 Selbourn (M)	2	1	0.0	54.9	66	54.9	10	----	54.9	0.0	8	-8.0
56725 Bosworth	3	1	0.0	55.1	66	55.1	10	----	55.1	0.0	8	-8.0
56722 Hudson	4	1	0.0	59.6	66	59.6	10	----	59.6	0.0	8	-8.0
56704 Behrman	5	1	0.0	61.0	66	61.0	10	----	61.0	0.0	8	-8.0
Ballfield South	6	1	0.0	52.7	66	52.7	10	----	52.7	0.0	8	-8.0
Ballfield North	7	1	0.0	52.0	66	52.0	10	----	52.0	0.0	8	-8.0
1937 Nellie	8	1	0.0	65.6	66	65.6	10	----	65.6	0.0	8	-8.0
1945 Nellie	9	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
1961 Nellie	10	1	0.0	57.8	66	57.8	10	----	57.8	0.0	8	-8.0
2009 Nellie	11	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
2013 Nellie	12	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
2022 Nellie	13	1	0.0	56.6	66	56.6	10	----	56.6	0.0	8	-8.0
2033 Nellie	14	1	0.0	56.9	66	56.9	10	----	56.9	0.0	8	-8.0
2032 Beth	15	1	0.0	55.6	66	55.6	10	----	55.6	0.0	8	-8.0
Long Term (M)	16	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	8	-8.0
Nellie Dr (M)	17	1	0.0	57.6	66	57.6	10	----	57.6	0.0	8	-8.0
South Roundabout (M)	18	1	0.0	66.7	66	66.7	10	Snd Lvl	66.7	0.0	8	-8.0
South Canal (M)	19	1	0.0	69.2	66	69.2	10	Snd Lvl	69.2	0.0	8	-8.0
W-14 Canal (M)	20	1	0.0	66.0	66	66.0	10	Snd Lvl	66.0	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>												

**RESULTS: SOUND LEVELS**

**NORPC**

All Selected		20	0.0	0.0	0.0							
All Impacted		4	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							



Summit Blvd - Build PM		Sheet 1 of 1	5 Dec 2012
Plan View (rotated)		Bowlby & Associates, Inc.	
Run name: SumBldPM		Project/Contract No. NORPC	
Scale: 		TNM Version 2.5, Feb 2004	
		Analysis By: CP	
Roadway:		Ground Zone:	polygon
Receiver:		Tree Zone:	dashed polygon
Barrier:		Contour Zone:	polygon
Building Row:		Parallel Barrier:	
Terrain Line:		Skew Section:	 B-3

**INPUT: ROADWAYS**
**NORPC**

Bowlby & Associates, Inc.				5 December 2012							
CP				TNM 2.5							
INPUT: ROADWAYS											
PROJECT/CONTRACT:		NORPC								Average pavement type shall be used unless	
RUN:		Summit Blvd - Build PM								a State highway agency substantiates the use	
										of a different type with the approval of FHWA	
Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)		Flow Control				Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Type	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
I-10 EB	44.0	I10EB-1	1	3,776,450.8	638,627.1	10.00				Average	
		I10EB-2	2	3,777,623.8	642,391.7	10.00				Average	
		I10EB-3	3	3,778,237.5	644,380.5	10.50				Average	
		I10EB-4	4	3,778,708.5	645,897.1	11.00				Average	
		I10EB-4B	18	3,778,933.5	646,633.9	11.50				Average	
		I10EB-5	5	3,779,131.0	647,284.8	12.00				Average	
		I10EB-5B	17	3,779,481.0	648,406.0	12.25				Average	
		I10EB-6	6	3,779,831.0	649,527.1	12.50				Average	
		I10EB-7	7	3,780,317.0	651,083.0	13.00					
I-10 WB	44.0	I10WB-1	8	3,780,197.2	651,116.7	13.00				Average	
		I10WB-2	9	3,779,722.2	649,558.9	12.50				Average	
		I10WB-3	10	3,779,401.5	648,487.8	12.30				Average	
		I10WB-4	11	3,779,038.0	647,315.9	12.00				Average	
		I10WB-5	12	3,778,834.2	646,650.4	11.50				Average	
		I10WB-6	13	3,778,606.5	645,929.5	11.00				Average	
		I10WB-7	14	3,778,148.0	644,440.9	10.50				Average	
		I10WB-8	15	3,777,516.2	642,421.3	10.00				Average	
		I10WB-9	16	3,776,326.5	638,672.2	10.00					
Summit NB	22.0	Sum-NB1	67	3,774,011.5	641,846.1	9.00				Average	
		Sum-NB2	68	3,774,187.0	642,003.8	9.00				Average	
		Sum-NB3	69	3,774,479.2	642,270.4	9.00				Average	
		Sum-NB4	70	3,774,583.2	642,353.5	9.00				Average	
		Sum-NB5	71	3,774,728.0	642,419.3	9.00				Average	
		Sum-NB6	72	3,774,882.8	642,443.6	9.00				Average	
		Sum-NB7	73	3,775,209.0	642,453.4	9.00				Average	

**INPUT: ROADWAYS**
**NORPC**

		Sum-NB8	74	3,775,960.0	642,474.6	9.00				Average	
		Sum-NB9	75	3,776,261.5	642,491.2	9.00				Average	
		Sum-NB10	76	3,776,389.0	642,505.5	9.00				Average	
		Sum-NB11	77	3,776,447.2	642,501.6	9.00				Average	
		Sum-NB12	78	3,776,524.5	642,502.1	9.00				Average	
		Sum-NB13	79	3,776,556.5	642,560.0	9.00				Average	
		Sum-NB14	80	3,776,532.8	642,619.8	9.00				Average	
		Sum-NB15	81	3,776,516.0	642,669.8	9.00				Average	
		Sum-NB16	82	3,776,502.8	642,794.7	9.00				Average	
		Sum-NB17	83	3,776,504.5	642,952.7	9.00				Average	
		Sum-NB18	84	3,776,498.2	643,410.2	9.00				Average	
		Sum-NB19	85	3,776,494.2	644,015.4	9.00				Average	
		Sum-NB20	86	3,776,511.8	644,612.6	9.00				Average	
		Sum-NB21	87	3,776,525.8	644,999.1	9.00				Average	
		Sum-NB22	88	3,776,536.8	645,294.0	9.00				Average	
		Sum-NB23	89	3,776,559.0	645,353.3	9.00				Average	
		Sum-NB24	90	3,776,592.0	645,414.2	9.00				Average	
		Sum-NB25	91	3,776,562.0	645,472.1	9.00				Average	
		Sum-NB26	92	3,776,534.8	645,525.0	9.00				Average	
		Sum-NB27	93	3,776,492.8	645,685.7	9.00				Average	
		Sum-NB28	94	3,776,412.5	645,996.3	9.00				Average	
		Sum-NB29	95	3,776,402.2	646,129.5	9.00				Average	
		Sum-NB30	96	3,776,417.8	646,212.6	9.00				Average	
		Sum-NB31	97	3,776,453.0	646,310.7	9.00				Average	
		Sum-NB32	98	3,776,512.2	646,381.0	9.00				Average	
		Sum-NB33	99	3,776,646.5	646,447.6	9.00				Average	
		Sum-NB34	100	3,776,953.8	646,574.9	9.00				Average	
		Sum-NB35	101	3,777,161.5	646,667.5	9.00				Average	
		Sum-NB36	102	3,777,317.2	646,770.5	9.00				Average	
		Sum-NB37	103	3,777,387.8	646,820.5	9.00				Average	
		Sum-NB38	104	3,777,443.0	646,855.1	9.00				Average	
		Sum-NB39	105	3,777,510.5	646,868.4	9.00				Average	
		Sum-NB40	106	3,777,574.2	646,884.3	9.00				Average	
		Sum-NB41	107	3,777,598.5	646,927.3	9.00				Average	
		Sum-NB42	108	3,777,593.5	646,972.3	9.00				Average	
		Sum-NB43	109	3,777,564.8	647,003.0	9.00				Average	
		Sum-NB44	110	3,777,525.8	647,018.8	9.00				Average	
		Sum-NB45	111	3,777,497.0	647,104.4	9.00				Average	
		Sum-NB46	112	3,777,476.2	647,204.3	9.00				Average	



**INPUT: ROADWAYS**
**NORPC**

		Sum-NB47	113	3,777,482.2	647,306.2	9.00				Average	
		Sum-NB48	114	3,777,513.0	647,384.9	9.00				Average	
		Sum-NB49	115	3,777,595.5	647,573.4	9.00				Average	
		Sum-NB50	116	3,777,695.0	647,789.6	9.00					
Summit SB	22.0	Sum-SB1	117	3,777,649.8	647,809.2	9.00				Average	
		Sum-SB2	118	3,777,556.2	647,591.3	9.00				Average	
		Sum-SB3	119	3,777,468.0	647,397.3	9.00				Average	
		Sum-SB4	120	3,777,437.8	647,314.7	9.00				Average	
		Sum-SB5	121	3,777,430.2	647,203.8	9.00				Average	
		Sum-SB6	122	3,777,451.5	647,096.5	9.00				Average	
		Sum-SB7	123	3,777,471.8	646,996.6	9.00				Average	
		Sum-SB8	124	3,777,453.0	646,933.7	9.00				Average	
		Sum-SB9	125	3,777,424.8	646,897.1	9.00				Average	
		Sum-SB10	126	3,777,365.5	646,850.6	9.00				Average	
		Sum-SB11	127	3,777,291.8	646,807.6	9.00				Average	
		Sum-SB12	128	3,777,146.0	646,704.0	9.00				Average	
		Sum-SB13	129	3,776,937.2	646,613.0	9.00				Average	
		Sum-SB14	130	3,776,630.8	646,483.1	9.00				Average	
		Sum-SB15	131	3,776,486.2	646,412.1	9.00				Average	
		Sum-SB16	132	3,776,416.0	646,326.6	9.00				Average	
		Sum-SB17	133	3,776,381.5	646,223.9	9.00				Average	
		Sum-SB18	134	3,776,363.2	646,133.9	9.00				Average	
		Sum-SB19	135	3,776,373.0	645,987.2	9.00				Average	
		Sum-SB20	136	3,776,456.5	645,676.7	9.00				Average	
		Sum-SB21	137	3,776,478.8	645,519.1	9.00				Average	
		Sum-SB22	138	3,776,474.8	645,477.0	9.00				Average	
		Sum-SB23	139	3,776,441.8	645,420.6	9.00				Average	
		Sum-SB24	140	3,776,471.0	645,353.8	9.00				Average	
		Sum-SB25	141	3,776,490.8	645,298.4	9.00				Average	
		Sum-SB26	142	3,776,485.8	645,000.0	9.00				Average	
		Sum-SB27	143	3,776,471.0	644,614.6	9.00				Average	
		Sum-SB28	144	3,776,449.2	644,017.1	9.00				Average	
		Sum-SB29	145	3,776,456.0	643,411.8	9.00				Average	
		Sum-SB30	146	3,776,463.5	642,951.2	9.00				Average	
		Sum-SB31	147	3,776,462.2	642,793.6	9.00				Average	
		Sum-SB32	148	3,776,454.8	642,670.8	9.00				Average	
		Sum-SB33	149	3,776,427.0	642,611.9	9.00				Average	
		Sum-SB34	150	3,776,372.5	642,561.0	9.00				Average	
		Sum-SB35	151	3,776,259.0	642,533.6	9.00				Average	

**INPUT: ROADWAYS**
**NORPC**

		Sum-SB36	152	3,775,957.0	642,517.2	9.00				Average	
		Sum-SB37	153	3,775,206.5	642,494.7	9.00				Average	
		Sum-SB38	154	3,774,882.0	642,482.5	9.00				Average	
		Sum-SB39	155	3,774,715.0	642,458.3	9.00				Average	
		Sum-SB40	156	3,774,563.5	642,386.4	9.00				Average	
		Sum-SB41	157	3,774,451.0	642,298.1	9.00				Average	
		Sum-SB42	158	3,774,158.5	642,033.2	9.00				Average	
		Sum-SB43	159	3,773,980.0	641,874.8	9.00					
Old Spanish Tr WB	24.0	OST-WB1	160	3,776,449.5	639,211.6	10.00				Average	
		OST-WB2	161	3,774,339.5	641,439.5	10.00				Average	
		OST-WB3	162	3,773,978.5	641,838.6	10.00				Average	
		OST-WB4	163	3,773,601.0	642,263.9	10.00				Average	
		OST-WB5	164	3,772,403.0	643,518.6	10.00					
Old Spanish TR EB	24.0	OST-EB1	165	3,772,352.0	643,458.2	10.00				Average	
		OST-EB2	166	3,773,952.2	641,804.9	10.00				Average	
		OST-EB3	167	3,774,304.8	641,402.2	10.00				Average	
		OST-EB4	168	3,776,441.5	639,130.0	10.00					
US190 WB	24.0	US190-WB	169	3,778,990.5	647,289.6	38.00				Average	
		US190-WB	170	3,778,747.5	647,396.1	30.00				Average	
		US190-WB	171	3,778,595.0	647,465.3	25.00				Average	
		US190-WB	172	3,778,005.8	647,730.2	18.00				Average	
		US190-WB	173	3,777,721.8	647,860.1	12.00				Average	
		US190-WB	174	3,777,346.0	648,032.4	10.00				Average	
		US190-WB	175	3,777,050.0	648,161.4	10.00				Average	
		US190-WB	176	3,775,535.8	648,893.3	10.00					
US190 EB	24.0	US190-EB	177	3,775,522.2	648,855.9	10.00				Average	
		US190-EB	178	3,777,048.0	648,115.9	10.00				Average	
		US190-EB	179	3,777,426.2	647,932.4	11.00				Average	
		US190-EB	180	3,777,686.8	647,819.0	12.00				Average	
		US190-EB	181	3,777,973.2	647,684.8	18.00				Average	
		US190-EB	182	3,778,612.0	647,397.4	25.00				Average	
		US190-EB	183	3,778,751.5	647,337.6	30.00				Average	
		US190-EB	184	3,778,980.8	647,240.7	38.00					
I-10 On Ramp	18.0	On1	185	3,778,612.0	647,397.4	25.00	Onramp	20.00	100	Average	
		On2	186	3,778,676.0	647,305.4	24.00				Average	
		On3	187	3,778,691.5	647,168.6	23.00				Average	
		On4	188	3,778,685.5	647,003.3	21.00				Average	
		On5	189	3,778,695.0	646,696.8	16.00				Average	
		On6	190	3,778,691.5	646,497.7	14.00				Average	

**INPUT: ROADWAYS**
**NORPC**

		On7	191	3,778,668.2	646,256.5	13.00				Average	
		On8	192	3,778,637.5	646,097.7	12.00				Average	
		On9	193	3,778,606.5	645,929.5	11.00					
Frontage Road/Garrett	30.0	Fr1	194	3,776,871.0	640,875.4	11.00				Average	
		Fr2	195	3,777,067.2	641,388.9	11.00				Average	
		Fr3	196	3,777,237.0	641,903.3	11.00				Average	
		Fr4	197	3,777,383.5	642,369.4	11.00				Average	
		Fr5	198	3,778,100.5	644,706.6	11.00				Average	
		Fr6	199	3,778,406.5	645,586.3	11.00				Average	
		Fr7	200	3,778,508.0	646,018.1	11.00				Average	
		Fr8	201	3,778,534.5	646,125.2	11.00				Average	
		Fr9	202	3,778,532.5	646,593.3	11.00				Average	
		Fr10	203	3,778,529.0	646,835.6	11.00				Average	
		Fr11	204	3,778,534.5	646,981.1	11.00				Average	
		Fr12	205	3,778,531.5	647,083.5	11.00				Average	
		Fr13	206	3,778,497.2	647,182.5	12.00				Average	
		Fr14	207	3,778,405.2	647,283.4	13.00				Average	
		Fr15	208	3,778,230.2	647,376.4	14.00				Average	
		Fr16	209	3,777,963.0	647,519.4	15.00				Average	
		Fr17	210	3,777,928.0	647,588.1	16.00				Average	
		Fr18	211	3,777,960.2	647,662.7	17.00					

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**NORPC**

Bowlby & Associates, Inc.												
CP												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	NORPC											
RUN:	Summit Blvd - Build PM											
Roadway	Points											
Name	Name	No.	Segment									
			Autos									
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
I-10 EB	I10EB-1	1	4139	65	54	65	216	65	0	0	0	0
	I10EB-2	2	4139	65	54	65	216	65	0	0	0	0
	I10EB-3	3	4139	65	54	65	216	65	0	0	0	0
	I10EB-4	4	4139	65	54	65	216	65	0	0	0	0
	I10EB-4B	18	4139	65	54	65	216	65	0	0	0	0
	I10EB-5	5	4139	65	54	65	216	65	0	0	0	0
	I10EB-5B	17	4139	65	54	65	216	65	0	0	0	0
	I10EB-6	6	4139	65	54	65	216	65	0	0	0	0
	I10EB-7	7										
I-10 WB	I10WB-1	8	2955	69	26	69	105	69	0	0	0	0
	I10WB-2	9	2955	69	26	69	105	69	0	0	0	0
	I10WB-3	10	2955	69	26	69	105	69	0	0	0	0
	I10WB-4	11	2955	69	26	69	105	69	0	0	0	0
	I10WB-5	12	2955	69	26	69	105	69	0	0	0	0
	I10WB-6	13	2955	69	26	69	105	69	0	0	0	0
	I10WB-7	14	2955	69	26	69	105	69	0	0	0	0
	I10WB-8	15	2955	69	26	69	105	69	0	0	0	0
	I10WB-9	16										
Summit NB	Sum-NB1	67	1477	30	16	30	62	30	0	0	0	0
	Sum-NB2	68	1477	30	16	30	62	30	0	0	0	0
	Sum-NB3	69	1477	30	16	30	62	30	0	0	0	0
	Sum-NB4	70	1477	30	16	30	62	30	0	0	0	0
	Sum-NB5	71	1477	30	16	30	62	30	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**NORPC**

	Sum-NB6	72	1477	30	16	30	62	30	0	0	0	0
	Sum-NB7	73	1477	30	16	30	62	30	0	0	0	0
	Sum-NB8	74	1477	30	16	30	62	30	0	0	0	0
	Sum-NB9	75	1477	30	16	30	62	30	0	0	0	0
	Sum-NB10	76	1477	30	16	30	62	30	0	0	0	0
	Sum-NB11	77	1477	30	16	30	62	30	0	0	0	0
	Sum-NB12	78	1477	30	16	30	62	30	0	0	0	0
	Sum-NB13	79	1477	30	16	30	62	30	0	0	0	0
	Sum-NB14	80	1477	30	16	30	62	30	0	0	0	0
	Sum-NB15	81	1477	30	16	30	62	30	0	0	0	0
	Sum-NB16	82	1477	30	16	30	62	30	0	0	0	0
	Sum-NB17	83	1477	30	16	30	62	30	0	0	0	0
	Sum-NB18	84	1477	30	16	30	62	30	0	0	0	0
	Sum-NB19	85	1477	30	16	30	62	30	0	0	0	0
	Sum-NB20	86	1477	30	16	30	62	30	0	0	0	0
	Sum-NB21	87	1477	30	16	30	62	30	0	0	0	0
	Sum-NB22	88	1477	30	16	30	62	30	0	0	0	0
	Sum-NB23	89	1477	30	16	30	62	30	0	0	0	0
	Sum-NB24	90	1477	30	16	30	62	30	0	0	0	0
	Sum-NB25	91	1477	30	16	30	62	30	0	0	0	0
	Sum-NB26	92	1477	30	16	30	62	30	0	0	0	0
	Sum-NB27	93	1477	30	16	30	62	30	0	0	0	0
	Sum-NB28	94	1477	30	16	30	62	30	0	0	0	0
	Sum-NB29	95	1477	30	16	30	62	30	0	0	0	0
	Sum-NB30	96	1477	30	16	30	62	30	0	0	0	0
	Sum-NB31	97	1477	30	16	30	62	30	0	0	0	0
	Sum-NB32	98	1477	30	16	30	62	30	0	0	0	0
	Sum-NB33	99	1477	30	16	30	62	30	0	0	0	0
	Sum-NB34	100	1477	30	16	30	62	30	0	0	0	0
	Sum-NB35	101	1477	30	16	30	62	30	0	0	0	0
	Sum-NB36	102	1477	30	16	30	62	30	0	0	0	0
	Sum-NB37	103	1477	30	16	30	62	30	0	0	0	0
	Sum-NB38	104	1477	30	16	30	62	30	0	0	0	0
	Sum-NB39	105	1477	30	16	30	62	30	0	0	0	0
	Sum-NB40	106	1477	30	16	30	62	30	0	0	0	0
	Sum-NB41	107	1477	30	16	30	62	30	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**NORPC**

	Sum-NB42	108	1477	30	16	30	62	30	0	0	0	0
	Sum-NB43	109	1477	30	16	30	62	30	0	0	0	0
	Sum-NB44	110	1477	30	16	30	62	30	0	0	0	0
	Sum-NB45	111	1477	30	16	30	62	30	0	0	0	0
	Sum-NB46	112	1477	30	16	30	62	30	0	0	0	0
	Sum-NB47	113	1477	30	16	30	62	30	0	0	0	0
	Sum-NB48	114	1477	30	16	30	62	30	0	0	0	0
	Sum-NB49	115	1477	30	16	30	62	30	0	0	0	0
	Sum-NB50	116										
Summit SB	Sum-SB1	117	1339	30	14	30	56	30	0	0	0	0
	Sum-SB2	118	1339	30	14	30	56	30	0	0	0	0
	Sum-SB3	119	1339	30	14	30	56	30	0	0	0	0
	Sum-SB4	120	1339	30	14	30	56	30	0	0	0	0
	Sum-SB5	121	1339	30	14	30	56	30	0	0	0	0
	Sum-SB6	122	1339	30	14	30	56	30	0	0	0	0
	Sum-SB7	123	1339	30	14	30	56	30	0	0	0	0
	Sum-SB8	124	1339	30	14	30	56	30	0	0	0	0
	Sum-SB9	125	1339	30	14	30	56	30	0	0	0	0
	Sum-SB10	126	1339	30	14	30	56	30	0	0	0	0
	Sum-SB11	127	1339	30	14	30	56	30	0	0	0	0
	Sum-SB12	128	1339	30	14	30	56	30	0	0	0	0
	Sum-SB13	129	1339	30	14	30	56	30	0	0	0	0
	Sum-SB14	130	1339	30	14	30	56	30	0	0	0	0
	Sum-SB15	131	1339	30	14	30	56	30	0	0	0	0
	Sum-SB16	132	1339	30	14	30	56	30	0	0	0	0
	Sum-SB17	133	1339	30	14	30	56	30	0	0	0	0
	Sum-SB18	134	1339	30	14	30	56	30	0	0	0	0
	Sum-SB19	135	1339	30	14	30	56	30	0	0	0	0
	Sum-SB20	136	1339	30	14	30	56	30	0	0	0	0
	Sum-SB21	137	1339	30	14	30	56	30	0	0	0	0
	Sum-SB22	138	1339	30	14	30	56	30	0	0	0	0
	Sum-SB23	139	1339	30	14	30	56	30	0	0	0	0
	Sum-SB24	140	1339	30	14	30	56	30	0	0	0	0
	Sum-SB25	141	1339	30	14	30	56	30	0	0	0	0
	Sum-SB26	142	1339	30	14	30	56	30	0	0	0	0
	Sum-SB27	143	1339	30	14	30	56	30	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**NORPC**

	Sum-SB28	144	1339	30	14	30	56	30	0	0	0	0
	Sum-SB29	145	1339	30	14	30	56	30	0	0	0	0
	Sum-SB30	146	1339	30	14	30	56	30	0	0	0	0
	Sum-SB31	147	1339	30	14	30	56	30	0	0	0	0
	Sum-SB32	148	1339	30	14	30	56	30	0	0	0	0
	Sum-SB33	149	1339	30	14	30	56	30	0	0	0	0
	Sum-SB34	150	1339	30	14	30	56	30	0	0	0	0
	Sum-SB35	151	1339	30	14	30	56	30	0	0	0	0
	Sum-SB36	152	1339	30	14	30	56	30	0	0	0	0
	Sum-SB37	153	1339	30	14	30	56	30	0	0	0	0
	Sum-SB38	154	1339	30	14	30	56	30	0	0	0	0
	Sum-SB39	155	1339	30	14	30	56	30	0	0	0	0
	Sum-SB40	156	1339	30	14	30	56	30	0	0	0	0
	Sum-SB41	157	1339	30	14	30	56	30	0	0	0	0
	Sum-SB42	158	1339	30	14	30	56	30	0	0	0	0
	Sum-SB43	159										
Old Spanish Tr WB	OST-WB1	160	1104	45	12	45	46	45	0	0	0	0
	OST-WB2	161	1104	45	12	45	46	45	0	0	0	0
	OST-WB3	162	1104	45	12	45	46	45	0	0	0	0
	OST-WB4	163	1104	45	12	45	46	45	0	0	0	0
	OST-WB5	164										
Old Spanish TR EB	OST-EB1	165	736	45	8	45	31	45	0	0	0	0
	OST-EB2	166	736	45	8	45	31	45	0	0	0	0
	OST-EB3	167	736	45	8	45	31	45	0	0	0	0
	OST-EB4	168										
US190 WB	US190-WB1	169	1164	45	12	45	49	45	0	0	0	0
	US190-WB2	170	1164	45	12	45	49	45	0	0	0	0
	US190-WB3	171	1164	45	12	45	49	45	0	0	0	0
	US190-WB4	172	1164	45	12	45	49	45	0	0	0	0
	US190-WB5	173	1164	45	12	45	49	45	0	0	0	0
	US190-WB6	174	1164	45	12	45	49	45	0	0	0	0
	US190-WB7	175	1164	45	12	45	49	45	0	0	0	0
	US190-WB8	176										
US190 EB	US190-EB1	177	776	45	8	45	33	45	0	0	0	0
	US190-EB2	178	776	45	8	45	33	45	0	0	0	0
	US190-EB3	179	776	45	8	45	33	45	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**NORPC**

	US190-EB4	180	776	45	8	45	33	45	0	0	0	0
	US190-EB5	181	776	45	8	45	33	45	0	0	0	0
	US190-EB6	182	776	45	8	45	33	45	0	0	0	0
	US190-EB7	183	776	45	8	45	33	45	0	0	0	0
	US190-EB8	184										
I-10 On Ramp	On1	185	296	65	3	65	11	65	0	0	0	0
	On2	186	296	65	3	65	11	65	0	0	0	0
	On3	187	296	65	3	65	11	65	0	0	0	0
	On4	188	296	65	3	65	11	65	0	0	0	0
	On5	189	296	65	3	65	11	65	0	0	0	0
	On6	190	296	65	3	65	11	65	0	0	0	0
	On7	191	296	65	3	65	11	65	0	0	0	0
	On8	192	296	65	3	65	11	65	0	0	0	0
	On9	193										
Frontage Road/Garrett	Fr1	194	0	0	0	0	0	0	0	0	0	0
	Fr2	195	0	0	0	0	0	0	0	0	0	0
	Fr3	196	0	0	0	0	0	0	0	0	0	0
	Fr4	197	0	0	0	0	0	0	0	0	0	0
	Fr5	198	0	0	0	0	0	0	0	0	0	0
	Fr6	199	0	0	0	0	0	0	0	0	0	0
	Fr7	200	0	0	0	0	0	0	0	0	0	0
	Fr8	201	0	0	0	0	0	0	0	0	0	0
	Fr9	202	0	0	0	0	0	0	0	0	0	0
	Fr10	203	0	0	0	0	0	0	0	0	0	0
	Fr11	204	0	0	0	0	0	0	0	0	0	0
	Fr12	205	0	0	0	0	0	0	0	0	0	0
	Fr13	206	0	0	0	0	0	0	0	0	0	0
	Fr14	207	0	0	0	0	0	0	0	0	0	0
	Fr15	208	0	0	0	0	0	0	0	0	0	0
	Fr16	209	0	0	0	0	0	0	0	0	0	0
	Fr17	210	0	0	0	0	0	0	0	0	0	0
	Fr18	211										



**INPUT: RECEIVERS**
**NORPC**

Bowlby & Associates, Inc. CP						5 December 2012 TNM 2.5					
INPUT: RECEIVERS											
PROJECT/CONTRACT:			NORPC								
RUN:			Summit Blvd - Build PM								
Receiver											
Name	No.	#DUs	Coordinates (ground)			Height	Input Sound Levels and Criteria				Active
			X	Y	Z	above	Existing	Impact Criteria		NR	in
						Ground	L <sub>Aeq</sub> 1h	L <sub>Aeq</sub> 1h	Sub'l	Goal	Calc.
			ft	ft	ft	ft	dBA	dBA	dB	dB	
56721 Selbourn	1	1	3,774,894.0	641,585.7	8.00	5.00	0.00	66	10.0	8.0	Y
56724 Selbourn (M)	2	1	3,775,020.2	641,600.7	8.00	5.00	0.00	66	10.0	8.0	Y
56725 Bosworth	3	1	3,775,187.8	641,580.6	8.00	5.00	0.00	66	10.0	8.0	Y
56722 Hudson	4	1	3,776,215.5	641,608.5	8.00	5.00	0.00	66	10.0	8.0	Y
56704 Behrman	5	1	3,776,507.0	641,446.2	8.00	5.00	0.00	66	10.0	8.0	Y
Ballfield South	6	1	3,775,269.0	643,810.9	7.00	5.00	0.00	66	10.0	8.0	Y
Ballfield North	7	1	3,775,046.0	644,322.1	7.00	5.00	0.00	66	10.0	8.0	Y
1937 Nellie	8	1	3,776,977.2	648,034.5	9.00	5.00	0.00	66	10.0	8.0	Y
1945 Nellie	9	1	3,776,996.5	647,937.0	9.00	5.00	0.00	66	10.0	8.0	Y
1961 Nellie	10	1	3,776,963.2	647,745.5	9.00	5.00	0.00	66	10.0	8.0	Y
2009 Nellie	11	1	3,777,027.5	647,526.0	9.00	5.00	0.00	66	10.0	8.0	Y
2013 Nellie	12	1	3,777,008.0	647,478.5	9.00	5.00	0.00	66	10.0	8.0	Y
2022 Nellie	13	1	3,777,006.2	647,372.3	9.00	5.00	0.00	66	10.0	8.0	Y
2033 Nellie	14	1	3,777,013.2	647,236.1	9.00	5.00	0.00	66	10.0	8.0	Y
2032 Beth	15	1	3,776,828.0	647,231.8	9.00	5.00	0.00	66	10.0	8.0	Y
Long Term (M)	16	1	3,777,424.0	642,939.8	8.00	5.00	0.00	66	10.0	8.0	Y
Nellie Dr (M)	17	1	3,777,093.2	647,213.3	9.00	5.00	0.00	66	10.0	8.0	Y
South Roundabout (M)	18	1	3,776,357.5	642,641.2	8.50	5.00	0.00	66	10.0	8.0	Y
South Canal (M)	19	1	3,775,258.5	642,530.5	8.00	5.00	0.00	66	10.0	8.0	Y
W-14 Canal (M)	20	1	3,776,383.0	644,193.8	10.00	5.00	0.00	66	10.0	8.0	Y

**INPUT: BUILDING ROWS**

**NORPC**

Bowlby & Associates, Inc.					5 December 2012	
CP					TNM 2.5	
INPUT: BUILDING ROWS						
PROJECT/CONTRACT:	NORPC					
RUN:	Summit Blvd - Build PM					
Building Row			Points			
Name	Average Height	Building Percent	No.	Coordinates (ground)		
				X	Y	Z
	ft	%		ft	ft	ft
Dwyer / Garrett Bldgs	25.00	70	1	3,776,849.8	641,858.7	8.00
			2	3,776,865.2	640,966.6	8.00

**RESULTS: SOUND LEVELS**
**NORPC**

<b>Bowlby &amp; Associates, Inc.</b>												
<b>CP</b>												
<b>RESULTS: SOUND LEVELS</b>												
<b>PROJECT/CONTRACT:</b>												
<b>RUN:</b>												
<b>BARRIER DESIGN:</b>												
<b>ATMOSPHERICS:</b>												
<b>Receiver</b>												
<b>Name</b>												
<b>No.</b>												
<b>#DUs</b>												
<b>Existing</b>												
<b>L<sub>Aeq1h</sub></b>												
<b>No Barrier</b>												
<b>L<sub>Aeq1h</sub></b>												
<b>Calculated</b>												
<b>Crit'n</b>												
<b>Increase over existing</b>												
<b>Calculated</b>												
<b>Crit'n</b>												
<b>Sub'l Inc</b>												
<b>Type</b>												
<b>Impact</b>												
<b>With Barrier</b>												
<b>Calculated</b>												
<b>L<sub>Aeq1h</sub></b>												
<b>Noise Reduction</b>												
<b>Calculated</b>												
<b>Goal</b>												
<b>Calculated</b>												
<b>minus</b>												
<b>Goal</b>												
<b>dB</b>												
56721 Selbourn	1	1	0.0	54.6	66	54.6	10	----	54.6	0.0	8	-8.0
56724 Selbourn (M)	2	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
56725 Bosworth	3	1	0.0	53.8	66	53.8	10	----	53.8	0.0	8	-8.0
56722 Hudson	4	1	0.0	59.4	66	59.4	10	----	59.4	0.0	8	-8.0
56704 Behrman	5	1	0.0	60.9	66	60.9	10	----	60.9	0.0	8	-8.0
Ballfield South	6	1	0.0	50.3	66	50.3	10	----	50.3	0.0	8	-8.0
Ballfield North	7	1	0.0	49.3	66	49.3	10	----	49.3	0.0	8	-8.0
1937 Nellie	8	1	0.0	65.5	66	65.5	10	----	65.5	0.0	8	-8.0
1945 Nellie	9	1	0.0	60.6	66	60.6	10	----	60.6	0.0	8	-8.0
1961 Nellie	10	1	0.0	56.8	66	56.8	10	----	56.8	0.0	8	-8.0
2009 Nellie	11	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
2013 Nellie	12	1	0.0	55.0	66	55.0	10	----	55.0	0.0	8	-8.0
2022 Nellie	13	1	0.0	54.1	66	54.1	10	----	54.1	0.0	8	-8.0
2033 Nellie	14	1	0.0	53.5	66	53.5	10	----	53.5	0.0	8	-8.0
2032 Beth	15	1	0.0	52.9	66	52.9	10	----	52.9	0.0	8	-8.0
Long Term (M)	16	1	0.0	68.1	66	68.1	10	Snd Lvl	68.1	0.0	8	-8.0
Nellie Dr (M)	17	1	0.0	54.0	66	54.0	10	----	54.0	0.0	8	-8.0
South Roundabout (M)	18	1	0.0	57.3	66	57.3	10	----	57.3	0.0	8	-8.0
South Canal (M)	19	1	0.0	51.9	66	51.9	10	----	51.9	0.0	8	-8.0
W-14 Canal (M)	20	1	0.0	54.3	66	54.3	10	----	54.3	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>												

**RESULTS: SOUND LEVELS**

**NORPC**

All Selected		20	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

**INPUT: ROADWAYS**
**NORPC**

Bowlby & Associates, Inc.				5 December 2012							
CP				TNM 2.5							
INPUT: ROADWAYS											
PROJECT/CONTRACT:		NORPC								Average pavement type shall be used unless	
RUN:		Summit Blvd - No Build								a State highway agency substantiates the use	
										of a different type with the approval of FHWA	
Roadway		Points									
Name	Width	Name	No.	Coordinates (pavement)		Flow Control				Segment	
				X	Y	Z	Control	Speed	Percent	Pvmt	On
							Device	Constraint	Vehicles	Type	Struct?
									Affected		
	ft			ft	ft	ft		mph	%		
I-10 EB	44.0	I10EB-1	1	3,776,450.8	638,627.1	10.00				Average	
		I10EB-2	2	3,777,623.8	642,391.7	10.00				Average	
		I10EB-3	3	3,778,237.5	644,380.5	10.50				Average	
		I10EB-4	4	3,778,708.5	645,897.1	11.00				Average	
		I10EB-4B	18	3,778,933.5	646,633.9	11.50				Average	
		I10EB-5	5	3,779,131.0	647,284.8	12.00				Average	
		I10EB-5B	17	3,779,481.0	648,406.0	12.25				Average	
		I10EB-6	6	3,779,831.0	649,527.1	12.50				Average	
		I10EB-7	7	3,780,317.0	651,083.0	13.00					
I-10 WB	44.0	I10WB-1	8	3,780,197.2	651,116.7	13.00				Average	
		I10WB-2	9	3,779,722.2	649,558.9	12.50				Average	
		I10WB-3	10	3,779,401.5	648,487.8	12.30				Average	
		I10WB-4	11	3,779,038.0	647,315.9	12.00				Average	
		I10WB-5	12	3,778,834.2	646,650.4	11.50				Average	
		I10WB-6	13	3,778,606.5	645,929.5	11.00				Average	
		I10WB-7	14	3,778,148.0	644,440.9	10.50				Average	
		I10WB-8	15	3,777,516.2	642,421.3	10.00				Average	
		I10WB-9	16	3,776,326.5	638,672.2	10.00					
Old Spanish Tr WB	24.0	OST-WB1	160	3,776,449.5	639,211.6	10.00				Average	
		OST-WB2	161	3,774,339.5	641,439.5	10.00				Average	
		OST-WB3	162	3,773,978.5	641,838.6	10.00				Average	
		OST-WB4	163	3,773,601.0	642,263.9	10.00				Average	
		OST-WB5	164	3,772,403.0	643,518.6	10.00					
Old Spanish TR EB	24.0	OST-EB1	165	3,772,352.0	643,458.2	10.00				Average	
		OST-EB2	166	3,773,952.2	641,804.9	10.00				Average	

**INPUT: ROADWAYS**
**NORPC**

		OST-EB3	167	3,774,304.8	641,402.2	10.00				Average	
		OST-EB4	168	3,776,441.5	639,130.0	10.00					
US190 WB	24.0	US190-WB	169	3,778,990.5	647,289.6	38.00				Average	
		US190-WB	170	3,778,747.5	647,396.1	30.00				Average	
		US190-WB	171	3,778,595.0	647,465.3	25.00				Average	
		US190-WB	172	3,778,005.8	647,730.2	18.00				Average	
		US190-WB	173	3,777,721.8	647,860.1	12.00				Average	
		US190-WB	174	3,777,346.0	648,032.4	10.00				Average	
		US190-WB	175	3,777,050.0	648,161.4	10.00				Average	
		US190-WB	176	3,775,535.8	648,893.3	10.00					
US190 EB	24.0	US190-EB	177	3,775,522.2	648,855.9	10.00				Average	
		US190-EB	178	3,777,048.0	648,115.9	10.00				Average	
		US190-EB	179	3,777,426.2	647,932.4	11.00				Average	
		US190-EB	180	3,777,686.8	647,819.0	12.00				Average	
		US190-EB	181	3,777,973.2	647,684.8	18.00				Average	
		US190-EB	182	3,778,612.0	647,397.4	25.00				Average	
		US190-EB	183	3,778,751.5	647,337.6	30.00				Average	
		US190-EB	184	3,778,980.8	647,240.7	38.00					
I-10 On Ramp	18.0	On1	185	3,778,612.0	647,397.4	25.00	Onramp	20.00	100	Average	
		On2	186	3,778,676.0	647,305.4	24.00				Average	
		On3	187	3,778,691.5	647,168.6	23.00				Average	
		On4	188	3,778,685.5	647,003.3	21.00				Average	
		On5	189	3,778,695.0	646,696.8	16.00				Average	
		On6	190	3,778,691.5	646,497.7	14.00				Average	
		On7	191	3,778,668.2	646,256.5	13.00				Average	
		On8	192	3,778,637.5	646,097.7	12.00				Average	
		On9	193	3,778,606.5	645,929.5	11.00					
Frontage Road/Garrett	30.0	Fr1	194	3,776,871.0	640,875.4	11.00				Average	
		Fr2	195	3,777,067.2	641,388.9	11.00				Average	
		Fr3	196	3,777,237.0	641,903.3	11.00				Average	
		Fr4	197	3,777,383.5	642,369.4	11.00				Average	
		Fr5	198	3,778,100.5	644,706.6	11.00				Average	
		Fr6	199	3,778,406.5	645,586.3	11.00				Average	
		Fr7	200	3,778,508.0	646,018.1	11.00				Average	
		Fr8	201	3,778,534.5	646,125.2	11.00				Average	
		Fr9	202	3,778,532.5	646,593.3	11.00				Average	
		Fr10	203	3,778,529.0	646,835.6	11.00				Average	
		Fr11	204	3,778,534.5	646,981.1	11.00				Average	
		Fr12	205	3,778,531.5	647,083.5	11.00				Average	



**INPUT: ROADWAYS****NORPC**

		Fr13	206	3,778,497.2	647,182.5	12.00				Average	
		Fr14	207	3,778,405.2	647,283.4	13.00				Average	
		Fr15	208	3,778,230.2	647,376.4	14.00				Average	
		Fr16	209	3,777,963.0	647,519.4	15.00				Average	
		Fr17	210	3,777,928.0	647,588.1	16.00				Average	
		Fr18	211	3,777,960.2	647,662.7	17.00					

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**NORPC**

Bowlby & Associates, Inc.												
CP												
INPUT: TRAFFIC FOR LAeq1h Volumes												
PROJECT/CONTRACT:	NORPC											
RUN:	Summit Blvd - No Build											
Roadway	Points											
Name	Name	No.	Segment									
			Autos									
			V	S	V	S	V	S	V	S	V	S
			veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph	veh/hr	mph
I-10 EB	I10EB-1	1	4139	65	54	65	216	65	0	0	0	0
	I10EB-2	2	4139	65	54	65	216	65	0	0	0	0
	I10EB-3	3	4139	65	54	65	216	65	0	0	0	0
	I10EB-4	4	4139	65	54	65	216	65	0	0	0	0
	I10EB-4B	18	4139	65	54	65	216	65	0	0	0	0
	I10EB-5	5	4139	65	54	65	216	65	0	0	0	0
	I10EB-5B	17	4139	65	54	65	216	65	0	0	0	0
	I10EB-6	6	4139	65	54	65	216	65	0	0	0	0
	I10EB-7	7										
I-10 WB	I10WB-1	8	2955	69	26	69	105	69	0	0	0	0
	I10WB-2	9	2955	69	26	69	105	69	0	0	0	0
	I10WB-3	10	2955	69	26	69	105	69	0	0	0	0
	I10WB-4	11	2955	69	26	69	105	69	0	0	0	0
	I10WB-5	12	2955	69	26	69	105	69	0	0	0	0
	I10WB-6	13	2955	69	26	69	105	69	0	0	0	0
	I10WB-7	14	2955	69	26	69	105	69	0	0	0	0
	I10WB-8	15	2955	69	26	69	105	69	0	0	0	0
	I10WB-9	16										
Old Spanish Tr WB	OST-WB1	160	1104	45	12	45	46	45	0	0	0	0
	OST-WB2	161	1104	45	12	45	46	45	0	0	0	0
	OST-WB3	162	1104	45	12	45	46	45	0	0	0	0
	OST-WB4	163	1104	45	12	45	46	45	0	0	0	0
	OST-WB5	164										

**INPUT: TRAFFIC FOR LAeq1h Volumes**
**NORPC**

Old Spanish TR EB	OST-EB1	165	736	45	8	45	31	45	0	0	0	0
	OST-EB2	166	736	45	8	45	31	45	0	0	0	0
	OST-EB3	167	736	45	8	45	31	45	0	0	0	0
	OST-EB4	168										
US190 WB	US190-WB1	169	1164	45	12	45	49	45	0	0	0	0
	US190-WB2	170	1164	45	12	45	49	45	0	0	0	0
	US190-WB3	171	1164	45	12	45	49	45	0	0	0	0
	US190-WB4	172	1164	45	12	45	49	45	0	0	0	0
	US190-WB5	173	1164	45	12	45	49	45	0	0	0	0
	US190-WB6	174	1164	45	12	45	49	45	0	0	0	0
	US190-WB7	175	1164	45	12	45	49	45	0	0	0	0
	US190-WB8	176										
US190 EB	US190-EB1	177	776	45	8	45	33	45	0	0	0	0
	US190-EB2	178	776	45	8	45	33	45	0	0	0	0
	US190-EB3	179	776	45	8	45	33	45	0	0	0	0
	US190-EB4	180	776	45	8	45	33	45	0	0	0	0
	US190-EB5	181	776	45	8	45	33	45	0	0	0	0
	US190-EB6	182	776	45	8	45	33	45	0	0	0	0
	US190-EB7	183	776	45	8	45	33	45	0	0	0	0
	US190-EB8	184										
I-10 On Ramp	On1	185	296	65	3	65	11	65	0	0	0	0
	On2	186	296	65	3	65	11	65	0	0	0	0
	On3	187	296	65	3	65	11	65	0	0	0	0
	On4	188	296	65	3	65	11	65	0	0	0	0
	On5	189	296	65	3	65	11	65	0	0	0	0
	On6	190	296	65	3	65	11	65	0	0	0	0
	On7	191	296	65	3	65	11	65	0	0	0	0
	On8	192	296	65	3	65	11	65	0	0	0	0
	On9	193										
Frontage Road/Garrett	Fr1	194	0	0	0	0	0	0	0	0	0	0
	Fr2	195	0	0	0	0	0	0	0	0	0	0
	Fr3	196	0	0	0	0	0	0	0	0	0	0
	Fr4	197	0	0	0	0	0	0	0	0	0	0
	Fr5	198	0	0	0	0	0	0	0	0	0	0
	Fr6	199	0	0	0	0	0	0	0	0	0	0
	Fr7	200	0	0	0	0	0	0	0	0	0	0

**INPUT: TRAFFIC FOR LAeq1h Volumes****NORPC**

	Fr8	201	0	0	0	0	0	0	0	0	0	0
	Fr9	202	0	0	0	0	0	0	0	0	0	0
	Fr10	203	0	0	0	0	0	0	0	0	0	0
	Fr11	204	0	0	0	0	0	0	0	0	0	0
	Fr12	205	0	0	0	0	0	0	0	0	0	0
	Fr13	206	0	0	0	0	0	0	0	0	0	0
	Fr14	207	0	0	0	0	0	0	0	0	0	0
	Fr15	208	0	0	0	0	0	0	0	0	0	0
	Fr16	209	0	0	0	0	0	0	0	0	0	0
	Fr17	210	0	0	0	0	0	0	0	0	0	0
	Fr18	211										