The Paul Lynch Park property was donated to the City of Shreveport in the early 1980's and a conceptual plan for park development was prepared in 1984. These plans proposed a recreation center, tennis courts, and ballfields, as well as a golf course. However, funding has not been available to initiate further design or construction to date, and the property remains undeveloped.

Access to the park from MLK Drive would be maintained with construction of the Selected Alignment. In addition, access to the park property west of McCain Creek would be maintained. Further, the Selected Alignment would not constitute "constructive use" of this resource as defined in Section 4(f) 49 U.S.C. 303. The Selected Alignment would not substantially impair any proposed activities, features, or attributes of the proposed recreational facilities. The primary intended use of this resource is outdoor recreation such as golf, baseball, softball, tennis, and other sports. These activities would be compatible with the current and proposed adjacent roadways.

The Selected Alignment could be beneficial to park development and operations. The proposed interchange at MLK Drive could provide additional local and regional access to the park and its recreational opportunities.

4.12 FARMLANDS

All alignments would impact soils identified as prime and locally important farmland (Table 4-13). A Farmland Conversion Impact Rating Form (Form AD-1006) was completed and forwarded to the Caddo Parish NRCS office for their review and completion. This completed form is included in the Appendix.

Line 4 would impact the greatest amount of prime farmland soils. Further, Line 4 would have the most involvement with prime and locally important soils. Line 3 would impact the greatest amount of locally important soils, while Line 4 would impact the least.

Table 4-13
FARMLAND IMPACTS

Alignment	Prime		Locally Important	
	ha	ac	ha	ac
No-Action	0	0	0	0
Line 1	286.1	706.7	162.2	400.7
Line 2	303.7	750.2	126.1	311.5
Line 3	253.5	626.1	181.5	448.3
Line 4	336.6	831.7	119.4	295.1
Selected	300.7	742.9	137.8	340.4

Source: Michael Baker Jr., Inc.

Due to the extensive agricultural activity in the study area, there is no practicable highway construction alternative that would avoid impacts to this resource. The Preferred Corridor and the subsequent Selected Alignment were developed to

minimize impacts to productive farmland based on input from local farmers.

The No-Action alternative would not impact farmlands.

Secondary development at interchanges may result in additional impacts to farmland soils. These impacts can not be quantified at this time.

4.13 CULTURAL RESOURCES

The cultural resources assessment for the Draft EIS was based on a literature search, a review of known cultural resources sites on file at the State Historic Preservation Office (SHPO), and an assessment of potential cultural resources within the alignment alternatives studied. Following the identification of the Draft EIS Preferred Alignment, an intensive cultural resources survey was initiated. The following sections present the findings and conclusions of the Draft EIS assessment as well as the findings to date of the intensive cultural resources survey, and a summary of future cultural resources efforts for this project.

4.13.1 Cultural Resources Efforts for Draft EIS

A literature and records review was conducted to determine the locations of recorded archaeological and historic sites within the Preferred Corridor. Five prehistoric archaeological sites were located near the Preferred Corridor west of Hosston and south of LA 2. With the exception of Line 3, no recorded archaeological sites would be impacted by the alignments. Line 3 would impact three of these locations, two of which are not eligible for nomination to the National Register and one of which the status is unknown. The Selected Alignment passes approximately 2 kilometers (1.2 miles) east of these sites. No recorded historic structures were identified within the Preferred Corridor. In addition to the recorded information, high probability areas for cultural material were identified in association with terraces, floodplains, and bayou and stream crossings. This information was used as a broad assessment tool to determine if any substantial differences existed between corridors and subsequently between the alignments. From this perspective, involvement with high probability areas was similar in magnitude for all alignments.

Effects of the No-Action Alternative

The No-Action alternative would not impact cultural resources in the study area. Current levels of looting, vandalism, and non-scientific collecting would likely continue.

4.13.2 Cultural Resource Efforts for Final EIS

Intensive cultural resources surveys of the Selected Alignment have been conducted and a Management Summary describing this work in detail has been submitted to the SHPO for review. These surveys have been conducted only where land owner access was granted. All sites located have been recorded and evaluated for their eligibility for nomination to the National Register of Historic Places. Results of the survey are

presented in Table 4-13.1. A total of nineteen sites were identified and recorded within the construction limits of the Selected Alignment. Of these, nine represented historic sites and the remaining ten represented prehistoric sites. Most of the sites had been damaged by logging or farming activities. Of these, only one site will require additional investigations to determine the significance and potential eligibility for nomination to the National Register of Historic Places.

Table 4-13.1
A SUMMARY OF SITES WITHIN THE SELECTED ALIGNMENT

Site Name	Type	Size	Eligibility	Recommendation
16CD279	historic	90 x 60 m	Not Eligible	No Further Work
16CD280	historic	55 x 50 m	Not Eligible	No Further Work
16CD281	prehistoric	10 x 20 m	Not Eligible	No Further Work
16CD282	historic	80 x 40 m	Not Eligible	No Further Work
16CD283	prehistoric	25 x 15 m	Not Eligible	No Further Work
16CD284	historic	N/A	Not Eligible	No Further Work
16CD285	historic	65 x 40 m	Not Eligible	No Further Work
16CD286	historic	40 x 40 m	Not Eligible	No Further Work
16CD287	prehistoric	90 x 75 m	Not Eligible	No Further Work
16CD288	historic	60 x 40 m	Not Eligible	No Further Work
16CD289	prehistoric	15 x 15 m	Not Eligible	No Further Work
16CD290	prehistoric	45 x 5 m	Not Eligible	No Further Work
16CD291	prehistoric	100 x 100 m	Not Eligible	No Further Work
16CD293	historic	20 x 30 m	Not Eligible	No Further Work
16CD295	historic	50 x 40 m	Not Eligible	No Further Work
16CD294	prehistoric	30 x 80 m	Potentially Eligible	Further testing required
Isolated Find #1	prehistoric	N/A	Not Eligible	No Further Work
Isolated Find #2	prehistoric	N/A	Not Eligible	No Further Work
Isolated Find #3	Prehistoric	N/A	Not Eligible	No Further Work

Source: Gulf South Research Corporation

4.13.3 Future Cultural Resources Efforts

The FHWA, DOTD and the SHPO have reached a consensus for the completion of the cultural resources efforts for this project. Additional studies will be conducted including 1) Phase I survey of those portions of the project where right-of-entry could not be obtained; 2) Phase II testing of one archaeological site (16CD294), which is considered potentially eligible for listing in the National Register of Historic Places; and 3) selected deep testing in certain archaeological high probability areas. All findings will be submitted to the SHPO for evaluation and concurrence and further agreements will be developed between the DOTD, FHWA, and the SHPO should the findings warrant such action. All archaeological sites that warrant preservation in place will be avoided, provided that a prudent and feasible alternative for highway construction can be identified. The documentation is provided in the Appendix.

4.14 AIR QUALITY

The primary source of air pollution emissions associated with the proposed highway project are motor vehicles using the facility. An air quality assessment was performed following the guidelines established by DOTD, FHWA, and EPA.

This analysis discusses the assessment methodology, the existing mobile source (traffic-related) air quality in the study area, and the predicted impacts to the local air quality from construction of the proposed highway. Construction mitigation measures and other mitigation measures are also addressed.

4.14.1 Methodology

A microscale analysis was performed to predict the effects of Carbon Monoxide (CO) changes to local air quality from the construction of the proposed highway. The microscale analysis predicts the generation and transportation of CO in the immediate area. The years 2005 (interim year) and 2020 (design year) were analyzed and compared to the NAAQS.

Motor vehicle emission rates were computed using EPA's MOBILE 5.0a emissions model (March, 1993). The emission factors were developed with conservative model inputs to provide a worst-case scenario. Carbon monoxide concentrations from highway vehicles were calculated by using CAL3QHC, a Gaussian dispersion model and extension of the CALINE 3 model.

A worst-case approach was taken for nearly all meteorological conditions. Three-hundred and sixty wind directions were analyzed at 1 degree intervals to determine the maximum CO concentrations. Other factors included a wind speed of one meter per second, a rural stable atmospheric condition (E), a mixing height of 1,000 meters (3,280 feet), and worst case minimum and maximum temperatures for January of 34.8°F and 55.4°F, respectively.

Modeling was done for the peak 1-hour traffic condition. A background concentration of 2.0 parts per million (ppm) for the 1-hour concentration was used to account for CO sources outside the Preferred Corridor. Speeds for the existing roadways and the proposed highway were based on the functional type and location of the particular road.

Receptor sites along the roadway were chosen at locations where the highest CO concentrations could be expected and where the general public would have access during the analysis periods. These were placed at representative points along the proposed alignments where human activity may occur. The CO concentrations were compiled to include the proposed highway, cross-streets, and background concentrations as necessary.

A mesoscale or "regional" analysis was not performed for the project because the study area is in attainment for O_3 (See Section 3).

4.14.2 Air Quality Impacts

Table 4-14 presents the predicted highest 1-hour CO receptor concentrations for existing year, interim year 2005 and design year 2020. The highest concentrations (which include a conservative 1-hour background level of 2.0 ppm) would be located in areas where the greatest traffic volumes are moving at their slowest probable speed. These locations are:

- U.S. 71 between Interstate 220 and LA 1 - the highest traffic volume link on the existing route
- the 4-way signalized intersection of U.S. 71 and LA 168 in Ida - the greatest potential queue condition on U.S. 71 in the study area
- Proposed North-South Expressway between Interstate 220 and LA 1 - the highest traffic volume link on the proposed highway.

Table 4-14
PREDICTED HIGHEST 1-HOUR CO CONCENTRATIONS

RECEPTOR LINKS	EXISTING YEAR	INTERIM YEAR 2005		DESIGN YEAR 2020	
		No-Action	All Build Alternatives	No-Action	All Build Alternatives
Worst-Case Existing Route: US 71 between Interstate 220 and LA 1	2.9	3.0	2.6	3.2	2.8
Worst-Case Intersection: U.S. 71/ LA 168	4.2	3.8	3.3	3.8	3.5
Worst-Case Proposed Highway: between Interstate 220 and LA 1	N/A	N/A	2.9	N/A	3.1

Source: Michael Baker Jr., Inc.
1-hour standard is 35 ppm
8-hour standard is 9 ppm

For the existing year, there is no receptor concentration above either the 1-hour or 8-hour criteria. The No-Action alternative also had no receptor above the NAAQS.

None of the analysis sites are predicted to exceed the 1-hour criteria for any of the build alternatives. The predicted design year build alternative CO is lower than the design year No-Action alternative CO because of traffic diversions from those roadway links with the highest potential CO to the proposed highway facility. Because the proposed concentrations are lower than the NAAQS, especially as low as those predicted for this project, an 8-hour analysis was not performed. Eight-hour concentrations are typically 60-70 percent of the 1-hour concentrations. Based on the microscale analysis results, no mitigation measures are required for the proposed highway. Further, the project is in an area where there are no transportation control measures. Therefore, conformity procedures do not apply as the area is in attainment for the appropriate pollutants.

4.15 NOISE

The noise analysis was prepared in accordance with 23 CFR 772 and DOTD's Highway Traffic Noise Policy that establish requirements for a noise study for any proposed federal or federal-aid project. DOTD requires that highway traffic noise prediction requirements, noise analyses, noise abatement criteria, and requirements for informing local officials in this directive, comply with the noise standards mandated by 23 U.S.C. 109(i).

This analysis section determines and analyzes expected traffic noise impacts and alternative noise abatement measures to mitigate these impacts, giving weight to the benefits and cost of abatement, and to the overall social, economic and environmental impacts.

The traffic noise analysis included the following:

- Identification of existing activities, developed land, and undeveloped land which is planned, designed, and programmed;
- Determination of existing noise levels;
- Prediction of traffic noise levels;
- Determination of traffic noise impacts; and
- Examination and evaluation of alternative noise abatement measures for reducing or eliminating the noise impacts for the Selected Alignment.

Sound intensity is typically presented as a sound level using the unit "decibel" (dB). The decibel is used to measure either sound power or sound pressure levels. These sound pressure levels are shown as dBA $L_{eq}(h)$. The term dBA refers to decibels on the A-weighted scale that represents the way the human ear perceives sound. The term L_{eq} (h) refers to an equivalent of an average sound level over an hour's time period.

Table 4-15 shows the DOTD Noise Abatement Criteria (NAC) for various land use activity categories. These criteria are consistent with the FHWA NAC allowing for consideration of traffic noise impacts 1 dBA below the FHWA criteria. For highway projects in Louisiana, noise impacts occur when the predicted traffic noise levels equal or exceed the DOTD NAC, or when the predicted traffic noise levels exceed the existing levels by 10 dBA. Noise abatement measures would be considered for these sites.

Activity Category B, representative of residences, schools, churches and parks, was used as the criteria for sensitive receptors identified in this analysis. Additionally, Activity Category C receptors were also noted when businesses were part of a mixed land-use area.

Table 4-15
DOTD NOISE ABATEMENT CRITERIA (NAC)*
HOURLY A-WEIGHTED SOUND LEVEL - DECIBELS (dBA)

ACTIVITY CATEGORY	L_{eq} (h)	DESCRIPTION OF ACTIVITY CATEGORY
A	56 (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	66 (Exterior)	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries and hospitals.
C	71 (Exterior)	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands.
E	51 (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.

*These criteria are consistent with the FHWA Noise Abatement Criteria (23 CFR 772) allowing for consideration of traffic noise impacts 1 dBA below the FHWA criteria.

As a guide for understanding how loud or quiet certain sound levels are, Table 4-16 shows outdoor and indoor noise levels that are commonly known by most people. Please note that each 10 decibel increment (±) represents a doubling or halving of perceived loudness.

Table 4-16
COMMON INDOOR & OUTDOOR NOISE LEVELS

Common Outdoor Noise Levels	dBA Level	Common Indoor Noise Levels
Jet Flyover at 1000 feet	110	Rock Band
Gas Lawn Mower at 3 feet	100	Inside Subway Train (New York)
Diesel Truck at 50 feet, Noisy Urban Daytime	90	Food Blender at 3 feet
Gas Lawn Mower at 100 feet	80	Garbage Disposal at 3 feet
Commercial Area	70	Vacuum Cleaner at 10 feet
Quiet Urban Daytime	60	Large Business Office
Quiet Urban Nighttime	50	Dishwasher In Next Room
	40	Small Theater, Lg. Conference Room (Background) , Library
Quiet Suburban Nighttime	30	Bedroom at Night, Concert Hall (Background)
Quiet Rural Nighttime	20	Broadcast & Recording Studio
	10	
	0	

Source: Michael Baker Jr., Inc.

Typical Noise Change:
3 dBA ± - Generally Not Perceptible
5 dBA ± - Generally Perceptible
10 dBA ± - Generally considered as doubling (or halving) of sound.

4.15.1 Prediction of Traffic Noise Levels

Traffic noise calculations were performed for the design year 2020 using the STAMINA 2.0/OPTIMA model. A 105 kilometer/hr (65 mph) speed was used for the proposed highway (model maximum). The vehicle fleet mix for the proposed highway was based on vehicle classifications for area freeways (Feasibility Study 1995). The mix was 84.1% autos, 0.2% medium trucks, and 15.7% heavy trucks. Additionally, the model accounted for tree shielding where dense vegetation existed based on aerial photography. Approximately 290 locations were modeled to represent more than 700 receptors to account for areas most likely affected by the proposed project (See Appendix).

4.15.2 Traffic Noise Impacts

Noise impacts are determined based on the degree to which the projected noise levels exceed the established noise level activity category criteria, and by how much the levels increase over the existing condition as a result of the proposed highway. Results of the noise analysis for each receptor area under all conditions modeled are presented in Table 4-17. Some of the predicted design year build sound levels are lower than the design year No-Action concentrations due to traffic diversions to the proposed highway facility, particularly along sections of U.S. 71. The impacts identified in the last column of the table refer to the Selected Alignment only. The approximate receptor locations and the areas considered for further noise abatement consideration are shown in the Appendix.

DOTD NAC Criteria Impacts

The number of sensitive receptors that equal or exceed the DOTD NAC for all alignments is presented in Table 4-18. No schools, parks, or business establishments were impacted under any condition. For these criteria, Line 1 and the Selected Alignment would have the greatest number of impacts, while Line 4 would have the least. Under the No-Action alternative, noise at 45 receptors would exceed the DOTD NAC in 2020.

Substantial Increase Criteria Impacts

Table 4-18 presents the number of sensitive receptors where a substantial increase in noise would occur due to the proposed highway. For these criteria, Line 3 would have the greatest number of sensitive receptors with substantial increases while Line 4 and the Selected Alignment would have the least. No schools, parks, or businesses were impacted under any condition for these criteria. The Substantial Increase Criteria do not apply for the existing condition and was predicted to be 0 for the No-Action alternative.

Total Number of Impacts

The total number and type of noise impacts is shown in Table 4-18. Line 3 would have the greatest number of total noise impacts, while Line 4 would have the least.

Table 4-17
EXISTING AND PREDICTED (YEAR 2020) SOUND LEVELS

ID	Receptor	Representative Dwelling Units Total & Type		Estimated LEQ(s) dBA							
				Existing	No-Action	Line 1	Line 2	Line 3	Line 4	Selected	Impact
1	Ella	12	11-Res. + 1 Church	63	64	69	69	69	64	69	X
2	Nash	8	7-Res. + 1 Church	63	64	69	69	69	64	69	X
4	Northside	5	Residential	63	64	68	68	68	64	68	X
5	Northside	7	Residential	63	64	66	66	66	64	66	X
6	Jamison	1	Residential	63	64	R/W	R/W	R/W	64	R/W	
7	Jamison	5	Residential	63	64	66	66	66	64	66	X
8	Jamison	1	Residential	63	64	68	68	R/W	64	68	X
9	Northside	3	Residential	62	63	65	65	65	63	65	
10	Northside	4	Residential	62	63	65	65	65	63	65	
11	Plum	3	Residential	62	63	69	69	R/W	63	69	X
13	Plum	1	Residential	62	63	69	69	R/W	63	69	X
14	Plum	5	Residential	62	63	67	67	67	63	67	X
15	Phelps	5	Residential	62	63	69	69	69	63	69	X
16	Phelps	13	12-Res/ Northside Sch.	62	63	64	64	64	63	64	
17	Phelps	1	Residential	62	63	R/W	R/W	R/W	63	R/W	
18	Montana	5	Residential	62	63	70	R/W	R/W	63	70	X
19	Montana	2	Residential	62	63	69	69	R/W	63	69	X
20	Montana	2	Residential	62	63	68	68	R/W	63	68	X
21	Off Montana	2	Residential	62	63	69	R/W	69	63	69	X
22	Off Montana	1	Residential	62	63	66	66	66	63	66	X
23	Montana	4	3-Res. + 1 Church	62	64	66	66	66	64	66	X
24	MLK	5	4-Res. + 1 Church	67	67	67	67	67	67	67	X
25	MLK	5	4-Res. + 1 Business	67	67	R/W	R/W	R/W	67	R/W	
26	MLK	2	Residential	67	68	R/W	R/W	R/W	68	R/W	
27	St Matthews	6	5-Res. + 1 Church	67	70	R/W	R/W	R/W	70	R/W	
28	MLK	9	8-Res. + 1 Business	67	69	R/W	R/W	R/W	69	R/W	
29	Hawkins	3	Residential	57	57	64	64	64	57	64	
30	Hawkins	2	Residential	57	57	64	64	64	57	64	
31	Hawkins	2	Residential	57	57	65	65	65	57	65	
32	Hawkins	2	Residential	57	57	64	64	64	57	64	
33	Hawkins	4	Residential	57	57	65	65	65	57	65	
34	Hawkins	1	Residential	57	57	63	63	63	57	63	
35	Hawkins	2	Residential	57	57	63	63	63	57	63	
36	Hawkins	6	Residential	57	57	62	62	62	57	62	
38	Hawkins	8	Residential	57	57	62	62	62	57	62	
39	Hawkins	6	Residential	57	57	62	62	63	57	62	
40	Hawkins	5	Residential	57	57	61	61	61	57	61	
41	Hawkins	8	Residential	57	57	61	61	61	57	61	
42	SWPineHill	4	Residential	50	51	55	56	56	55	55	
43	Pine Hill	2	Residential	62	63	65	68	68	65	65	
44	Pine Hill	2	1-Res. + 1 Business	62	63	61	62	62	61	61	
45	Kent	1	Residential	51	51	58	60	60	58	58	
46	Pine Knoll	4	Residential	51	51	58	60	60	58	58	
47	Pine Knoll	1	Residential	51	51	58	60	60	58	58	
48	Off Pine Knoll	20	Residential	51	51	59	61	61	59	59	
52	No.40Estates	2	Businesses	54	54	63	65	65	63	63	
53	No.40Estates	8	Businesses	54	54	61	63	63	61	61	
54	No.40Estates	4	Businesses	54	56	61	62	62	61	61	

Table 4-17 (cont.)
EXISTING AND PREDICTED (YEAR 2020) SOUND LEVELS

ID	Receptor	Representative Dwelling Units Total & Type		Estimated LEQ(s) dBA							
				Existing	No-Action	Line 1	Line 2	Line 3	Line 4	Selected	Impact
55	LA1	2	Residential	59	61	62	63	63	62	62	
57	LA1	2	Residential	60	62	68	R/W	R/W	68	68	X
58	LA1	5	Residential	62	64	69	69	69	69	69	X
59	LA538	1	Residential	55	57	61	R/W	R/W	61	61	
61	LA538	3	Residential	52	54	R/W	R/W	R/W	R/W	R/W	
62	LA538	13	Residential	53	55	59	60	60	59	59	
64	Off Albany	1	Residential	52	52	61	62	52	61	61	
65	No.WoodCh	1	Northwood Church	62	63	63	63	63	63	63	
67	Off Albany	2	Residential	52	52	60	62	62	60	60	
68	BMSChurch	4	3-Res. + 1 Church	52	52	61	63	63	61	61	
69	Albany	1	Residential	52	52	59	60	60	59	59	
70	Albany	1	Residential	52	52	57	58	58	57	57	
71	Albany	1	Residential	52	52	56	56	56	56	56	
72	Albany	3	Residential	52	52	55	56	56	55	55	
73	Albany	3	Residential	52	52	53	54	54	53	53	
74	Blue Church	1	Blue Church	54	54	R/W	R/W	65	R/W	R/W	
75	LA173	4	Residential	54	54	59	62	57	59	59	
76	Haygood	3	Businesses	49	49	52	53	52	52	52	
77	Haygood	2	1-Res. + 1 Business	49	49	54	55	53	54	54	
78	Haygood	1	Residential	49	49	56	58	55	56	56	
79	Haygood	1	Residential	49	49	54	56	54	54	54	
80	Haygood	1	Residential	49	49	57	59	56	57	57	
81	Haygood	2	Residential	49	49	58	61	57	58	58	
82	Haygood	2	Businesses	49	49	56	58	55	56	56	
83	LA169	3	Residential	49	49	52	54	51	52	52	
89	Gamm Road	1	Residential	48	48	54	56	53	54	54	
90	Self Road	1	Residential	48	48	52	52	50	52	52	
92	LA530	3	Residential	49	49	59	61	58	59	59	X
93	LA530	1	Residential	49	49	56	57	56	56	56	
94	LA530	1	Residential	49	49	55	56	55	56	56	
95	LA530	3	Residential	49	49	53	54	53	54	54	
96	RainsSchRd	1	Residential	50	50	50	51	53	51	51	
97	LA170	1	Residential	50	50	52	51	57	51	51	
98	LA170	1	Business	50	50	51	50	55	50	50	
99	LA170	1	Residential	50	50	50	50	53	50	50	
100	LA170	2	Residential	50	50	50	50	52	50	50	
101	LA170	1	Residential	50	50	50	50	51	50	50	
102	Huckabay	1	Residential	50	50	57	50	57	50	50	
103	US71	1	Residential	57	59	55	62	54	62	62	
104	US71	1	Residential	55	57	54	62	53	61	61	
105	JohnsChRd	1	Residential	58	58	R/W	48	56	48	48	
106	JohnsChRd	1	St. Johns Ch (aband)	58	58	R/W	49	53	49	49	
107	JohnsChRd	1	Residential	58	58	R/W	49	52	49	49	
108	JohnsChRd	1	Residential	58	58	57	52	52	52	52	
109	JohnsChRd	1	Residential	61	63	56	54	53	54	54	
110	US71	1	Residential	58	60	58	52	53	52	52	
111	US71	1	Residential	61	63	60	59	58	59	59	
112	US71	1	Residential	58	60	58	52	53	52	52	

Table 4-17 (cont.)
EXISTING AND PREDICTED (YEAR 2020) SOUND LEVELS

ID	Receptor	Representative Dwelling Units Total & Type		Estimated LEQ(s) dBA							
				Existing	No-Action	Line 1	Line 2	Line 3	Line 4	Selected	Impact
120	US71	5	Residential	61	63	58	52	53	52	52	
131	US71	7	Residential	57	59	55	52	55	52	52	
132	Off US71	3	Residential	57	58	56	50	56	50	50	
133	Off US71	1	Residential	57	58	58	49	58	49	49	
134	LA2	2	Residential	52	52	58	52	58	52	52	
135	RLNance	1	Robert L Nance Park	52	52	58	52	58	52	52	
143	Odom	9	Residential	52	52	63	52	63	52	52	
144	Odom	14	Residential	52	52	63	52	63	52	52	
145	Hoss Rd	4	Residential	52	52	58	52	R/W	52	52	
146	Hoss Rd	1	Residential	52	52	R/W	52	R/W	52	52	
147	Hoss Rd	14	Residential	57	58	54	49	57	49	49	
148	Hoss Rd	8	7-Res. + 1 Business	61	63	55	55	56	55	55	
149	Hoss Rd	3	Residential	61	63	53	52	55	52	52	
150	US71	1	Residential	57	58	53	52	55	52	52	
151	US71	6	Residential	57	59	55	54	56	54	54	
153	US71	1	Residential	57	58	53	52	55	52	52	
154	US71	1	Residential	57	58	53	53	55	53	53	
155	US71	6	Residential	57	57	52	52	59	52	52	
156	US71	9	Residential	57	58	54	54	55	54	54	
157	US71	1	Residential	57	58	53	53	55	53	53	
158	US71	3	Residential	57	58	55	55	56	55	55	
159	US71	3	Residential	57	58	55	55	56	55	55	
160	US71	1	Residential	57	58	54	53	56	53	53	
161	US71	1	Residential	57	57	55	54	57	54	54	
162	US71	1	Residential	57	57	54	51	58	51	51	
164	US71	1	Residential	57	57	55	50	61	50	50	
165	US71	2	Residential	57	57	55	50	61	50	50	
166	US71	1	Residential	57	58	55	54	57	54	54	
167	US71	1	Residential	63	64	55	54	58	54	54	
168	US71	3	Residential	57	58	56	50	64	50	50	
169	US71	1	Residential	57	58	55	51	60	51	51	
170	US71	1	Residential	57	58	56	54	58	54	54	
171	US71	1	Residential	57	58	56	54	58	54	54	
172	US71	1	Residential	57	58	55	52	59	52	52	
173	US71	1	Residential	63	64	55	54	57	54	54	
174	US71	1	Residential	57	57	56	52	61	52	52	
175	US71	1	Residential	57	52	57	51	64	51	51	
177	US71	1	Residential	57	57	56	52	61	52	52	
178	US71	1	Residential	57	57	55	54	57	54	54	
179	US71	1	Residential	57	57	55	53	58	53	53	
181	US71	1	Residential	57	57	56	52	61	52	52	
183	US71	3	2-Res. + 1 Business	63	64	58	54	59	54	54	
184	US71	1	Residential	63	64	59	53	60	53	53	
185	US71	8	Residential	54	55	53	58	52	58	58	
186	US71	2	Residential	54	54	54	60	54	60	60	
187	US71	1	Residential	57	57	55	54	57	54	54	
188	US71	1	Residential	63	64	58	53	60	53	53	
189	US71	1	Residential	61	62	54	55	56	55	55	

Table 4-17 (cont.)
EXISTING AND PREDICTED (YEAR 2020) SOUND LEVELS

ID	Receptor	Representative Dwelling Units Total & Type		Estimated LEQ(s) dBA							
				Existing	No-Action	Line 1	Line 2	Line 3	Line 4	Selected	Impact
190	US71	1	Residential	62	63	53	54	56	54	54	
191	US71	2	Residential	54	55	54	54	54	54	54	
192	US71	6	Residential	54	55	54	54	54	54	54	
194	Hoss Rod	1	Residential	44	44	56	45	52	45	45	
195	Hoss Rod	1	Residential	44	44	56	45	52	45	45	
197	Off US 71	1	Residential	44	44	60	50	63	50	50	
199	LA769	1	Residential	51	51	57	57	65	57	57	
200	LA769	1	Residential	51	51	56	56	61	56	56	
201	LA769	1	Residential	51	51	55	55	58	55	55	
202	LA769	1	Residential	51	51	55	55	59	55	55	
203	LA769	1	Residential	51	51	53	53	56	53	53	
204	LA769	1	Residential	51	51	52	52	55	52	52	
205	Atlanta-Mira	1	Residential	51	51	54	54	58	54	54	
206	Atlanta-Mira	1	Residential	51	51	52	52	54	52	52	
207	MunChpl	1	Residential	51	51	52	52	53	52	52	
208	MunChpl	1	Residential	55	55	56	55	57	56	56	
209	MunChpl	1	Residential	55	55	56	55	57	56	56	
212	MunChpl	1	Residential	55	55	63	59	R/W	63	63	
213	MunChpl	2	Residential	55	55	64	60	R/W	64	64	
214	LA168	2	Residential	50	50	59	59	58	59	59	
215	LA168	2	Residential	50	50	58	59	57	58	58	
216	Magnolia	1	Residential	49	49	R/W	R/W	64	R/W	R/W	
217	IdaBoyScout	1	Residential	50	50	55	56	55	55	55	
218	IdaBoyScout	1	Residential	50	50	56	57	56	56	56	
219	IdaBoyScout	1	Residential	50	50	57	58	57	57	57	
220	IdaBoyScout	1	Residential	50	50	58	59	58	58	58	
221	IdaBoyScout	1	Residential	50	50	58	59	58	58	58	
223	IdaBoyScout	11	Residential	63	64	52	52	52	52	52	
224	IdaBoyScout	1	Residential	52	52	54	54	54	54	54	
225	IdaBoyScout	1	Residential	52	52	55	55	55	55	55	
226	IdaBoyScout	1	Residential	52	52	56	56	56	56	56	
227	Magnolia	1	Residential	49	49	R/W	60	R/W	R/W	R/W	
228	Magnolia	1	Residential	49	49	58	54	58	58	58	
229	Magnolia	1	Residential	49	49	56	53	56	56	56	
230	LA168	1	Residential	49	49	R/W	58	R/W	R/W	R/W	
231	LA168	2	Residential	49	49	55	52	55	55	55	
232	LA168	1	Residential	49	49	55	52	55	55	55	
234	LA168	1	Residential	49	49	56	52	56	56	56	
235	LA168	2	Residential	49	49	55	52	55	55	55	
236	LA168	1	Residential	50	50	55	56	57	57	57	
237	LA168	1	Residential	50	50	56	55	55	56	56	
238	LA168	3	2-Res. + 1 Church	49	49	55	53	55	55	55	
239	LA169	1	Residential	50	50	55	54	55	55	55	
240	MunChpl	1	Residential	55	55	55	55	55	55	55	
241	MunChpl	1	Residential	55	55	55	55	54	55	55	
242	MunChpl	1	Residential	55	55	67	R/W	57	67	67	X
243	MunChpl	1	Residential	55	55	67	R/W	57	67	67	X
244	MunChpl	1	Residential	55	55	65	R/W	56	65	65	X

Table 4-17 (cont.)
EXISTING AND PREDICTED (YEAR 2020) SOUND LEVELS

ID	Receptor	Representative Dwelling Units Total & Type		Estimated LEQ(s) dBA							
				Existing	No-Action	Line 1	Line 2	Line 3	Line 4	Selected	Impact
245	MunChpl	1	Residential	55	55	62	R/W	55	62	62	
246	US71	1	Residential	63	64	57	57	56	57	57	
247	US71	1	Residential	63	64	53	53	52	53	53	
248	US71	1	Residential	63	64	55	55	54	55	55	
249	US71	1	Residential	63	64	58	58	56	58	58	
250	US71	1	Residential	63	64	58	58	56	58	58	
251	US71	1	Residential	63	64	58	58	57	58	58	
252	US71	1	Residential	63	64	58	58	57	58	58	
253	US71	1	Residential	55	56	58	58	55	58	58	
254	US71	1	Residential	55	57	58	58	55	58	58	
255	US71	3	Residential	63	64	57	57	55	57	57	
256	US71	2	1-Res. + 1 Business	63	64	56	56	54	56	56	
257	US71	3	Residential	63	64	56	56	54	56	56	
264	US71	2	Residential	63	64	56	56	55	56	56	
265	US71	5	Residential	63	64	56	56	55	56	56	
266	US71	1	Residential	63	64	58	58	57	58	58	
267	US71	1	Residential	63	64	58	58	57	58	58	
268	US71	4	2-Res/1-Bus/1-Church	63	64	56	56	55	56	56	
282	US71	2	Residential	54	54	54	R/W	54	R/W	R/W	
284	OffHossRod	2	Residential	48	48	48	62	48	62	62	X
285	US71	2	Residential	57	59	56	62	55	62	62	
286	US71	1	Residential	57	59	53	57	53	57	57	
297	Gamm Rd	1	Residential	49	51	57	57	51	57	57	
298	Gamm Rd	1	Residential	49	49	55	55	53	57	57	
299	Gamm Rd	1	Residential	49	49	55	55	53	55	55	
300	Gamm Rd	1	Residential	49	49	56	56	54	56	56	
301	Gamm Rd	1	Residential	49	49	54	54	53	56	56	
302	Gamm Rd	1	Residential	49	49	58	58	56	58	58	
303	Gamm Rd	1	Residential	49	49	56	56	55	56	56	
304	Gamm Rd	1	Residential	49	49	55	55	54	55	55	
305	Gamm Rd	1	Residential	49	49	55	55	54	55	55	
306	Gamm Rd	1	Residential	49	49	56	56	55	56	56	
307	Gamm Rd	1	Residential	49	49	56	56	55	56	56	
308	Gamm Rd	1	Church	49	49	55	55	54	55	55	
309	LA530	1	Residential	49	49	55	54	56	55	55	
310	Gamm Rd	1	Residential	49	49	58	57	60	58	58	
311	Gamm Rd	1	Residential	49	49	58	57	61	58	58	
312	Gamm Rd	1	Residential	49	49	58	57	61	58	58	
313	Gamm Rd	3	Residential	49	49	62	59	66	62	62	X
314	LA530	2	Residential	49	49	53	52	54	53	53	
315	LA530	1	Residential	49	49	52	51	53	52	52	
317	BlchrOilCity	3	Residential	49	49	56	55	57	56	56	
318	BlchrOilCity	1	Residential	49	49	53	52	54	53	53	
319	BlchrOilCity	1	Residential	49	49	55	54	56	55	55	
320	LA530	1	Residential	49	49	50	50	50	50	50	
322	Self Rd	2	Residential	48	48	58	56	60	58	58	X
323	Self Rd	1	Residential	48	48	58	56	60	58	58	X
324	Self Rd	1	Residential	48	48	59	57	61	59	59	X

Table 4-17 (cont.)
EXISTING AND PREDICTED (YEAR 2020) SOUND LEVELS

ID	Receptor	Representative Dwelling Units Total & Type		Estimated LEQ(s) dBA							
				Existing	No-Action	Line 1	Line 2	Line 3	Line 4	Selected	Impact
325	Self Rd	1	Residential	40	40	49	47	50	49	49	
328	US71	1	Residential	62	64	55	55	56	55	55	
329	US71	1	Residential	60	61	57	55	58	57	57	
330	US71	1	Residential	60	61	58	56	59	58	58	
331	US71	1	Residential	60	61	58	56	59	58	58	
332	US71	2	1-Res. + 1 Business	65	67	59	57	60	59	59	
330	Alan Street	4	Residential	62	63	59	57	61	59	59	
334	Alan Street	2	Residential	62	63	61	58	63	61	61	
335	Alan Street	4	Residential	65	67	60	58	61	60	60	
336	RslynChrch	1	Rossilyn Church	65	67	59	58	60	59	59	
337	US71	1	Business	65	67	57	55	57	57	57	
339	Albany Rd	1	Residential	52	52	57	56	56	57	57	
340	Albany Rd	1	Residential	52	52	58	57	58	58	58	
341	Albany Rd	1	Residential	52	52	R/W	64	63	R/W	R/W	
342	Albany Rd	3	Residential	52	52	R/W	64	63	R/W	R/W	
343	Albany Rd	1	Residential	52	52	61	60	60	61	61	
344	Albany Rd	1	Residential	52	52	60	59	59	60	60	
345	Albany Rd	15	14-Res. + 1 Business	52	52	57	56	56	57	57	
347	Albany Rd	12	Residential	52	52	58	57	57	58	58	
348	LA538	6	Residential	52	54	60	59	59	60	60	
356	LA538	1	Residential	52	54	R/W	R/W	R/W	R/W	R/W	
357	LA538	1	Residential	52	54	R/W	64	65	R/W	R/W	
358	LA538	1	Residential	52	54	R/W	65	65	R/W	R/W	
359	LA538	2	Residential	52	54	67	64	64	67	67	X
361	LA538	2	Residential	52	54	63	61	61	63	63	X
363	LA538	2	Residential	52	54	62	60	60	62	62	X
364	LA538	4	Residential	52	54	63	61	61	63	63	X
365	LA1	2	Residential	65	67	R/W	R/W	R/W	R/W	R/W	
366	LA1	3	Residential	65	67	R/W	R/W	R/W	R/W	R/W	
370	LA1	1	Church	65	67	68	68	68	68	68	X
371	LA1	5	Residential	65	67	68	68	68	68	68	X
373	LA1	5	3-Res. + 2 Business	65	67	69	69	69	69	69	X
374	Off LA1	2	Residential	61	63	65	65	65	65	65	
375	Off LA1	4	Residential	56	58	61	60	60	61	61	
376	Off LA1	3	Residential	52	53	61	60	60	61	61	
377	Pine Hill	1	Residential	62	63	R/W	R/W	R/W	R/W	R/W	
379	FaTabCh	1	Faith Tbrncl Church	62	63	63	62	62	63	63	
380	Pine Hill	3	Residential	58	59	62	62	62	62	62	
382	Off Pine Hill	4	Residential	57	59	57	56	56	57	57	
388	Off Pine Hill	10	Residential	48	50	55	54	54	55	55	
389	Off Montana	2	Residential	62	62	R/W	R/W	R/W	R/W	R/W	
390	Phelps	1	Residential	62	62	R/W	R/W	R/W	62	R/W	
391	Phelps	6	Residential	62	62	R/W	R/W	R/W	62	R/W	
392	Phelps392	2	Residential	62	62	R/W	R/W	R/W	62	R/W	
399	PLynchPrk	1	Proposed Park	57	57	58	58	58	57	58	

Source: Michael Baker Jr., Inc.

Table 4-18
NOISE IMPACT COMPARISON

	EXISTING YEAR	2020 DESIGN YEAR NO-ACTION	2020 DESIGN YEAR LINE 1	2020 DESIGN YEAR LINE 2	2020 DESIGN YEAR LINE 3	2020 DESIGN YEAR LINE 4	2020 DESIGN YEAR SELECTED
Total Number of Sensitive Receptors	717	717	717	717	717	717	717
Sensitive Receptors Equaling or Exceeding the DOTD Noise Abatement Criteria*	25	45	93	82	75	45	93
Sensitive Receptors with Substantial Noise Increase Criteria **	N/A	0	45	42	66	21	21
Total Receptors Impacted	25	45	138	124	141	66	114

Source: Michael Baker Jr., Inc.
* 66 dBA for Category B receptors.
** An increase of 10 or more dBA over the existing condition.

4.15.3 Noise Abatement

Noise abatement must be considered for sites when the DOTD NAC are equaled or exceeded at any receptor location or if the substantial increase criteria is exceeded. In Louisiana, the approach criteria is 66 dBA for Category B receptors and the substantial increase criteria is 10 or more dBA over the existing condition. Noise abatement measures and procedures are fully described in the DOTD Highway Traffic Noise Policy. When noise abatement measures are considered, every effort would be made to obtain nose reductions of at least 8 dBA.

Mitigation measures are not required for the existing conditions or the Design Year No-Action alternative because these measures are only analyzed for Type I highway noise impacts. The study included efforts to avoid or minimize noise impacts to sensitive receptors through alignment shifts and overall avoidance of residential areas.

General Noise Reduction Measures

Several types of noise reduction measures could be considered to mitigate noise impacts of the proposed highway and include:

- ❑ Using existing vegetation

- ❑ Traffic management measures
- ❑ Alteration of horizontal and vertical alignments
- ❑ Acquisition of property rights for construction of noise barriers
- ❑ Construction of noise barriers
- ❑ Noise insulation of public use or nonprofit institutional structures.

Noise reduction measures such as earth berms and barrier walls would provide the greatest degree of noise attenuation. A graded, vegetated earth berm that blends with the surrounding topography is one of the more aesthetically pleasing noise barriers. The feasibility of berm construction would be considered as part of the overall grading plan for the project, especially if there is an excess of cut material. There may be instances where an effective earth berm can be constructed within normal right-of-way or with a minimal additional right-of-way purchase. If right-of-way is insufficient to accommodate a full height earth berm, a lower earth berm could be constructed in combination with a wall to achieve the necessary height and attenuation. An earth berm may also provide slightly more attenuation (up to 3 dBA more) than a vertical barrier wall of the same height because of the better absorptive quality of the earth and ground vegetation.

A solid, acoustically opaque barrier (barrier wall) can theoretically reduce noise exposure to a property by as much as 15 to 20 dBA, although a typical reduction is approximately 5-10 dBA. The barriers can be constructed from common building materials such as concrete, wood, plastic, and recycled products. The design can range from relatively simple, straight-line walls to complex designs that blend in with local features such as terrain and neighborhood characteristics. The materials should be rigid and sufficiently dense to provide adequate mitigation and drainage, while at the same time be attractive, durable, and relatively maintenance-free.

Both the on-site cost and the degree of noise attenuation must be considered when selecting barrier wall materials. In addition, it is unlikely that any one barrier wall type or material would be applicable in every situation, however, preliminary costs of $\$25/ft^2$ were based on ground mounted concrete barriers. Consideration must also be made for the on-site cost of the foundations, fabrication, erection, and maintenance of the wall, as well as for any additional drainage costs that may be associated with the construction of a barrier.

For maximum effectiveness, barriers should be as close as possible to either the source or the receiver and should be high and long enough to adequately mitigate the site. Space limitations and public involvement often help in the determination

of the type of barrier used. A combination of earth mound topped by a wall can be visually pleasing as well as functional. In some cases, the wall may serve to control access and eliminate the need and cost of right-of-way fencing.

4.15.4 Determination of Reasonableness and Feasibility.

The DOTD would identify both noise abatement measures which are reasonable and feasible and which are likely to be incorporated in the project. Noise impacts for which no apparent solution is available would also be identified.

Noise abatement considerations evaluate both feasibility and reasonableness. The feasibility of mitigating noise impacts deals primarily with quantitative elements such as topography, access points, drainage, safety, maintenance requirements, other noise sources, and whether the proposed insertion of a barrier provides minimum sound level reductions. In determining the feasibility of providing noise abatement measures, at least one receiver must receive a minimum of 8 dBA reduction. If no receivers receive this minimum noise reduction, the abatement measure is deemed not to provide substantial noise reductions and is not feasible.

In determining reasonableness, DOTD would balance the interests of the overall public good with the social, economic and environmental impacts and the costs of the noise abatement measures. On each project where noise impacts occur, DOTD would consider the following:

- a sensitive receptor, whether or not impacted, must receive a 5 dBA reduction in noise levels to be counted as benefited, and
- the cost of the noise abatement measure (including the cost of real estate acquisition, construction servitude or utility relocation) must be equal to or less than $15,000 per benefited receptor.

Additional reasonableness considerations are detailed in the DOTD Highway Traffic Noise Policy.

Preliminary Noise Abatement Analysis

A preliminary analysis addressed the receptors that required noise mitigation consideration for the Selected Alignment. Some impacted locations were eliminated from further noise abatement consideration because of:

- Isolated or single receptor locations that would not typically warrant further consideration because of the cost of benefiting one site
- Areas with only a few homes which did not have acceptable cost per receptor ratios
- Areas where the predicted noise contributions coming from other roads would create an insufficient Insertion Loss (IL) from any proposed abatement feature
- Overriding direct access requirements to local roadways and driveways

- Other considerations, such as access to the general public.

The following predicted impact areas were analyzed according to the conditions discussed in this section for implementing noise abatement. For preliminary analysis purposes, a barrier cost of $25 per ft^2 was assumed, based on the DOTD statewide noise barrier cost for ground mounted barriers (9/16/96). These potential abatement areas are shown in the Appendix with the modeled receptor sites.

- Area # 1 – Receptor ID numbers 1, 2, 4, 5, 7, 8, 11, 13-15, 18-23, representing 71 receptors. These receptors are located north of I-220, south of Martin Luther King Jr. Drive and west of the Selected Alignment. Existing dominant highway noise originates from I-220 and MLK Drive. The current sound levels in this area range from 62-63 dBA and would increase by 1-2 dBA into the design year through natural traffic volume growth. The construction of the Selected Alignment would increase the dBA levels by 3-7 dBA over the existing condition. In order to properly mitigate this area according to DOTD policy, a noise barrier approximately 2500 meters (8200 ft) long and 4.27 meters (14 ft) high would be necessary. Station numbers are shown in Table 4-19. The barrier would also have to be extended to parallel the proposed southbound off-ramp to I-220 and a portion of I-220 as well. At an estimate of over $40,400 per benefited receptor, this abatement feature would be unreasonable due to excessive cost.
- Area # 2 – Receptor ID number 24, representing 5 receptors. These receptors abut the south side of Martin Luther King Jr. Drive and are west of the Selected Alignment. Existing dominant highway noise originates from MLK Drive. The current sound levels in this area are 67 dBA because of their proximity to the roadway. Because of the relatively high existing dBA levels, there is no predicted increase for either the design year No-Action or the Selected Alignment noise levels. Generally, it would require a doubling of the traffic volumes on the local road to increase the sound environment by 3 dBA. Additionally, these sites may be acquired in conjunction with the proposed interchange. If they are not acquired and uncontrolled access to MLK Drive is maintained, minimum IL could not be achieved from the construction of any noise abatement feature because of the need to maintain a continuous barrier.
- Area # 3 – Receptor ID number 57, representing 2 receptors. These receptors are located north of LA 1 and west of the Selected Alignment. Existing dominant highway noise originates from LA 1. The current sound level in this area is 60 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 2 dBA. For the Selected

Alignment, the increase is 6 dBA over the existing condition, primarily from the induced traffic volumes on LA 1 as a result of the interchange. If these residences are not acquired and uncontrolled access to LA 1 is maintained, minimum IL could not be achieved because of the need to maintain a continuous barrier along LA 1.

- Area # 4 – Receptor ID number 58, representing 4 receptors. These receptors are located immediately north of LA 1 and west of the Selected Alignment. Existing dominant highway noise originates from LA 1. The current sound level in this area is 62 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 2 dBA. For the Selected Alignment, the increase is 7 dBA over the existing condition, primarily from the induced traffic volumes on LA 1 as a result of the interchange. Similar to Area #3, no-access limits have not yet been established for this location. If some of these residences (and businesses) are not acquired and uncontrolled access to LA 1 is maintained, minimum IL could not be achieved from the construction of any noise abatement feature because of the need to maintain a continuous barrier along LA 1.
- Area # 5 – Receptor ID number 92, representing 3 receptors, 1 of which is within the current construction limits and would be impacted. These receptors are located immediately north of LA 530 and west of the Selected Alignment. The current sound level in this area is 49 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 0 dBA. For the Selected Alignment, the increase is 10 dBA over the existing condition. To protect these 2 residences, a structure barrier would have to be constructed on the overpass. This would not be reasonable from a cost standpoint ($480,000 per benefited receptor). Station numbers are shown in Table 4-19.
- Area # 6 – Receptor ID numbers 243-244, representing 3 receptors. These receptors are located north of Munnerlyn Chapel Road and east of the Selected Alignment. The current sound level in this area is 55 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 0 dBA. For the Selected Alignment, the predicted increase is 10-12 dBA over the existing condition. A noise barrier approximately 600 meters (1970 ft) long and 4.27 meters (14 ft) high would adequately mitigate noise in this area and would benefit a total of 4 residences (the impacted 3 receptors plus a nearby residual benefit to receptor ID number 245). This would not be reasonable from a cost perspective ($172,000* per benefited receptor). Station numbers are shown in Table 4-19.

TABLE 4-19
PRELIMINARY LOCATIONS WARRANTING NOISE ABATEMENT CONSIDERATION

Site Number and Location	Effectiveness and Cost Data				Barrier Data		Evaluation Comments
	Receptor Impacts	Receptors Benefited*	Total Cost**	Cost per Receptor**	Length	Height	
Area No. 1, receptor nos. 1, 2, 4, 5, 7, 8, 11, 13-15, 18-23; I-220, Montana, Phelps, Plum, & other local streets in the MLK Area	71	71	$2,870,000	$40,423	2500 m (8200ft) Station 1+000 to 2+440 LT plus interchange ramps plus I-220 section (no Station numbers)	4.27 m (14 ft)	Minimum insertion loss achieved for the protected residences. The proposed mitigation is not cost reasonable basis. The proposed mitigation would require shielding from I-220 traffic noise and structure barriers would be required on the overpasses. The abatement feature would also have to cross the corner of Northside and Nash Streets where the on-ramp is proposed.
Area No. 2, receptor no. 24; MLK Drive	5	N/A	N/A	N/A	N/A	N/A	Minimum insertion loss of 8 dBA can not be achieved because direct access is required to MLK Drive. These receptors may also be acquired as part of the no-access requirements from the proposed interchange.
Area No. 3, receptor no. 57; LA 1	2	N/A	N/A	N/A	N/A	N/A	Minimum insertion loss of 8 dBA can not be achieved because direct access is required to LA 1. LA 1 has a sound level contribution of 62 dBA in the front yard of these residences. Additionally, it is likely that these residences would be acquired to accommodate the proposed interchange with LA 1.
Area No. 4, receptor no. 58; LA 1	4	N/A	N/A	N/A	N/A	N/A	Minimum insertion loss can not be achieved because direct access is required to LA 1. Primary highway noise source is LA 1 and not the Preferred Alternative. There are also 2 businesses located in this area which are not impacted according to the NAC criteria.
Area No. 5, receptor no. 92; LA 530	2 (+ 1 right-of-way property)	2	$960,000	$480,000	1000m (3200ft) Station 28+960 to 29+960 LT	3.66 m (12 ft)	It is likely that all 3 residences may have to be acquired for the interchange area for a typical diamond and no-access limits restrict access to the driveway. If they remain, the cost to protect 2 residences would be approximately $480,000 per benefited receptor. This is well above the cost reasonableness criteria of $15,000.

*Benefited receptors have a minimum 5 dBA IL & 1 receptor must have at least 8 dBA IL.
**Costs are approximate and based on a conservative $25 ft^2 estimate.

TABLE 4-19
PRELIMINARY LOCATIONS WARRANTING NOISE ABATEMENT CONSIDERATION

Site Number and Location	Effectiveness and Cost Data				Barrier Data		Evaluation Comments
	Receptor Impacts	Receptors Benefited*	Total Cost**	Cost per Receptor **	Length	Height	
Area No. 6, receptor nos. 242-244; Munnerlyn Chapel Road	3	4 (1 extra benefited receptor-no. 245)	$689,500	$172,375	600 m (1970ft)	4.27 m (14 ft)	It is likely that the 2 closest of the affected receptors may have to be acquired for right-of way. If these residences are not acquired, the cost to benefit 4 residences would not be cost reasonable.
					Station 53+030 to 53+630 RT		
Area No. 7, receptor no. 284; Hosston River Road	2	N/A	N/A	N/A	N/A	N/A	The cost to benefit 2 residences at this location would not be reasonable from a cost standpoint (a minimum of $125,000 per benefited).
Area No. 8, receptor no. 313; Gamm Road	3	3	$689,500	$229,833	600 m (1970ft)	4.27 m (14 ft)	The cost to benefit 3 residences would be approximately $229,833 per benefited receptor. This is well above the cost reasonableness criteria of $15,000. Visually, the placement of this barrier in the middle of an open field should be considered and engineering issues would also have to address this barrier crossing Swift Bayou.
					Station 28+200 to 28+800 RT		
Area No. 9, receptor nos. 322-324; Self Road	3	3	$1,120,000	$373,333	1000m (3200ft)	4.27 m (14 ft)	The cost to benefit 3 residences would be $373,333 per benefited receptor, which is well above the cost reasonableness criteria of $15,000. Visually, the placement of this barrier in the middle of an open field and on some structure should be considered.
					Station 25+950 to 26+950 RT		
Area No. 10, receptor nos. 359, 361, 363, 364; LA 538 (Old Mooringsport Rd.	10	10	$1,050,000	$105,000	914 m (3000 ft)	4.27 m (14 ft)	The cost to benefit 10 residences would be $105,000 per benefitted receptor, which is above the cost reasonableness criteria of $15,000. Two of these receptors may also be acquired as part of the right-of-way from the proposed interchange with LA 1.
Area No. 11, receptor nos. 370, 371, 373; LA 1	9	N/A	N/A	N/A	N/A	N/A	Minimum insertion loss of 8 dBA can not be achieved because access is required to LA 1. Primary highway noise source is LA 1 (67 dBA) and not the Preferred Alternative. There are also 2 businesses located in this area which are not impacted according to the NAC criteria.

*Benefited receptors have a minimum 5 dBA IL & 1 receptor must have at least 8 dBA IL.
**Costs are approximate and based on a conservative $25 ft^2 estimate.

- Area # 7 – Receptor ID number 284, representing 2 receptors. These receptors are located south of Hosston River Road and west of the Selected Alignment. The current sound level in this area is 48 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 0 dBA. For the Selected Alignment, the predicted increase is 14 dBA over the existing condition. In addition to a barrier along the highway, barriers that traverse the length of the bridge on both sides of Hosston River Road would be needed to protect 2 residences. This would not be reasonable from a cost standpoint (a minimum of $125,000 per benefited receptor).
- Area # 8 – Receptor ID number 313, representing 3 receptors. These receptors are located west of Gamm Road, south of LA 530, and east of the Selected Alignment. The current sound level in this area is 49 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 0 dBA. For the Selected Alignment, the predicted increase is 13 dBA over the existing condition. An 8 dBA reduction would be achieved with a noise barrier approximately 600 meters (1970 ft) long and 4.27 meters (14 ft) high. However, it would not be reasonable from a cost perspective to benefit 3 residences ($229,000+ per benefited receptor). Station numbers are shown in Table 4-19.
- Area # 9 – Receptor ID numbers 322-324, representing 3 receptors. These receptors are located south of Self Road, and east of the Selected Alignment. The current sound level in this area is 48 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 0 dBA. For the Selected Alignment, the predicted increase is 10-11 dBA over the existing condition. An 8 dBA reduction would be achieved with a noise barrier approximately 1000 meters (3200 ft) long and 4.27 meters (14 ft) high. However, it would not reasonable from a cost perspective to benefit 3 residences ($373,000 per benefited receptor). Station numbers are shown in Table 4-19.
- Area # 10 – Receptor ID numbers 359, 361, 363, 364, representing 10 receptors. These receptors are located north and south of LA 538 (Old Mooringsport Road) and east of the Selected Alignment. The current sound level in this area is 52 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 2 dBA. For the Selected Alignment, the predicted increase is 10-15 dBA over the existing condition. An 8 dBA reduction would be achieved with the following conditions: structure barriers would need to be constructed on both sides of the LA 538 overpass, a wrap-around barrier would be required to benefit the receptors closest to the proposed LA 1 interchange area, and the

barriers would need to be constructed along the proposed highway on both sides of LA 538. Total barrier length of all barriers is approximately 914 meters (3,000 ft) with an average height of 4.3 meters (14 ft). This would include higher barriers near the LA 1 interchange and smaller barrier heights across the LA 538 bridge. However, it would not be to cost reasonable to benefit 10 residences ($105,000 per benefited receptor). The local sound level contribution is 54 dBA.

- Area # 11 – Receptor ID numbers 370, 371, 373, representing 9 receptors. These receptors are located north and south of LA 1, immediately adjacent to the road, and east of the Selected Alignment. Existing dominant highway noise sources originate from LA 1. The current sound level in this area is 67 dBA. The predicted increase in the dBA levels for the design year No-Action Alternative is 1 dBA. For the Selected Alignment, the increase is 1-2 dBA over the existing condition, primarily from the induced traffic volumes on LA 1 as a result of the interchange. A 8 dBA minimum IL could not be achieved from the construction of any noise abatement feature because of the need to maintain a continuous barrier along LA 1.

Table 4-19 summarizes the detailed descriptions mentioned above. Preliminary costs per receptor were provided for the areas where candidate abatement was feasible. Some abatement may or may not be determined feasible and/or reasonable if additional design is undertaken. A final decision on barriers for noise mitigation would be made during the final design of the highway when more detailed information is available. This would account for changes to the horizontal and vertical alignments, additional property acquisition, drainage requirements, costs, natural resource and environmental considerations, design criteria constraints, and interchange designs.

Currently, there are no practical noise abatement measures that would eliminate or reduce the expected highway traffic noise impact at the identified areas. Generally, they are either unreasonable on a cost basis, do not benefit enough receptors, or they would restrict access to local roads and/or driveways.

4.16 HAZARDOUS MATERIALS

All alignments would impact known potential hazardous waste sites. Line 3 would impact the greatest number of sites (8), while Line 4 and the Selected Alignment would impact the least (4). The Selected Alignment would impact one site that contains an inactive gasoline tank, one pond associated with petroleum activities, and two petroleum related tank batteries.

A Preliminary Site Investigation is currently being conducted for the Selected Alignment. If areas of contamination are present, appropriate measures

would be taken to remediate the area prior to construction.

4.17 ENERGY

With the exception of the No-Action alternative, construction of any alignments would require short-term energy consumption. Construction related energy consumption would be generally based on the construction cost of the alternative. The amount of energy required for the production and placement of materials (asphalt, structures, cut, fill, etc.) during construction would be a fixed cost. Construction related energy consumption would be offset over the life of the project by the energy efficiencies gained with the use of an improved transportation facility. The North-South Expressway project would improve fuel efficiencies due to higher levels of service resulting from uniform speeds, less congestion, and free flow of traffic. As traffic is diverted to the proposed highway, previously congested segments of U.S. 71 and other area roadways would experience a decrease in traffic. Consequently, the operating efficiency would likely improve on most of these roads, improving levels of service, reducing travel times between destinations, and in turn reducing overall fuel consumption.

4.18 CONSTRUCTION IMPACTS

Highway construction impacts would be limited in duration to the actual construction period and could affect the residences of the immediate construction area and those traveling in the vicinity of the work in progress. The temporary impacts associated with highway construction activities could include:

- The temporary degradation of air, noise, and water quality;
- The temporary disruption of traffic for residents, businesses, and travelers, including maintenance, control, and safety concerns;
- Public health and safety;
- The stockpiling and disposal of construction materials and waste;
- The use of borrow areas and the construction and use of haul roads;
- The temporary disruption of utilities.

4.18.1 Air Quality Construction Impacts

Construction activities can have a temporary impact on local air quality during periods of site preparation, primarily with particulate matter or fugitive dust. This impact would occur in association with excavation and earth moving, asphalt aggregate handling, heavy equipment operation, use of haul roads and wind erosion of exposed areas and material storage piles. The effect of fugitive dust would be temporary and would vary in scale depending on local weather conditions, the degree of construction activity, and the nature of the construction activity.

Mitigative dust control measures may include: minimization of exposed erodible earth, stabilization of exposed earth with vegetation, mulch, pavement, or other cover as early as possible, periodic application of stabilizing agents (e.g. water), covering or stabilizing stockpiled material as necessary, and the use of covered haul trucks. Any abatement measures shall be in strict accordance with the Louisiana Standard Specifications of Roads and Bridges.

4.18.2 Construction Noise

A temporary increase in noise and vibration is expected during the highway construction period and would be limited to the immediate vicinity of the work in progress. Construction noise and vibration may be associated with ground clearing, demolition of and removal of existing structures, excavation, foundation placement, and finishing, including filling, paving, grading, and clean up. Noise at any given site would depend on the phase of construction and the type of equipment being used.

Noise abatement measures would be employed in accordance with Section 107.15 of the Louisiana Standard Specifications of Roads and Bridges. These measures include muffling all motorized equipment, locating haul roads away from sensitive areas, limiting the hours of operation at the construction sites, and locating noisy stationary equipment away from sensitive areas.

4.18.3 Water Quality Construction Impacts

Water quality impacts are discussed in detail in Section 4.6. In general, construction activities can create temporary water quality impacts through increased sediment loading. An erosion and sediment control plan will be developed and implemented and will include all specifications and best management practices (BMPs) necessary for control of erosion and sedimentation due to construction related activities.

4.18.4 Maintenance and Control of Traffic

The maintenance of traffic, construction sequencing, and detouring will be planned and scheduled to minimize impacts to local residents, businesses, and the traveling public. Access to residences and businesses impacted by construction will be maintained by temporary driveway construction or temporary connections when necessary. Detours may be required at various locations throughout the construction process.

Any disruption to the delivery of community and emergency services during construction will be minimal. Intersections with major local roads will be grade separated or relocated to allow continuous operation and access. Local police and fire departments and other emergency service providers will be notified in advance of any construction-related activities to allow for proper planning and alternate route identification.

4.18.5 Public Health and Safety

During the course of construction, the contractor will comply with all federal, state, and local laws governing safety, health, and sanitation. All reasonable safety considerations and safeguards necessary to protect the life and health of employees on the job, safety of the public, and the protection of property in connection with roadway construction will be taken.

4.18.6 Other Construction Impacts

Utilities in the project area include water, sewer, gas and oil pipelines, telephone, and electrical transmission lines. The contractor will contact the appropriate local officials to coordinate a work schedule that will avoid and minimize any disruption of utility services during construction.

The stockpiling and/or disposal of construction materials generated from clearing, grubbing, and other phases of construction would be conducted in accordance with local and state regulatory agencies permitting the construction operation. The use of borrow areas and construction of haul roads would also be coordinated with the appropriate local, state, or federal regulatory agencies as necessary.

4.19 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Short-term impacts to the human and natural environment are anticipated by the construction of the proposed highway. Impacts to the human environment would include the relocation of families and businesses. The DOTD relocation program would minimize this inconvenience to the extent possible. Improved access within the study area could stimulate long-term residential and commercial growth as well as create short and long term employment opportunities.

Short-term impacts to the natural environment would include erosion and siltation of local creeks and bayous. Implementation of an approved erosion and sedimentation control plan would minimize these impacts. Long-term impacts to wetlands involve fill required for construction of the proposed highway. Successful creation or restoration of wetland habitat would mitigate for these long-term impacts. Short-term wildlife impacts would involve the disruption and displacement of species during construction. Long-term impacts would include the conversion of vegetative cover to a transportation use.

The North-South Expressway project has been identified by U.S. Congress, the North Louisiana Council of Government's (MPO) area transportation plan, and the City of Shreveport as essential for the continued growth and development of this area.

4.20 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Construction of the proposed highway would require a commitment of land, labor, natural

resources, and financial resources. Land used for the proposed highway would be considered an irreversible commitment during the life of the facility. If a greater need arises for the use of this land in the future, the highway could be converted to another use. However, presently, there is no need to consider that this would occur.

Labor, construction materials, and fossil fuels for construction vehicles and equipment would be used during construction. Labor and natural resources would be used to fabricate construction materials. Generally, these materials are not retrievable. The use of these materials would not have an adverse effect on the continued availability of these resources.

Construction of the proposed highway would require funding from Federal and State sources. These funds would be committed to the construction and maintenance of the facility and not available for other uses.